Puerto Iguazú, Argentina 2017

Ornithological Congress of the Americas

XVII RAO / XXIV CBO / XCV AFO

BOOK OF ABSTRACTS

AUGUST 8-11 · PUERTO IGUAZÚ, MISIONES PROVINCE, ARGENTINA · CENTRO DE EVENTOS Y CONVENCIONES DEL IGUAZÚ, HOTEL AMERIAN

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Welcome to the

Ornithological Congress of the Americas!

Puerto Iguazú, Misiones, Argentina, from 8–11 August, 2017

Puerto Iguazú is located in the heart of the interior Atlantic Forest and is the portal to the Iguazú Falls, one of the world's Seven Natural Wonders and a UNESCO World Heritage Site. The area surrounding Puerto Iguazú, the province of Misiones and neighboring regions of Paraguay and Brazil offers many scenic attractions and natural areas such as Iguazú National Park, and provides unique opportunities for birdwatching. Over 500 species have been recorded, including many Atlantic Forest endemics like the Blue Manakin (*Chiroxiphia caudata*), the emblem of our congress. This is the first meeting collaboratively organized by the Association of Field Ornithologists, Sociedade Brasileira de Ornitologia and Aves Argentinas, and promises to be an outstanding professional experience for both students and researchers. The congress will feature workshops, symposia, over 400 scientific presentations, 7 internationally renowned plenary speakers, and a celebration of 100 years of Aves Argentinas!

Enjoy the book of abstracts!

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ON THE IMPORTANCE OF STUDYING NATURAL HISTORY WHILE THINKING ABOUT EVOLUTIONARY ECOLOGY THEORY AND PHYSIOLOGY PRINCIPLES TO ADVANCE UNDERSTANDING OF LIFE HISTORY VARIATION

Thomas E. Martin U. S. Geological Survey, Montana Cooperative Wildlife Research Unit, University of Montana, USA

Much of the natural history of tropical and southern hemisphere birds remain unstudied and unknown. As a result, general theory and principles are often based on imperfect knowledge as applied to these regions. For example, one long-standing viewpoint is that parental investment (energy per offspring) is greater and development is slower in the tropics to produce higher quality individuals that live longer than relatives in the North Temperate Zone. Under this view, longer incubation periods cause higher adult survival. Yet, study of the natural history of tropical and southern hemisphere birds show that parents of many species actually exhibit reduced parental investment compared with north temperate relatives during incubation; tropical and southern hemisphere species spend less time and effort in warming eggs than north temperate relatives, and the resulting cooler egg temperatures explain the slower embryonic development in the tropics. Swapping and heating experiments verify the causal basis of temperature for large differences in incubation periods. Moreover, parental investment in incubation, measured as egg temperature, is strongly predicted by annual adult survival probability; species with higher survival show greater reduction in energy costs of incubation by warming eggs less and causing longer incubation periods, thereby reversing the causal direction between adult survival and embryonic period. In contrast, study of parental feeding behavior across tropical species shows that parents invest more per offspring during the nestling stage (i.e., higher feeding rate per nestling), and this explains improved offspring quality in terms of developmental condition at fledging. At the same time, differences in investment in nest structure also can play a critical role in embryonic and nestling development through effects on heat loss. Attention has generally focused on input (food delivery) for nestling growth, but energy loss (i.e., heat loss) is at least as important and has received little attention. Similarly, parental brooding behavior has been ignored, but shows extensive variation among species related to both nest structure and to some extent diet. Finally, understanding variation in adult survival among tropical birds is critical for advancing life history theory and data show that tropical birds actively avoid nets causing standard-effort netting studies to significantly underestimate apparent survival in tropical birds. Ultimately, causes of variation among tropical species in many behavioral, developmental, and functional attributes remain poorly studied as does nest and adult mortality which can form important agents of selection. Detailed natural history studies that include these traits are critical for

improving understanding of life history and demographic variation within and across latitudinal regions.

GENITAL EVOLUTION IN BIRDS: LOSING THE PENIS AND WINNING THE BATTLE

Patricia L. R. Brennan University of Massachusetts, USA

Most birds do not have a penis, and most ornithologists have not thought about bird penises much. However, evolutionarily, the loss of the penis in birds is an extremely significant event: why loose an organ that seems so handy to get sperm close to female eggs? The few birds that have kept their penis may offer some insights as to why this penis loss may have occurred in birds. There are multiple reductions and eliminations of the penis in the evolutionary history of birds, within the Tinamidae and the Megapodidae. Yet, the avian penis has the same erectile mechanism, and functional asymmetry in all birds that have been examined so far. Differences in penis morphology do not arise during embryonic development, but later, during the first year of reproduction. Developmental studies suggest that losing the penis is not as hard as one might imagine. Within birds that have kept their penis, waterfowl are remarkable in the variation of their genital morphology. In some waterfowl, males force copulations on females, and in these species males have longer and more elaborate penises. Male-male competition plays a critical role in influencing the morphology of the penis, surprisingly within the lifetime of an individual. In male biased group settings, males grow longer penises than males housed in pairs. Females suffer great direct and indirect costs from forced copulations and they have evolved complex vaginas that prevent the full eversion of the penis, and reassert female control over paternity. An evolutionary arms race is playing out in the complex genitalia of waterfowl, with some species having extremely exaggerated genitalia. One possible resolution of such conflict is disarmament, and Dr. Brennan will discuss how the avian penis loss may have been driven by female choice for increased sexual autonomy, giving females the upper hand in the reproductive battle.

GENOMIC DRIVERS OF EVOLUTIONARY CHANGE: MICRO- AND MACRO-EVOLUTIONARY EXAMPLES ACROSS THE AVIAN TREE OF LIFE

Scott V. Edwards Harvard University, USA

Next-generation sequencing is unleashing a plethora of variation both within and between species and allowing stronger links between genotype and phenotype. In this talk I will present two examples from my lab that take advantage of natural experiments, both within and between species, to understand the genetic basis of micro- and microevolutionary change in birds. We first use a technique called ddRad-seq, which recovers variation at thousands of points along the genome, to detect introgression among *Zimmerius* flycatcher species in the Andes. This introgression helps explain an enigmatic 'mosaic' population, which possesses the song of northern *chrysops* but the

plumage of southern *viridiflavus*. We next present data on multiple new complete genomes flightless birds (Palaeognathae), which we use to understand the genetic basis of flightlessness in this group. Our phylogenomic analysis, as well as recent studies by other groups, strongly suggests that flight was lost multiple times in this group, a conclusion that clashes with a centuries-old scenario in which flight was lost just once in the common ancestor. I will demonstrate how we use detailed analyses of genes and non-coding regulatory regions to conclude that regulatory, not protein-coding, genomic changes drove the evolution of flightlessness. This scenario contrasts markedly with a similar analysis for convergent vocal learning in birds, which appears to be driven much more by protein evolution. Together these studies reveal how introgression and parallel genomic changes across species can help explain novel phenotypes in birds, and how natural selection can operate in multiple lineages independently.

EMERGING ROLES FOR CITIZEN SCIENCE IN UNDERSTANDING BIRD DISTRIBUTIONS AND IN CONSERVATION

John W. Fitzpatrick Cornell Lab of Ornithology, Ithaca, USA

Engaging bird-watchers as biosensors to document bird distributions dates to the early twentieth century, but only with advent of the Internet and mobile devices has the exercise expanded to the entire calendar year, achieved global scales, and become a genuine force in environmental monitoring. The last fifteen years have seen spectacular growth in worldwide data generation by birders. Citizen science projects such as eBird, BirdTrack, WikiAves, Ornitho, Artportalen, Sabap, iNaturalist and others are gathering millions of bird observations and checklists. Some of these projects are occurrence-based, in which an observation and/or photograph constitute a unique record. Accumulation of such data can yield increasingly accurate distribution maps, but statistical analyses are difficult, especially for generating relative abundances across space and time. eBird is a checklist-based project in which observers are encouraged to report all species detected, along with total observation time and distance traversed. Combining these data with other sources of georeferenced environmental data yields surprisingly accurate "big-data" models depicting bird distributions, abundance patterns, and habitat associations throughout the annual cycle. Longitudinal tracking of individual observers' performances allows parsing of the data by skill level, which improves model accuracy. Some emerging conservation applications include range-wide analyses of "use-days" to identify hot-spots having disproportionate importance for the species' annual cycle, population trend analyses at both local and range-wide scales, and identification of temporary concentrations where dynamic conservation strategies may be employed. "Bird Vis" is a new application for detecting seasonal changes in habitat use from eBird data, and reveals dramatic, previously undetected positive attractions of songbirds to urban habitats during spring and fall migrations. Evidence is accumulating that these patterns result from light-attraction during nocturnal migration. NEXRAD radar data on nocturnally migrating birds provide a big-data source for population

estimates that is complimentary to daytime observations by birdwatchers. Preliminary analyses suggest that these data afford exceptional insight into continent-wide numbers and demographic patterns.

PHYLOGEOGRAPHY OF BIRDS: REVEALING THE BIOGEOGRAPHICAL HISTORY OF THE ATLANTIC FOREST

Cristina Y. Miyaki Departamento de Genética e Biologia Evolutiva, Instituto de Biociências, Universidade de São Paulo, Brazil

The Atlantic Forest (AF) houses a megadiverse avifauna, with around 200 endemics. We have been gathering phylogeographic data of AF birds to help to understand the history of this biome. It is clear that there is no unique pattern of population structure and demographic history that fits to all the species. We will show congruencies and idiosyncrasies found in more than 20 species analyzed so far. Also, we will discuss how these results fit in the biogeographic scenario of the AF. Funds: FAPESP (Biota 2013/50297-0), NSF (DEB 1343578), NASA, CNPq, CAPES, NAP BioComp.

SHARING THE AIR WITH WILDLIFE: PATTERNS, PROCESSES AND CONSERVATION IN 3D

Sergio Lambertucci CONICET, Universidad Nacional del Comahue, Argentina

Major human impacts have been produced in land and water ecosystems, but new technology that increases the possibilities to use the airspace creates new wildlife-human conflicts also in the air. The airspace is used by humans and wildlife and is studied interdisciplinary (from ecological, geographical, and atmospheric perspectives) by the Aeroecology. However, no many concerns on the conservation of this habitat have been raised. I will discuss how human's use of the airspace affects aerial wildlife and ecological processes and will provide suggestions for a conservation approach of the problem within the Aeroconservation framework. Flying species may spend much time in the air, and use it for several vital behaviors (feeding, breeding, etc.). Humans are increasingly using the airspace for transport, building structures that modify this habitat, and releasing contaminants which overlap with wildlife. These impact species distribution, habitat use, demography, and produce human-wildlife conflicts. Till now, most conservation strategies have focused on the time species spend on the ground or the water (eg., breeding, feeding or stopover areas). So far, a 3D integrative approach to the conservation requirement of wildlife and ecological processes (migration, dispersion, pollination) in the airspace has not been developed; neither has clear policy strategies to protect the airspace and to reduce the conflicts between humans and wildlife in this habitat. Current challenge is the design of novel conservation strategies for this key habitat considering species and ecological processes being affected, at the time they reduce the risks and the conflicts for both humans and wildlife when using the airspace.

CLIMATE CHANGE AND NEOTROPICAL BIRDS: CURRENT KNOWLEDGE AND GAPS

Miguel Ângelo Marini Universidade Nacional de Brasília, Brazil

Climate change and its effects on birds are well studied in the northern temperate regions, but it is still vaguely studied in the Neotropical region. Most studies from the region evaluated changes in species distributions under different future climatic scenarios, and showed, as expected, that birds will move polewards or upwards in mountains, but there is still a lack of a broad comprehensive scenario. Other studies, such as about the effects on population dynamics or breeding are very rare. A 33-yr long study of birds in Panama showed that population growth rates and viability decreased with longer dry seasons. An analysis of clutch sizes of Neotropical tyrant flycatchers over 100-years revealed that clutch sizes are decreasing and related to increased temperatures. However, several aspects related to tropical species remain obscure, such as whether mismatching will occur, how much migratory species will be affected, and whether tropical species have low tolerance to heating. Furthermore, the coupled effects of ongoing land use and climatic changes might enhance the effects of both. For example, the development of sugar-cane plantations in the Cerrado for biofuel is causing indirect land use change (ILUC) in the Amazon, and is one of several factors likely to accelerate climatic changes insofar as it is a driver of deforestation and land clearing by biomass burning. Also, the current reserve system may not be enough and well distributed to cope with these accelerating changes. The low income, economic instability, and unsustainable development in most tropical countries and volatile changes in international politics pose further challenges to conservation in the region. Hope comes from increasing access to databases and an increasing number of trained ornithologists in the region.

SYMPOSIA

APPLIED STATISTICS

10237 AVIAN GROWTH MODELING: PAST, PRESENT AND FUTURE.

Svagelj, Walter S.[1]; Quintana, Flavio[2] [1]Instituto de Investigaciones Marinas y Costeras (IIMyC), Universidad Nacional de Mar del Plata (UNMdP)-CONICET, Mar del Plata, Pcia. Buenos Aires, Argentina [2]Instituto de Biología de Organismos Marinos (IBIOMAR), CONICET, Puerto Madryn, Chubut, Argentina.

Avian growth is an important life-history trait that varies widely at inter- and intraspecific levels. In the last fifty years, the quantitative study of avian growth has benefited mainly from the use of three mathematical growth models namely logistic, Gompertz, and von Bertalanffy. These nonlinear models were traditionally used because can be parameterized in a simple way with just three parameters with biological meaning - estimated adult size, growth rate and age at maximum growth. Despite of that, all of them have unrealistic fixed forms with inflection points fixed at a given relative value. On the other hand, violations of statistical independence among data derived from repeated measures on chicks and nests were traditionally remedied with suboptimal approaches, losing variability, data and ultimately, effort. Nowadays, nonlinear mixed effect models deal with any lack of statistical independence. Moreover, these models allow the simultaneous inclusion of growth parameters as fixed effects, describing the average growth curve and the influence of predictor variables, as well as random effects allowing for random individual variation around the average values. Also, in contraposition to traditionally used models, the Richards growth model emerged as a very attractive four-parameter alternative because it does not have a fixed form and the inflection point can vary freely. The application of nonlinear mixed effect models to the Richards equation represents a flexible and powerful analytical tool that remains almost unused by ornithologists. Here, by modeling chick growth in Imperial Cormorants (*Phalacrocorax atriceps*), we demonstrate several benefits derived from this innovative approach.

10350 ADVOCATING BETTER HABITAT USE MODELS IN BIRDS: HOW TO CHOOSE THE RIGHT ONE IN THE LIGHT OF A DIVERSITY OF APPROACHES?

Palacio, Facundo Sección Ornitología, División Zoología Vertebrados facundo_palacio@fcnym.unlp.edu.ar

Studies on habitat use represent a basic aspect of bird ecology, due to its importance in natural history, distribution, response to environmental changes, management and conservation. Basically, a statistical model that identifies environmental variables linked to a species presence is searched for. In this sense, there is a great diversity of analytical methods which identify important explanatory variables within a model, with higher explanatory and predictive power than classical parametric approaches. In particular, these allow dealing with non-normal distributions, heterogeneous variances and non-

independent errors. However, most of these powerful models are not widespread and remain underused in ornithological studies, partly because of their complex theory, and in some cases, difficulties on their implementation and interpretation. I describe and compare some of these models applied to common Neotropical birds, namely generalized linear (mixed) models, generalized additive (mixed) models, occupancy models, and classification and regression trees. Their use in bird studies is encouraged, given their huge potential as statistical tools.

10411 BETTER EXPLORATION OF DATA TO IDENTIFY COMMON STATISTICAL PROBLEMS

Codesido, Mariano Instituto de Ecología, Genética y Evolución de Buenos Aires (IEGEBA/FCEN). CONICET/UBA mcodesido@ege.fcen.uba.ar

Sometimes some scientific work does not meet the assumptions required by the statistical techniques they have used (i.e. something known as violation of assumptions). Some of the violations to the assumptions have low impact on the results or the conclusions, however others increase the errors of type I and II, which potentially affects the interpretations and the conclusions. Most of these violations can be resolved if better exploration are applied to the data. In this presentation, some tips are presented to make a better exploration of the data through the use of some examples obtained from studies carried out with the Neotropic birds. In particular, I will focus on the discussion of tools that serve to detect extreme data, heterogeneity of variances, collinearity, dependence on observations, problems with interactions, and the correct type of relationship between response and explanatory variables. Better exploration of data would improve the quality of ecological research and any applied recommendations that it produces.

10489 DISENTANGLING PATTERNS AND PROCESSES IN METACOMMUNITY ECOLOGY

Lacoretz, Mariela V. [1,2]; Fernández, Gustavo J. [1] [1]Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires [2]mariela.lacoretz@gmail.com

One main goal in community ecology is to identify species assemblage patterns and to study the underlying processes. The metacommunity, defined as a set of communities connected (or not) through dispersal, takes into account the interplay between the regional pool of species and the local communities. New analyses have been developed recently that allow researchers to explore several aspects of metacommunity structure. In this work, this approach was applied to test the hypotheses that the metacommunity of forest birds from north and central Argentina has a nested pattern and to establish the association between the metacommunity pattern and different processes which are able to shape the structure of the communities. Using bird censuses of different ecoregions of Argentina that were obtained from bibliography, we utilized Elements of Metacommunity Structure (EMS) analyses to determine the pattern of best fit for species distributions within a metacommunity. Also, variation partitioning analysis was used to tease apart the roles of spatial structure and environmental filtering in

community data. In EMS analysis, a nested pattern was obtained. Moreover, variation partitioning analysis showed that the variability between the communities could be explained by the combination of dispersion and environmental filter processes. The combination of these analyses allows us to infer about processes behind species assemblage patterns. In a context of diversity and forest area loss, it is important to study how the structure of metacommunities was formed and maintained to take proper management measures.

CITIZEN SCIENCE

10270 CITIZEN SCIENCE FOR UNDERSTANDING TIMING OF BIRD MIGRATION IN URBAN PARKS

Barbosa, Karlla V.C.[1,3]; Jahn, Alejandro E.[2] [1]Universidade Estadual Paulista [2]Migratory Bird Center, Smithsonian Conservation Biology Institute [3]barbosa.karlla@gmail.com

Urbanization has been cited as one of the greatest threats to biodiversity. Nonetheless, species such as the austral migrant *Myiodynastes maculatus solitarius* (Streaked Flycatcher) uses green areas within the urban context as habitat. The main goal of this study was to verify differences in the migratory timing of that species in urban parks inserted in distinct contexts within São Paulo metropolitan area (SPMA). For this, we used data collected from the online platforms eBird and Wikiaves, where there are 3139 records between December 1988 and April 2016. Additionally, we installed autonomous recorders (Song Meter SM4, Wildlife Acoustics) and conducted searches using playback in five parks located in the SPMA between September 2016 and April 2017. Two parks that are more connected and with more than 900ha: Anhanguera Park and Cantareira State Park, and three parks that are relatively isolated and with less than 100ha: Carmo, Butantan Institute and Ecological Tietê. We found evidence that Streaked Flycatcher stays in small parks until 15 march before leaving for the wintering grounds, whereas it remains until 28 March in the larger parks. This indicates that the departure day and its migratory timing seem to be related to the size of its breeding areas, perhaps because individuals in smaller areas are under stronger pressure to migrate early. These results reinforce the importance of citizen science-based data in revealing patterns and answering questions about bird distribution and ecology.

10388 USING CITIZEN SCIENCE DATA TO PREDICT DISTRIBUTIONAL RESPONSES OF BIRDS TO CLIMATE AND LANDCOVER

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Changes in land-use and its associated effects on species distributions have been well studied, resulting in strong conservation action. Climate change has also demonstrated the potential to significantly alter species distributions across broad spatial scales. Thus, quantifying the impacts of climate change relative to landcover will be important to

anticipate changes in species distributions and implement effective regional conservation strategies. Here we combine two analyses (both using randomForest methodologies) to link the contemporary directional changes in bird distributions with projected future change in forest bird habitat. We modeled distributions for 103 bird species using citizen science data collected from two discrete breeding bird atlas projects in Ohio (1982-1987 and 2006-2011) with climate and landcover data. To assess performance, models were back-projected with environmental data from the first atlas to quantify actual change. Then, to explore changes across broader spatial and temporal scales, we modeled 88 forest bird distributions based on North American Breeding Bird Survey data with predictors of climate, elevation, and tree species composition. These models were projected into the future to assess potential trajectories of habitat changes and bird distributions for each decade until 2070, when temperature increases in the eastern United States will likely reach or exceed ~2ºC. Each modeling approach illustrates the importance of both landcover and climate in describing changes in avian distributions and demonstrates the utility of citizen science data for conservation planning in the face of increased environmental pressures.

10431 LESSONS FROM THE FIRST BREEDING BIRD ATLAS USING EBIRD

Medrano, Fernando[1,2]; Schmitt, Fabrice[1]; Barros, Rodrigo[1]; Matus, Ricardo[1]; Lefort, Inti[1]; Norambuena, Heraldo[1]; Tejeda, Ivo[1] [1]Red de Observadores de Aves de Chile [2]fmedrano@renare.uchile.cl

Breeding Bird Atlases (BBA) are compendiums where species breeding distribution is mapped within a territory. BBA are a key input for conservation planning and the wildlife management, being an important step for the ornithology of a country. However, in South America, there is not any Atlas done, probably because of the monetary and logistics costs of the development of the Atlases. In this presentation, we comment on the lessons learned from the first Breeding Bird Atlas using eBird, done in Chile. We collected data from the citizens in 5 years (2011-2016), which allowed us to gather more than 500.000 data for the 334 breeding bird species, in quadrilles of 400-kilometer squares. With this information, we have done potential distribution maps using MAXENT models and a map with the breeding data obtained. Furthermore, we were able to obtain novel data about the breeding phenology and the altitudinal distribution of the species. After the development of this Atlas, we have the challenge of increase the number of the checklists of the least explored areas, and we created an effort map with this purpose that will allow us focus our future effort and diminish the bias. Additionally, it could be interesting to reduce the grid size to obtain more accurate data, but that will only be possible if the number of data in eBird increase exponencially.

10469 INTEGRATING CITIZEN SCIENCE AND FIELD MONITORING TO EVALUATE THREATENED BIRDS IN AUSTRAL PATAGONIA

Roesler, Ignacio[1,2,4]; Fasola, Laura[3]; Martín, Lucia[2]; Giusti, Emilia[2]; Buchanan, Patrick[2]; Gorleri, Fabricio[2] [1]IEGEBA (CONICET) [2]Aves Argentinas [3]CONICET, Delegación Regional Patagonia de la Administración Parques Nacionales [4]kiniroesler@gmail.com

Obtaining important data to develop conservation actions in remote areas requires great logistical and economic efforts. Austral Patagonia is one of the least populated areas in the continent, with few human settlements, where birdwatchers (local and visitors) are concentrated. In this region academic institutions and NGOs monitor threatened species, producing information available on open platforms (eBird). The goal of this study was to evaluate the state of information available in Santa Cruz and Tierra del Fuego (Argentina), comparing information gathered by researchers and independent birdwatchers. We considered three threatened species with existing projects in Argentina: Hooded Grebe (*Podiceps gallardoi* - HG), Ruddy-headed Goose (*Chloephaga rubidiceps* - RhG) and Austral Rail (*Rallus antarcticus* - AR). A comparison of the available data (detections) on eBird was performed, evaluating the proportion of researchers/observer detections and the geographic coverage of the data (quantity of locations and total area covered). Data generated by researchers was higher in HG (72%) and RhG (92%), but lower in AR (29.5%). The total number of localities was higher in the first two, HG (77/42) and RhG (22/7), and also lower in AR (8/10). Researcher's data showed a larger area occupied by the species. While there has been a marked increase in data available since the launch of eBird in Argentina (2013), it is still necessary to encourage observers to use free platforms. Encouraging researchers to upload bird checklists onto open platforms as well as supporting birdwatching tourism would ensure robust information at low cost for agencies responsible for the development of conservation actions.

10579 USING CITIZEN SCIENTIST DATA TO ELUCIDATE DRIVERS OF URBAN BIRD-WINDOW COLLISIONS

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Throughout the spring (April-May) and fall (Sept-Aug) migrations of 2014 – 2016, citizen scientists searched for birds that had collided with buildings in downtown Pittsburgh, PA, USA. These volunteers spent 965 hours searching an area encompassing 217.7 ha comprised of skyscrapers, low commercial buildings, apartment buildings, and city parks. Volunteers found 705 dead or injured birds, 218 in the spring and 487 in the fall. We delineated building sides for all buildings with collisions (n=278), and for randomly selected buildings without collisions (n=65). We quantified physical characteristics of the building and adjacent land cover using GIS and field visits (presences and extent of overhangs, percentage of windows, reflectivity of windows, rugosity, and presence of

landscaping). Bird-window collisions were more frequent at larger, structurally complex buildings with nearby vegetative cover. Our results demonstrate that not all buildings are equally dangerous for birds. Furthermore, future bird-window collisions could be mitigated if architects and urban planners design buildings with less glass, fewer alcoves, and less nearby vegetation.

10663 CITIZEN SCIENCE REVEALS WIDESPREAD IMPACTS ON BIRDS FROM THE DEEPWATER HORIZON OIL SPILL

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Northern Gulf of Mexico coastal habitats support millions of birds during at least one part of their life cycle making it a globally recognized area of conservation importance. On 20 April 2010, the Deepwater Horizon oil rig exploded about 65 kilometers from the southeast coast of Louisiana, spewing an estimated 4.9 million barrels of crude oil into the northern Gulf of Mexico. Currents brought this oil to shore, impacting 2,580 km of shoreline and placing dozens of waterbird species at high risk of exposure. We trained and mobilized citizen scientists to assess the frequency and extent of oiling on coastal waterbirds from Louisiana to the Florida panhandle. We combined the dataset resulting from these citizen science surveys with additional observations submitted to eBird. Dozens of volunteers assessed 60,403 birds in oil-impacted and non-impacted sites between May and November 2010. Among 33 waterbird species, including species of high conservation concern such as Least Tern, Wilson‘s Plover, and Reddish Egret, 982 individuals showed evidence of oiling. Spatial and temporal patterns of oiling rates corresponded with the spread of oil and subsequent capping of the well with the highest rates of oiling seen in southeastern Louisiana in June and July. During this period, 17% of wading birds were found with oil, higher than other foraging guilds. In addition to providing an independent assessment of oiling frequencies during the Deepwater Horizon disaster, this study highlights how citizen scientists can mobilize quickly to collect valuable data at large spatial scales.

10664 DORADITOS AND TYRANNULETS: CRYPTIC SPECIES CHALLENGE CITIZEN SCIENCE IN SOUTH AMERICA

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Errors resulting from misidentified species can be a major issue for citizen science because many cryptic, or similar species, can be confused. Despite having expert-adjusted filters to prevent errors, these filters fail to recognize the certainty of reports of cryptic species that are often frequent and sympatric. To test the uncertainty level of such records, we compiled data from citizen science platforms of 5 cryptic species of the genera *Serpophaga* and *Pseudocolopteryx*. We categorized each record as certain or

uncertain according to the documentation submitted, the observer's experience, and the location and date of the sighting. We performed two MaxEnt models for each species, the first including uncertain records, and the second model only with certain records, and then we evaluated the variation observed between both models. The uncertainty was higher in *P. flaviventris* (98.4%) and *S. subcristata* (53.4%), and lower in *S. munda* (23.6%) and *P. citreola* (1%). We did not find any misidentified documented records for *S. griseicapilla* or *P. citreola*. The models that presented the greatest difference in their distribution areas were from *P. flaviventris* (31% difference), and *S. subcristata* (14%); the models of *P. citreola* were almost identical. To reduce the degree of uncertainty in reports of cryptic species, we suggest training regional reviewers to detect uncertain records, increasing the accuracy of automated filters or creating particular protocols after reporting a cryptic species, and encouraging observers to report species with adequate evidence for identification.

CITIZEN SCIENCE DATA UNCOVERS MIGRATORY MOVEMENTS OF THE COMMON POTOO, *Nyctibius griseus*, IN BRAZIL.

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Far more complex and way less studied than the North American migratory system, Austral migratory movements are still poorly known. Part of this lack of knowledge is due the contrast between the richest world bird fauna with a few number of ornithologists in activity in the Neotropics, when compared to the northern hemisphere countries. Here we used citizen science data to detect seasonal patterns of distribution of the Common Potoo (*Nyctibius griseus*). This is the most widespread species of the family Nyctibiidae, and it is described as sedentary, in spite of the the absence of records in some areas during winter. We used data available from WikiAves and eBird to evaluate the seasonality in the occurrence patterns of *N. griseus* in distinct areas of Brazil. We removed duplicated records based on date and time, and used records of other, more abundant species as a proxy for sampling effort. We fitted 100 km side hexagons over all points and determined if they had only summer, only winter, or both summer and winter records. The results show that the southern population migrates during the winter, to places still unknown. The same seems to be true for the populations of the mountains of Minas Gerais. Our analysis shows, beyond doubt, that this species performs partial migration in Brazil, and highlights the potential of citizen science data to understand migration patterns ate broad scale.

USING A CITIZEN SCIENCE DATABASE TO UNDERSTAND BIOGEOGRAPHICAL PATTERNS OF BIRDS OF THE ATLANTIC FOREST

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The Atlantic Forest is one of the most important biodiversity hotspots. Birds are a good indicator of this situation, as this ecosystem holds a rich bird fauna, including more than 200 endemic species, and at the same time has one of the highest number of endangered birds of the world. It is also the Brazilian ecosystem in which birds have been more studied, although this knowledge is highly dispersed on the literature. In addition, during the last decade, the information gathered by Brazilian birders and shared on line in citizen science databases resulted in an unexpected increase in the knowledge about distribution of Atlantic Forest birds. I revisited all the literature available about Atlantic Forest species, as well as digital vouchers deposited at WikiAves and xeno-canto. The results were a comprehensive review of the species richness and composition of the Atlantic Forest bird fauna, as well as original information about the biogeographical patterns originated from the analyses of the large body of new information generated by citizen science. Results has shown that the Atlantic Forest avifauna is composed of 861 species, totaling 1035 taxons if considering the subspecies, grouped into 26 orders and 80 families. The Atlantic Forest avifauna is characterized by a high level of endemism, 213 species. On a biogeographical context, the results are indicating the necessity of review of the current Atlantic Forest considered limits, as showed by the records of endemic forest species in areas currently considered part of the Cerrado domain.

GENOMIC ADVANCES 1

10248 IS THE PARANA RIVER A GEOGRAPHIC BARRIER THAT PROMOTES FOREST BIRD SPECIATION?

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The riverine barriers hypothesis establishes that large rivers represent geographic barriers to gene flow for different organisms, leading to differentiation that could result in the origin of new species. Initially, this hypothesis was enunciated in the context of the Amazon River basin; an area which includes the largest rivers in the Neotropics. In this project, we asses if the Paraná River in the Del Plata basin, the second in importance in South-America, could be acting as barrier for east-west dispersion and gene flow for forest bird species. We have analyzed seven species that have described subspecies based on morphological differences between populations on either side of the Paraná

River. We used a genomic approach (double digest RAD-Seq) to assess the genetic divergence between populations distributed on both sides of the river. We found clear genetic differentiation concordant with the current course of the Paraná River only in one species (*Thamnophilus caerulescens*). We discuss the possible influence of the paleo-river in another five species (*Cyclarhis gujanensis*, *Cyanocompsa brissonii, Colaptes melanochloros*, *Thraupis sayaca* and *Lepidocolaptes angustirostris*) that showed population structure with an East/West split not concordant with the current Paraná River location. We also found weak population structure in *Coryphospingus cucullatus,* with no association with the Paraná River. Finally, we analyzed these results taking into account the divergence time in each case in the context of the geologic and paleo-ecologic history of the region; and considering the biology, ecology and behavioral features of each species.

10282 USING PHYLOGENOMICS TO UNCOVER THRUSHES GLOBAL RADIATION

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In this study, we aimed to conduct the first phylogenomic analysis for the genus *Turdus* by sequencing and analyzing a large genomic data set of Ultraconserved Elements, UCEs to help solve their phylogenetic relationship. We sampled fresh tissues, from 96 individuals of thrushes obtained from various museums around the world and also skin toepads from 20 specimens sampled. We used target capture to sequence 2,386 UCEs in in three Illumina MiSeq flowcells. Data were processed and filtered using PHYLUCE package. We collected 1,577 loci obtained for 113 sampled individuals. This data set resulted in a concatenated matrix of 1,581,254 bp in length. We performed Maximum Likelihood analysis to infer the phylogenetic relationships forTurdus. A much simpler and more parsimonic dispersal scenario was recovered. The deepest nodes in the phylogeny were the species *viscivorus* and *philomelos*. All *Turdus* with African distribution are together in a single clade with high support, as never shown before. The Palearctic species also represent a well-supported clade. The New World (Americas) clade has the deepest nodes from the Greater Antilles, and the following clades are: North-Central American, Central American, and South American. The latter clade showed two main clades. One comprised all species that inhabit high altitudes (Andes distributions), with sister group formed by species from the lowlands. Using a genomic sampling we show a more realistic scenario than previous studies for *Turdus* diversification as never shown before using few molecular markers.

10324 A PHYLOGENOMIC STUDY TO UNVEIL ANCIENT CONTACTS BETWEEN THE AMAZONIA AND THE ATLANTIC FOREST (BRAZIL)

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The Neotropical region is one of the most biodiverse in the world and several hypotheses have been proposed to explain how it diversified. Some studies, especially with vertebrates, suggest that historical connections between the Amazon Forest (AMZ) and the Atlantic Forest (AF) wereimportant in the diversification history of these biomes. The goal of this study is to unveil patterns and processes associated to historical connections between the AMZ and the AF based on the biogeographic analyses of two genera (*Xipholena* and *Cotinga*; family Cotingidae). Our phylogenies and estimates of divergence dates are congruent with a previous hypothesis that bird species from the AF of northeastern Brazil are more closely related to taxa from eastern Amazon and diverged within the Plio-Pleistocene. Results of coalescent simulations and Approximate Bayesian Computation for both genera are congruent with the hypothesis that the AF was colonized by a founding population (bottleneck) that expanded afterwards. This suggests that dispersion played an important role in the AF colonization. Ecological similarity among species of these genera may explain the concordant pattern. Thus, species-specific responses to expansion of the different suitable ecological habitats (ecological niches) are expected to occur and reinforce that ecological attributes can play an important role in these forest connection patterns. This reinforces the need of analyses of a larger number of taxa with different ecologies.

10349 REPEATED DIVERGENT SELECTION ON PIGMENTATION GENES IN A RAPID FINCH RADIATION

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Instances of recent and rapid speciation are suitable for associating phenotypes with their causal genotypes, especially if gene flow homogenizes areas of the genome that are not under divergent selection. We study a rapid radiation of nine sympatric bird species known as capuchino seedeaters, which are differentiated in sexually selected characters of male plumage and song. We sequenced the genomes of a phenotypically diverse set of species to search for differentiated genomic regions. Capuchinos show differences in a small proportion of their genomes, yet selection has acted independently on the same targets in different members of this radiation. Many divergent regions contain genes involved in the melanogenesis pathway, with the strongest signal originating from putative regulatory regions. Selection has acted on

these same genomic regions in different lineages, likely shaping the evolution of cis-regulatory elements, which control how more conserved genes are expressed and thereby generate diversity in classically sexually selected traits.

10482 THE BIOGEOGRAPHY OF THE ANDEAN-ATLANTIC FORESTS CONNECTION: A MULTILOCUS STUDY WITH PASSERINES

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We have studied the biogeographic history of the connection between the Andean and the Atlantic rainforests by studying the phylogeographic structure of the forest passerines *Syndactyla rufosuperciliata* and *Arremon flavirostris*. In addition, we evaluated the molecular systematics of the species' intraspecific lineages. The central Andean rainforests are isolated from the Atlantic forest by dry and open biomes (Chaco and Cerrado). Despite of this isolation, both rainforests share closely related lineages, which denotes a recent biogeographic connection. Both regions could have been linked through gallery forests in the Cerrado, or alternatively, by gallery forest along the main rivers of the Chaco. We performed conventional phylogenetic analyses using DNA sequences, and population analyses with genomic data collected by double digestion and random sequencing (ddRadSeq) of 18 to 30 samples per species (about 4000 loci each). We evaluated population structure with STRUCTURE and performed coalescent analyses to estimate gene flow in GPHOCS. Results indicated for both species that the major phylogeographic disjunction occurred between the Andean and the Atlantic regions, during the Mid-Pleistocene. The STRUCTURE and gene flow analyses supported for both species that the Cerrado was the main route of connection between regions, rejecting any important recent link through Chaco. This study, combined with our previous analyses, suggests that the biodiversity of the Andean and of the Atlantic forests have been impacted by cycles of connections through the Cerrado. This study also supports to split the Andean and Atlantic forest lineages of both species into full species.

10585 A COMPREHENSIVE SPECIES-LEVEL PHYLOGENY OF THE SUBOSCINE PASSERINES USING GENOME-SCALE DATA

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The advent of high-throughput sequencing allows gathering genomic data at unprecedented scales, and it is bringing us closer to generating species-level phylogenies

for large radiations in an efficient fashion. The suboscines (Suborder Tyranni) are a species-rich (~1300 spp) group of pantropical passerine birds that represent nearly 13% of all avian species. They reach their highest species richness in the Neotropics where they exhibit a wide range of morphologies, behaviors, and ecologies. Here, we present a species-level phylogeny of the suboscines based on 2389 loci comprising ultraconserved elements – UCEs (2305) and nuclear exons (84). We were able to include data for 1844 vouchered specimens and 16 outgroups representing 100% of genera and 99% of species. We recovered data for 158 toe-pad samples from museum study specimens that allowed having extinct or highly-endangered species in our matrix. On average, we recovered 2104 target loci per sample with an average length of 521 bp. We assessed phylogenetical signal across different types of markers and found that exons are less variable than UCEs and that their signal is highly congruent with previous phylogenetic hypothesis for the group obtained via Sanger sequencing. Finally, we describe general diversification patterns in the group and describe interesting findings from a taxonomic perspective.

10655 HYBRID ZONES AND AVIAN DIVERSIFICATION IN AMAZONIA: A GENOMIC PERSPECTIVE

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Hybrid zones are critical areas for understanding the process of speciation. In Amazonia, the upper reaches of major rivers such as the Tapajós and Xingu represent areas where several phenotypically and genetically well-differentiated taxa (classified as species or subspecies) meet away from any noticeable physical barrier. A recent study demonstrated that gene flow occurs between several of those taxa in this area, although the extent and significance of introgression between has not been determined with confidence to date. Here, we further analyze several of those closely related taxon pairs in direct contact using next generation sequencing methods to unveil the local dynamics of gene flow. A first result was that lineages in direct contact across the Tapajós / Xingu headwaters are not each other closest relatives, suggesting that their current contact is a more recent event preceded by historical isolation and differentiation in allopatry. Second, measured levels of gene flow for some taxa indicate strong selection against hybrids, resulting in very narrow hybrid zones. In conclusion, complete reproductive isolation takes a very long time to evolve within Amazonian species complexes and apparently post-zygotic barriers play a more important role in reinforcing genetic differentiation than pre-zygotic barriers. Also, climate change may promote multiple events of isolation and contact between closely related lineages, enhancing genetic differentiation but eventually facilitating hybridization, which may have multiple outcomes.

10831 Phylogeography and genomic adaptation of penguins across a wide latitudinal distribution from the Tropics to Antarctica

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Penguins are widely distributed across latitudes along the southern hemisphere, from Equator to the pole. They differ in biology, ecology, population dynamics, adaptation and speciation timing. We studied several molecular markers (mtDNA, nuclear introns, MHC, and microsatellites), SNPs along the whole genome sequencing (n=12) and ddRAD to assess population genetic structure, phylogeography and adaptation of *Pygoscelis* (Antarctic and Sub-Antarctic region) and *Spheniscus* (South America) species. *Spheniscus* species exhibited reduced population genetics structure. Likewise, *P. adeliae* and*P. antarcticus* show similar patterns, with high gene flow between Antarctica and a sub-Antarctic island for the latter species. *P. papua* show a completely different pattern, with significant population genetics structure and high lineages divergence between Antarctica and each sub-Antarctic island. Comparing the nucleotide diversity on the CDS of genomes, the intraspecific diversity of 3635 genes between the five species of *Spheniscus* and*Pygoscelis* were similar, however, for the 35 genes related to thermoregulation, the highest diversity was observed in *S. magellanicus* and the lowest in *P. adeliae*, suggesting better adaptive capacities of *S. magellanicus* in response to climate change. MHC (major histocompatibility complex) genes in *S. humboldti* and *S. magellanicus*, exhibited high diversity for MHCI and MHCII, lack of local adaptation due high gene flow or weak selection. This high MHC diversity enhances the adaptive ability of both species to respond to pathogens. This molecular comparative approach allows understanding the differences in ecology between penguin species and how species may potentially respond to global changes based on the genetic diversity.

GENOMIC ADVANCES 2

10405 SPECIATION VIA LOSS OF MIGRATION IN THE PARTIALLY MIGRATORY FORK-TAILED FLYCATCHER (*Tyrannus savana*)

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The question of whether migratory behavior can promote speciation has been studied in subspecies with different migration pathways to distinct wintering grounds. But another mechanism by which migration can promote speciation is via loss of migration, when a population splits from the migratory population and becomes permanently sedentary. Hundreds of migratory species also have populations (or subspecies) that are sedentary (partial migration), and this may be an intermediate stage of the speciation process. We studied the phylogeographic history of the Fork-tailed Flycatcher (*Tyrannus*

savana), a species composed of a long distance migratory subspecies (*T. s. savana*) that breeds in southern South America and migrates during the non-breeding season to northern South America, where it coexists with three other sedentary subspecies (*T. s. monachus, T. s. sanctaemartae* and *T. s. circumdatus*). Based on mtDNA sequences and 41458 SNPs obtained through Genotyping by Sequencing, we find evidence for a recent divergence associated to loss of migration. Our results show that mtDNA was monomorphic and genetic distances between subspecies based on GBS were low. We found low genetic diversity in the sedentary subspecies in comparison to the migratory subspecies and population assignment analyses cluster all three sedentary subspecies as one group apart from the migratory subspecies. Estimations of gene flow are low, suggesting reproductive isolation between all subspecies. Our results suggest that loss of migration promotes reproductive isolation. Further studies aiming to understand how migratory species respond to changes in resource distribution can shed light into the triggers and ubiquity of this phenomenon.

10555 GENOMIC PHYLOGEOGRAPHY OF THE WHITE CROWNED MANAKIN (AVES: PIPRIDAE) ILLUMINATES CRYPTIC DIFFERENTIATION AND EXTREME SONG EVOLUTION

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The complex history of the Neotropics has generated patterns of isolation that make this region among the most species-rich in the world, with a great number of cryptic taxa yet to be discovered. Detailed phylogeographic studies are needed to uncover this cryptic diversity. Further, such studies undertaken at the continental scale have the potential to reveal the hidden story of a species' history. The White-Crowned manakin (*Dixiphia pipra*), is a small (8.5-11.8cm) passerine bird, which is broadly distributed across the Amazon basin, with additional populations in the Brazilian Atlantic Forest and Central America. *Dixiphia* spans every known type of biogeographic barrier in South America (e.g. the Andes, major Amazon rivers, etc) but is generally restricted to tropical rainforest. We studied this species complex using a reduced representation genomic sequencing technique (ddRAD), to sample thousands of loci from ~250 individuals across most of the known range. Our analyses imply a new hypotheses of species delimitation for the group, with at least 5-7 reciprocally monophyletic, deeply diverged lineages. We infer a well-supported phylogeny which broadly recapitulates variation in song and Amazonian areas of endemism. Broadly, we identify a Central American clade, highland and lowland Peruvian clades, a Guyana shield clade, southern Amazonian clades, and an Atlantic forest clade.

10606 MITO-NUCLEAR DISCORDANCE IN THE EVOLUTIONARY HISTORY OF A WIDESPREAD PASSERINE (*Troglodytes aedon*)

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Divergent intraspecific lineages discovered in mitochondrial-based analyses are frequently interpreted as being isolated with limited gene flow. However, nuclear markers are better suited to uncover patterns of gene flow and can be easily obtained at large scale using genomic techniques. Here we combine mitochondrial and genomic (ddRADseq) data to study the evolutionary history of the House Wren, *Troglodytes aedon*, focusing on the southern cone of South America. Mitochondrial (COI) data from around 90 specimens from Argentina, Bolivia and Uruguay revealed the presence of at least 3 continental lineages with up to 5% sequence divergence. These lineages, however, were not geographically structured: only one lineage is present in Patagonia but two or three different lineages are sympatric in other localities in Argentina. Our genomic analysis did not differentiate these lineages as clearly as the mitochondria, with the exception of a few birds from the High Andes in Bolivia, and instead suggested high levels of gene flow among lineages. Moreover, the subtle nuclear differentiation could be partially explained by isolation by distance. These results suggest the presence of divergent mitochondrial lineages in a largely panmictic population. This pattern could be due to ancient isolation and posterior secondary contact with gene flow among lineages, and the very large effective population size of this species could also contribute to the retention of mitochondrial diversity. This study highlights that analyzing nuclear and mitochondrial data together provides a better understanding of evolutionary history and emphasizes the need for precaution when interpreting mitochondrial patterns on their own.

10651 ELUCIDATING THE GENOMIC AND MOLECULAR UNDERPINNINGS OF HIGH-ALTITUDE ADAPTATION IN ANDEAN WATERFOWL SPECIES

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Hypoxia (or low O_2) is one selective pressure that stimulates a similar physiological response across metazoans allowing organisms to match O_2 supply and demand. During reduced O_2 supply, changes in gene expression are mediated by transcription factors known as Hypoxia-Inducible Factors (HIF), which have been shown to play a key role in cellular responses to low O_2 tension in a variety of organisms. Here we test whether variation in 26 genes in the HIF signaling pathway are associated with high-altitude and corresponding O_2 availability in several duck species that colonized the Andes from ancestral low-altitude habitats in South America: speckled teal (*Anas flavirostris*) and yellow-billed pintail (*Anas georgica*). Ultimately, we found strong support for both convergent and parallel evolution at different taxonomic levels. Specifically, the same

exonic regions in the same genes (*EGLN1*, *EPAS1*) exhibited sharply demarcated outliers with a high probability of directional selection in two high-altitude populations. In addition, between the high-altitude populations of speckled teal and yellow-billed pintail, there was evidence of strong molecular parallelism at the location of specific exons resulting in nonsynonymous changes in close proximity to protein domains associated with oxygen-driven protein stability and transactivation. Although the specific molecular mechanisms associated with these variants are currently unknown, previous work suggests that these variants are likely resulting in a blunted hypoxic response, potentially through hemoglobin and other downstream targets.

10784 MAKING TWO ANDEAN HUMMINGBIRD SPECIES: GENOME DIVERGENCE AND STRUCTURAL COLORATION

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Instances of low genetic differentiation combined with clear phenotypic differences between closely related and recent diverged taxa are ideal scenarios to search for drivers of speciation. The two hummingbirds *Coeligena bonapartei* and *Coeligena helianthea* are sister species distributed parapatrically in the high Andes in the north of South America. These hummingbirds show strikingly different plumage coloration but low genetic divergence in mitochondrial DNA and Ultra Conserved Elements (UCEs). In this study, we used whole genome sequencing and low coverage (population-level) genome re-sequencing to search for candidate genes related to plumage coloration differences. In total we obtained 45 genomic sequences from both species at a coverage of ~3x. We identified highly differentiated genomic regions (i.e., differentiation peaks) and ~1.7 million single nucleotide polymorphisms (SNPs) between these hummingbirds. We found significant genetic differentiation among subspecies, which was moderate for *C. b. bonapartei*, *C. h. helianthea* and *C. h. tamai*, and strong between the subspecies *C. b. consita* and all others. Currently, *C. b. consita* is geographically isolated from the remaining subspecies in the Serranía del Perijá, and thus could have differentiated mainly in allopatry under divergent ecological pressures. However, *C. b. bonapartei* and *C. helianthea* remain in contact in the south of their distribution facing similar ecological pressures, and may have diverged in the face of gene flow. It is possible that in this context sexual selection drove divergence among species through the coloration differences. We discuss association between genetic variants and structural coloration differences in this system.

INTERNATIONAL SHOREBIRD SURVEY

10634 JOINING THE ISS NETWORK IN SOUTH AMERICA: MONITORING PROTOCOL AND THE JOYS OF SHOREBIRD IDENTIFICATION

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Bird monitoring provides valuable information on population status, size & trends and, above all, it helps showing whether conservation initiatives are effective. Shorebirds are declining more than many other species groups and thus data is crucial in order to monitor their status and be able to define conservation actions where and when necessary. The International Shorebird Survey (ISS) is a monitoring program established in 1974, focusing on shorebirds in the Western Hemisphere. The program has helped identifying key sites for shorebirds and provided information on shorebird population sizes and trends. Besides, the gathered data has been used to feed many species conservation plans. However, despite the program's hemispheric scope, most of the monitoring has taken place by volunteers in North America and only very little in the rest of the Americas. Being designed as a volunteer-based monitoring program to ensure long-term efforts, everybody with an interest in birds can join ISS. The methodology is simple and mainly involves a number of total site counts during migration. Although shorebirds are sometimes described as a difficult group to identify, the majority of the nearly 80 shorebird species occurring in South America are quite easy to identify. Migratory species, such as the *Calidris* sandpipers, can be challenging, but it is a rewarding activity, generating excitement whenever you spot a key feature that identifies the species. Therefore, there are no excuses, only joy in going out counting shorebirds for a hemispheric cause.

10665 USE OF CITIZEN SCIENCE FOR BIRD CONSERVATION IN BRAZIL: ARE SHOREBIRDS CONTEMPLATED?

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Brazil is one of the countries with the greatest bird diversity in the world. Nevertheless, knowledge on population size, biology, distribution and conservation status of most species is still poorly understood. Recent discoveries of new species in the Atlantic Forest, one of the most well-known biomes of the country, illustrate this knowledge gap. In a highly-diverse country with continental proportions, as is Brazil's case, citizen science programs can be an efficient and viable means of generating the necessary knowledge to fill in those gaps. Citizen science programs encourage an active participation of citizens in the production of technical and scientific information and has shown great results in the United States and in several European countries. Internet tools and phone applications have increased volunteer participation and recruitment. In Brazil, bird observation has been growing steadily, and citizen science along with it. Recent numbers from eBird show an increase of approximately five-fold in active users.

In 2013 eBird Brazil had 244 users; in 2016 the number of users grew to 1084, accounting for 1,661 species observed. Another important example is the participatory monitoring conducted in four protected areas of São Paulo State, in which 138 citizen scientists observed 428 species. However, this impressive engagement has not helped shorebirds in Brazil, because the survey effort has been directed towards different environments and/or group of species. Therefore, the International Shorebird Survey may be an important tool to generate the knowledge necessary to better understand shorebird migration timing, site use and population trends in Brazil.

10680 HISTORY OF THE INTERNATIONAL SHOREBIRD SURVEY (ISS)

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To know where conservation actions are needed, and whether conservation initiatives have been effective, shorebird scientists require a broad understanding of species populations and trends. In 1974, Manomet Inc. organized the volunteer-based International Shorebird Survey (ISS) to gather information on shorebirds and the wetlands they depend on. Through the work of dedicated volunteers that conduct field surveys during spring and fall migrations, this monitoring network is the only long-term data-set available on shorebirds. Volunteers have completed almost 80,000 census counts at 1,200 locations in 47 U.S. States. There are also some additional counts from Central and South America. The information gathered through the ISS has proven pivotal to shorebird conservation planning in the United States. The U.S. Shorebird Conservation Plan draws heavily on this data set to determine regional and national priorities. ISS also has been extensively used to document major shorebird migration stop-over and staging areas throughout the Western Hemisphere in the identification of potential sites to be nominated for the Western Hemisphere Shorebird Reserve Network. The primary goal of the ISS is to have an operational monitoring program that will be sustained for decades so that we can monitor the recovery of imperiled shorebird populations as well as results of conservation efforts in the Western Hemisphere.

10684 CRACKING THE FLOCK: LEARNING HOW TO ESTIMATE BIRDS IN LARGE FLOCKS

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For those with an interest in monitoring birds, and particularly in monitoring shorebirds and becoming an ISS volunteer, it is important not only to know how to identify the species, but also to be prepared to count very large flocks. It might be that for many people counting birds sounds like something easy, but counting large flocks can be very daunting and sometimes even impossible. That is especially true with small species (peeps), and/or when birds are far or constantly moving. At these times, getting an exact count is as good as impossible and the solution is to learn to estimate as accurately as possible. Although many field biologists consider themselves good at estimating numbers of birds in flocks, rarely are large flocks estimated with high accuracy. Many

surveyors underestimate flock size, whereas many overestimate. Accuracy usually varies with several aspects including flock size, species size, and bird color. This presentation will address difficulties in estimating bird flocks and illustrate how you can train yourself and increase accuracy of counts. It will also show how each person has their own way of estimating, and that it is important to find the way that works best for you.

10817 THE NEED FOR AND IMPORTANCE OF SHOREBIRD DATA FROM A BRAZILIAN PERSPECTIVE

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For forty years, shorebird protection has been working in Brazil, notably with the creation of Lagoa do Peixe National Park in 1986. In 2013, the Environment Ministry adopted the National Action Plan for Shorebird Conservation (PAN), conducted by researchers and institutions to increase and ensure effective protection of critical shorebird habitats by 2018. We present the need for and importance of shorebird data for the PAN development, from its conception to its effective evaluation. The PAN was drawn up after an assessment of 48 species of shorebirds. 28 focus-species were selected and their main requirements for conservation were highlighted. Regarding the overlapping with threats existing along the Brazilian wetlands, the plan defined actions, targets and products needed for shorebird conservation. PAN is annually monitored by an Advisory Group (GAP). The knowledge of shorebird abundance and its habitats is the basis of the assessment and the plan for conservation. Weak estimates can result in a plan based on very generic approaches and low effective strategies, affecting negatively on its execution and evaluation. The Advisory Group recommended guidelines to studies and census and pointed priority places to conduct them – Protected Areas where studies could be continued. Additionally, the PAN focuses on identifying and protecting important habitats for shorebirds. The insufficient and discontinued support for actions could limit their effectiveness and it should be fundamental for the PAN to expand its partners and increasingly involve society.

MIGRATION IN SOUTH AMERICA

10250 THE WIKIAVES PLATFORM AS A CITIZEN-SCIENCE TOOL FOR STUDYING BIRD MIGRATION IN BRAZIL

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Revealing and studying the migratory patterns of birds demand coordinated samplings made in adequate spatial and temporal scales. These are some of the difficulties that leads to perpetuation of the large knowledge gaps that exists on this subject in Brazil. In this sense, platforms such as WikiAves allow volunteers to share online images, sound

recordings and other information about Brazilian birds, thus having the potential of providing crucial data to bird migration studies. The purpose of this study was to propose and validate the use of the data in this platform, after proper treatment, in bird migration studies. Thus, we first selected five known migratory and four known resident species as models. To validate the platform data use in migration studies, we expected to find seasonal patterns for the records of migratory species along the year, while residents should have records distributed throughout the year. Once validated the use of this platform as a citizen-science data source for migration studies, we demonstrate the advances allowed to this line of research by solving existing literature inconsistencies on the migratory behavior of six model species. Our study validates the use of the WikiAves platform data as important assets in studies of Brazilian migratory birds. Moreover, it also highlights the relevance of general public on reducing both knowledge gaps and some of the logistic barriers which preclude advances in this research area which currently is underexplored by Brazilian researchers.

10454 ALTITUDINAL MIGRATION OF A PASSERINE IN THE ATLANTIC FOREST: A COMPLEX PATTERN ARISES

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Migration is a captivating behavior with a long history of research. Nevertheless, altitudinal migration of birds within the Neotropics remains the least studied migration system in the world. In this talk we will discuss our ongoing efforts to fill this knowledge gap by studying the Yellow-legged Thrush *Turdus flavipes*. Previous evidence supports that this species performs seasonal altitudinal movements in SE Brazil while tracking fruiting pulses of Palm tree *Euterpe edulis* from ~0 to ~250m asl. During research on the migration of this species across a broader altitudinal range in southern Brazil (~15 to 1,100m asl), we recorded data that may shift the existing perspective on this species' movements. By tracking the variation in temporal abundance of populations at multiple altitudes, we found evidence that this species undergoes a partial rather than an obligatory altitudinal migration. Data showed an unprecedented scenario in which populations from extreme altitudes breed independently, apparently mixing at intermediary altitudes for wintering. We discuss how some biotic and abiotic variables correlate with these movements, as well as introduce our next plans for deepen our understanding on this first case of altitudinal migration that has been studied in detail in Brazil.

10532 UNRAVELLING THE MAJOR GAP FOR HOODED GREBE CONSERVATION: MIGRATION AND MOVEMENTS

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The critically endangered Hooded Grebe (*Podiceps gallardoi*) breeds in plateaus of western Santa Cruz, Argentina. It overwinters in estuaries at the Atlantic coast, in Santa Cruz. Its migratory behavior and movements are unknown. A survey of 400 lakes at 7 plateaus from 2009 to date showed that numbers across seasons in each plateau did not change (x2<0.001). Tissue samples of 51 individuals from two plateaus (Buenos Aires – BALP– n=31; Siberia n=20) were analyzed for testing breeding site fidelity. We sequenced mtDNA (control region, 353 bp), and analyzed population structure with AMOVA. Genetic variability between them explained 11% of the variation, and haplotype frequency distribution was significantly different between plateaus (FST=0.1,p=0.009). Since 2011 we tagged 53 individuals at BALP and Strobel plateaus. Two juveniles and adults banded at BALP were detected nesting at the same plateau. An adult and a juvenile banded at BALP were detected at the Río Gallegos estuary (April). Lastly, we monitored the three main estuaries since 2011 and found a temporal trend, with early presence (April-May) in southern estuaries and a later northward displacement (June-August). The results suggest a phylopatric behavior, and number variations among lakes suggest fidelity at the scale of plateau, instead of specific lakes. The northwest – southeast migratory routes are likely to differ between autumn and spring migration. The information obtained is essential to understand population dynamic of Hooded grebes and the importance of each plateau as reproductive habitat and the role of each estuary during different stages of its migratory cycle.

10537 NATIONAL BANDING SCHEME OF BRAZIL: LINKING BANDERS AND BIRD CONSERVATION ACROSS THE COUNTRY

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Brazil holds several bird migration routes, latitudinal and longitudinal migrations, local or regional movements, in addition to intratropical and altitudinal migratory patterns. Bird migration studies in Brazil have substantially benefited from new technologies in the last decade, but traditional ringing is still also on focus of our National Banding Scheme (SNA). The first band recovered in Brazil was from aSterna hirundo with a US band, in 1928. Although the primary focus of bird ringing in Brazil was the study of bird movements and migration since CEMAVE establishment in 1977, today the focus is also on understanding health, behavior and population dynamics issues, such as dispersion after fledging, survival rates and longevity. Nevertheless, successful banding programs depend on the effort to recapture marked birds, which can be carried out by specialists aiming to understand population dynamics but also by citizen-scientists, when looking for dispersal and seasonal movements. Although a relatively high effort is required to mark and recapture birds, banding is still a useful tool for understanding bird movement strategies. In addition, cost is not a limiting factor since CEMAVE provides metal rings for projects registered in the SNA. Therefore, SNA is still engaged in a continuous effort of training, communicating and organizing ringing in Brazil.

Currently, more than a thousand scientists are ringing birds in Brazil, studying several topics. Here, we present the history of our banding scheme as well as innovations, online services (SNA.net), results and challenges throughout the years.

10556 INTRA-TROPICAL BIRD MIGRATION RESEARCH IN THE 21ST CENTURY: NEW INSIGHTS ABOUT A COMPLEX SYSTEM

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Recent studies show that intra-tropical bird migration is much more common than previously thought. However, we still know very little about the details of such intra-tropical movements, including how many species migrate in the tropics, when and to where different populations migrate, the underlying mechanisms responsible for such movements, or the risks to survival during migration. Differences in the seasonality of tropical vs. temperate ecosystems and in the life history strategies of intra-tropical migrants vs. migrants breeding at temperate regions suggest that intra-tropical migrants are under a different set of selective pressures than their temperate counterparts. Proposed drivers of intra-tropical migration are spatial and temporal variation in the availability of food resources, risk of predation, limitation of nesting sites, competition for food, and weather. Understanding which populations migrate within the tropics, as well as what determines individual migratory strategies is imperative to a full appreciation of how and why birds move across the planet, as well as how to best conserve and manage their populations. We provide a synthetic review of the geographic distribution of migrants in South America and discuss potential mechanisms underlying different patterns of movement (e.g., altitudinal migration). We also highlight some recent discoveries from ongoing research using a diversity of novel tracking technologies and discuss important future directions for research on intra-tropical migration.

10682 HOW SEASONALITY IN THE SOUTHERN HEMISPHERE AFFECTS MIGRATION OF AUSTRAL MIGRANT *Tyrannus savana*

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We lack a thorough understanding of the degree to which the seasonal changes in locations of animals are driven by the timing and sequence of resource availability across the annual cycle, a necessary component for their conservation in a changing global climate. However, recent advancements in animal tracking technology offer an unprecedented ability to explore how individual animals track seasonal changes. This

has been an especially fast-growing question in the study of bird migrations with evidence supporting a major role of seasonality in temperature, rainfall and primary productivity in driving seasonal movements of individuals. To test which environmental factors (temperature, rainfall and/or primary productivity) affect seasonal distributions of austral migrants, we used Maxent models of presence-only data gathered from 56 *Tyrannus savana* individuals fit with light-level geolocators at five breeding locations in Bolivia, Brazil, and Argentina. We found that *T. savana* tracked predominantly with temperature and NDVI (a measure of primary productivity) during the breeding months in southern South America, but tracked with temperature and rainfall during both spring and fall migrations, and primarily with rainfall while overwintering in northern South America. This supports the general idea that seasonality is important to annual routines in migratory birds, even within South America where seasonality is driven largely by wet-dry cycles. Since wet-dry seasons vary inter-annually, migration in the austral system may be more flexible in timing than in boreal systems where seasonal movements are strongly linked to temperature.

MIXED SPECIES FLOCKS

10309 NOT SO STABLE: VARIATION IN MIXED-SPECIES FLOCKS NETWORKS IN A LOWLAND AMAZONIAN FOREST

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Terra firme forests in the Amazon host extraordinary species diversity and richness, mainly due to great availability of resources. Although it may give an impression of a homogeneous and stable environment, topography is sufficiently variable to affect landscape and species distribution. In this study, we aimed to examine the effect of habitat in overall richness and network properties of mixed-species flocks of birds (MSF) in a continuous *terra firme* Amazonian forest. We collected data on 33 MSF along an environmental gradient in the FLONA Saracá-Taquera, located in eastern Brazilian Amazon. The type of habitat influenced species richness and network properties. Vegetation (NDVI) was a good predictor of species richness in MSF (R^2-adj = 0.217, p = 0.019), and elevation had a marginal effect (R^2-adj = 0.044, p = 0.062). We found higher frequency of interspecific associations (weighted degree) in valley areas (“baixio”), which may present favorable niche features for the formation of more complex MSF. Previous studies observed the influence of the altitudinal gradient in bird assemblages, and our results emphasize the misconception of stability in *terra firme* Amazonian forests. Although altitudinal gradients are not heavily pronounced as in other regions, the resulting environmental gradient in these forests are sufficient to affect further interspecific associations.

10325 MIXED SPECIES FLOCKS ALONG AN ELEVATIONAL GRADIENT IN THE BOLIVIAN ANDES: A NETWORK PERSPECTIVE

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Mixed-species flocks represent a prevalent social system of most tropical forests on which species of several taxa move and forage together. Despite the importance of understanding flocking dynamics, the underlying processes driving the structure and assembly of mixed-species flocks are still poorly understood, particularly in mountain ecosystems. Here, I assess how mixed-species flocks are structured in the Andes of Bolivia and how the characteristics of these ecological networks change across elevations. For each flock along a continuous elevational gradient (3550 – 1300 m asl), I (1) constructed weighted networks and calculated species-level and flock-level metrics and (2) calculated a pair-wise association strength for each species pair, and related this matrix with pair-wise phenotypic similarity matrix and a phylogenetic similarity matrix. Overall I found that positive interactions were more important in the assembly of mixed-species flocks than negative associations. However, positive interactions were frequent in high elevation flocks, whereas negative interactions (i.e. competition) were more frequent at lower elevations. My results showed a decay in species richness with elevation along with patterns of in less modular and simpler networks at high elevations. Thus, networks with fewer and more even pair-wise interactions are found at high elevations, whereas more modular and complex networks are found at lower elevations. I discuss how this information can be used to better understand how mixed-species flocks respond to changes in environmental conditions, such as those expected by climate change.

10393 MIXED SPECIES FLOCKS OF BIRDS AS A STRATEGY: BEHAVIOR AND SEASONALITY IN YUNGAS FOOTHILL OF NORTH-WEST, ARGENTINA

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It has been long recognized that bird mixed-species flocks are seasonal in temperate forests and annual in tropical forests, however, seasonality of mixed flocks in the subtropical forests remains poorly studied despite their potential role to clarify how intermediate climatic conditions affect flocking behavior. We surveyed the number of mixed flocks, number of species and number of individuals in mixed flocks in Yungas-foothill of Northwest Argentina, to examine seasonality of mixed flocks and flocking behavior in response to climatic elements (temperature, humidity, wind speed) and fragmentation, to test the hypothesis that birds flock more frequently under harsh conditions. In both, continuous forest and forest fragments, mixed flock formation was seasonal (they occurred more frequently and had more species and individuals during the harsh dry season, than during the more benign wet season), and harsh climatic conditions lead to flocking (the number of mixed flocks, and number of species and

individuals in them increased as temperature and humidity decreased within and between seasons). Although forest fragments were climatically harsher (drier and windier) than continuous forest, fragments had fewer mixed flocks with fewer species and individuals. Since flock formation was a function of the number of species and individuals, either reduced connectivity has limited the number of individuals reaching the forest fragments or forest fragments were so harsh that birds could not thrive in them. The benefits gained by flocking remain to be elucidated, but whichever those benefits are they should be understood in the context of seasonal variation in life-history traits.

10407 COMPOSITION AND STRUCTURE OF THE MIXED-SPECIES FLOCKS ALONG THE LATITUDINAL GRADIENT OF THE SUBTROPICAL MONTANE FOREST OF THE YUNGAS, ARGENTINA

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Mixed-species flocks (MF) are associations of different species formed as a strategy to increase the efficiency of foraging and to reduce the risk of predation. The participant species play different roles and receive various benefits from the association. The aim of the present study was to determine the variation of the composition and structure of the MF, along a latitudinal gradient in the subtropical mountain forest of the Yungas of Argentina. Eight sampling sites were studied along the 700 km of distribution of the Yungas in Argentina. At each site 10 transects were established and were visited from June to September between 2006 and 2009. It was determined the richness and abundance of the MF. 325 MF, with a total of 72 participating species and an abundance of 2480 individuals were observed. Seventeen families were represented, 15 of the order Passeriformes and two non-passerines (Trochilidae and Picidae). The major families were Tyrannidae (12 species), Furnariidae (10 species) and Thraupidae (eight species). Twelve species were omnipresent in the eight study sites, being *Syndactyla rufosuperciliata*, *Phylloscartes ventralis*, *Chlorospingus flavopectus* and *Myioborus brunniceps* the species that had the highest values of occurrence. Although multivariate statistical analyzes indicated that the latitudinal gradient would have no direct influence on the structural characteristics (number of flocks, number of species and individuals involved) of the MF, the composition of the species varied in association with latitude. Possible causes associated with the latitudinal gradient, such as local climate and vegetation characteristics, could influence the results obtained.

10825 RESPONSE OF MIXED-SPECIES FLOCKS TO HABITAT ALTERATION AND DEFORESTATION IN THE ANDES

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Although a growing number of studies address how Neotropical birds respond to anthropogenic disturbance and deforestation, we continue to poorly understand responses of groups of interacting species, such as mixed-species flocks in the Andes. In this study, we examined how attributes at landscape and local scales shaped mixed-species flocks within five broadly-defined habitat types in the Northern and Central Andes. From 2007 to 2010, we systematically surveyed flocks along line transects in 97 1-km^2 plots distributed from Venezuela to Peru based on a stratified-random design. We recorded 220 avian species in 186 mixed-species flocks, with the greatest species richness and largest flocks detected in forested habitats. Increasing forest cover promoted species richness and size of flocks, with particularly strong associations in successional habitats and shade coffee. Structural complexity was positively associated with flock size in early successional and silvopastoral habitats, where 20% increases in complexity doubled flock size. Encounter rates of flocks were poorly explained by simple metrics of forest cover and structural complexity. Unlike flocks reported in many lowland forests, Andean flocks tended to span all vertical strata, with fewer understory-specializing flocks such as those led by *Basileuterus* warblers and *Chlorospingus* tanagers. Nonetheless, in such flocks, understory insectivores were most closely associated with mature and secondary forests. Our research supports the idea that managed habitats with overstory trees can contribute to flock conservation. Overall, our results further suggested that understory birds require the more forested of habitats, and may be less amenable to conservation with agroecosystems or working landscapes.

MOVEMENT ECOLOGY

10400 THE RELATIONSHIP BETWEEN TIMING OF MIGRATION AND REPRODUCTIVE SUCCESS IN AN INTRA-TROPICAL MIGRATORY BIRD

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Migratory birds must undertake a number of key activities, including migration, breeding and molt to successfully reproduce and survive. Properly timing these events is key, because each is energetically costly and can result in significant fitness consequences. Spring migration, in particular is important for successful reproduction, because arriving early to the breeding area has many benefits, such as sexual selection and acquisition of a better territory. Therefore, we evaluated the relationship between arrival date and the reproductive outcome in Fork-tailed Flycatchers (*Tyrannus savana*). We worked at the Estação Ecológica de Itirapina, Brazil. We searched and banded adult flycatchers during the breeding season, beginning just prior to the arrival of flycatchers and finally, we monitored their nests at each site from construction until failure or fledging of nestlings. We found that flycatchers that arrived early to a tropical breeding site in South America have significantly higher reproductive success than those that arrive later. Overall, this result support the hypothesis that reproductive success of intra-tropical migrant flycatchers is related to their date of arrival on the breeding site. We

found that male Fork-tailed Flycatchers arrived at the breeding site earlier than females, which to the best of my knowledge is the first documented evidence of protandry in an intra-tropical migratory passerine.

10543 TO FLY, WALK OR DIVE: WHAT COSTS MORE? THE IMPERIAL CORMORANT AS A CASE OF STUDY

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Birds capable of moving in air and water are expected to face some energetic constraints. For example, small wings with little air trapped between feathers diminish floatability and enhance diving capacity however; they are associated with the high energetic costs of flight. All cormorant species (with the exception of the Galapagos Cormorant *Phalacrocorax harrisi*) walk, fly to their feeding areas and dive to find food. We present the costs of walking, flying and diving of the Imperial Cormorant (*P. atriceps*). Moreover, we show how changes in the time and energy spent flying and diving to different depths affect the total energetic cost of the Imperial cormorants´ foraging trips. Finally, we present how the costs of flying and diving to different depths can be used to construct an energy landscape of the area around a breeding colony. The determination of the energy landscape around breeding sites is not minor since it may help us understand the coastal distribution of diving seabirds. All energetic cost estimations were determined by means of recording the overall dynamic body acceleration (ODBA) of breeding Imperial cormorants carrying electronic devices.

10592 THE ROLE OF ENVIRONMENTAL VARIABLES IN THE HABITAT SELECTION OF THE SOUTHERN GIANT PETREL

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The Ecological Niche Factor Analysis (ENFA) is a presence-only model that generates habitat suitability (HS) maps by understanding the choices of resources that are unequally used when they are equally available in a study area. Here, we determined the factors affecting foraging distribution of the Southern Giant Petrel (SGP) from northern Patagonian colonies (Isla Arce and Isla Gran Robredo) using ENFA. Data on movements of 17 adults and nine first-year juvenile SGP were gathered using satellite telemetry. Model eco-geographical variables (EGVs) (geographic, biological, and oceanographic) overlapped at a temporal and spatial scale the tracked animals. The resulting HS maps included most of the tracking locations along the Argentinean Continental Shelf. Wind conditions and primary productivity shaped the HS of petrels over the year. However, different EGVs influenced differently this population depending on the requirements of their life stage. Juveniles showed high marginality (values of

EGVs different from the mean values available). Breeding adults´ HS was determined by a small range of values within those available, showing high specialization. Contrarily, wintering petrels showed higher plasticity in the selection of their foraging environments. The resulting HS maps of SGP in the present study also congregates different species of seabirds and marine mammals, which highlights the importance of the ACS for the conservation of the marine environment.

10826 MOVEMENT ECOLOGY APPLIED TO THE CONSERVATION OF THREATENED BIRDS

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One of the main challenges in species conservation and management is to incorporate movement ecology with management goals. The framework, in this theme, is still incipient therefore we have not achieved the incorporation of the movement of species in their conservation and management plans. It is frequently found that the movement data are incorporated into conservation intuitively by conservationists without a framework. In this study, I used the “Movement Management Framework” for incorporing the movement ecology to conservation of three theatered species.The Caribean Flamingo (*Phoenicopterus ruber*) was studied in Colombia, Venezuela and Bonaire (n=2), young Black-and-chestnut Eagles (*Spizaetus isidori*) was studied in Colombia y Argentina (n=2), and Crowned Solitary Eagle (*Buteogallus solitarius*) was studied in Argentina (n=20). I used hypothetical distribution of species as alternative data sources. The movement data contributed to improve the accuracy about important geographical zones for species conservation, at different scales. Management actions designed from alternative data how distribution models, bands and historical records, could be complemented with movement data in the “Movement Management Framework” to redefine management goals in the long-term, but new information may also lead to iterative improvements in the near-term by refocusing objectives and/or defining new actions via adaptive management.

10828 METHODS TO APPROACH BIRD MOVEMENT DATA: A ROADMAP

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Animal movement is a key process in ecosystems as it can provide a link between behavior, landscape ecology, and population dynamics. Satellite telemetry now allows biologists and conservationists to get large numbers of high-resolution three-dimensional location data to monitor and map the details of bird movement. This technique is then expected to catalyze new conceptual progresses in theoretical biology and conservation, but at the challenge of developing and incorporating new analytical tools. In this talk, we will review the available methods to analyze movement data from bird species, with special emphasis being placed on the pros and cons of each one when satellite-based data is used. Particularly, we will walk through the evolution of methods

used to assess space use and resource selection; and finally focus on the different approaches to model animal movement. We hope our talk will encourage researchers to incorporate novel methods to study movement ecology of birds according their particular objectives.

10829 COGNITIVE ECOLOGY IN BROOD PARASITES: BRAIN, MEMORY AND SPACE USE

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The adaptive specialization hypothesis proposes that the brain and cognition are adaptively specialized to solve specific ecological problems. Brood parasites such as cowbirds exploit the parental care of other species (hosts) by dumping their eggs in their nests. This parasitic behaviour imposes special demands on information processing: cowbirds should locate host nests, remember their location and return to those nests when they are ready to lay eggs. This cowbird's demand for remembering the precise location and nesting stage of multiple host nests correlates with a relative enlargement of the hippocampus, a brain region involved with spatial information processing in all vertebrates. This enlargement is present in the sex that locates host nests: females of Brown-headed (*Molothrus ater)* and Shiny Cowbirds (*M. bonariensis*) and females and males of Screaming Cowbirds (*M. rufoaxillaris*). We studied the use of space (including daily ranges, communal roost use and host-nest visitation pattern) in radio-tagged Shiny and Screaming Cowbirds and examined comparative aspects of cognition and memory under natural circumstances. Females of both species visited host nests prior to laying and flew directly from the communal roost to target nests around dawn, supporting the hypothesis that they remember their location from previous prospecting behaviour. Daily ranges in females of Shiny Cowbirds and both sexes of Screaming Cowbirds were constant, which is consistent with nest monitoring behavior. Our results illustrate how cognitive adaptations can be studied in the context of field behavioral ecology.

10832 Movement ecology and health conditions of Brown skuas throughout their breeding period

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Breeding influences the nutritional and immunological condition of the parents due to itshigh degree of stress and energetic cost, and in central place foragers, through the restriction imposed to their movements and the reduction in their time for self-feeding. The development of the offspring increases its energetic requirements, leading to a higher energetic investment by the parents and then, to a negative effect on their

nutritional and immunological conditions. We studied the variation on the amount of movement and the nutritional and immunological condition in Brown skuas (*Stercorarius antarcticus lonnbergi*) breeding at Isla 25 de Mayo, Antarctica. The breeding period was divided in three stages: incubation (I), hatching (H) and fledging chicks (F). At each stage we characterized the amount of movement through the daily distance of flight (DDF), studied the nutritional conditions through the body mass and the concentration of metabolites associated to metabolic pathways of protein and lipids, and the immunological conditions through the heterophil:lymphocyte ratio. The DDF increased towards the last stage (I-H:p=0.46; H-F:p=0.02). Body mass decreased in Brown Skuas throughout their breeding period (I-H:p=0.03; H-F:p<0.01) and there was a decline of total proteins (I-H:p=0.01; H-F:p=0.03) and triglycerides (I-H:p=0.57; H-F:p=0.01), while the concentration of urea increased (I-H:p=0.00; H-F:p=0.01). Uric acid and NEFA as well as the heterophil:lymphocyte ratio did not change. This shows an increase in parents investment, especially towards the end of the breeding period, with a decrease in the general body condition that does not impact on the immunological condition at the level studied.

ORAL SESSIONS

AGRICULTURAL ECOLOGY

10265 WADING BIRD USE OF GEOGRAPHICALLY ISOLATED WETLANDS IN THE SOUTHEASTERN U.S. COASTAL PLAIN

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Geographically isolated wetlands (GIWs) are a prominent feature of the U.S. southeastern Coastal Plain. These wetlands support species rich plant and animal communities, particularly within the longleaf pine ecosystem. Currently, more than 50% of GIWs in the Southeast have been impacted by human land uses. Modification of wetlands influences species such as wading birds, which serve as important apex predators. Due to their high trophic status, wading birds are significant indicators of ecological health and productivity in wetland ecosystems, yet no studies exist that quantify their presence in coastal plain GIWs and identify drivers influencing their use of these systems. I conducted weekly systematic surveys for wading birds and monthly surveys of potential prey items at 15 GIWs including reference (cypress swamps and herbaceous marshes) and agriculturally-modified GIWs across the hydroperiod of February through July. An information theoretic modelling approach was used to identify wetland features, hydrologic characteristics, and landscape components that explained patterns of wading bird density. Density, measured in birds per hectare, was highest in agriculturally-modified wetlands from February to May (M=3.56, SD=6.58) and highest in reference wetlands in June and July (M=7.51, SD=7.93). Prey abundance (catch-per-unit effort) for all wetland types increased early in the season (February-March) and was relatively stable for the remainder. Top explanatory variables were month and the interaction of wetland type with prey abundance. A better understanding of wading bird use of human-modified wetlands can provide tools for more informed conservation decisions for these birds and the wetland systems they rely on.

10476 TRENDS IN REGIONAL OCCUPANCY OF BIRD COMMUNITIES AND ITS RELATIONSHIP WITH LAND USE-COVER IN CENTRAL ARGENTINA

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The rapid expansion of agriculture in recent decades in Argentina poses challenges for conservation of bird diversity because many species that provide ecosystems services to agriculture are sensitive to these changes. Several regional drivers, such as climatic

conditions or production systems, could affect bird's persistence and modify distribution patterns. We evaluated relationships between bird occupancy and richness and land use-cover, and explored temporal trends in three sub-regions based on predominant agricultural production activities in an area comprising 255,000 km^2 of Espinal and Pampas ecoregions, which contains the main agricultural areas in Argentina. Between 2003-2012, we conducted yearly surveys using point counts along secondary roads in two heterogeneous sub-regions, one with native forest, agriculture and cattle activities ("Entre Rios", n=120 sites) and another with a combination grazing grasslands and crops ("Inland Pampas", n=168); and an area with a predominance of annual crops(mostly soybean and corn, "Soybean",n=192). We accounted for imperfect detection using Bayesian hierarchical, multi-species and multi-season occupancy models. Richness, species occupancy and temporal trends differed between sub-regions. A higher number of species were negatively affected by soybean proportion in the Soybean sub-region (Beta community -0.701, CRI95% (-1.39;-0.04)). Landscape heterogeneity in Entre Rios and Inland benefit birds, mitigating agricultural land use effects (Beta community -0.201 (CRI95% -0.75;0.35); -0.24 (CRI95% -0.87;0.39)). Richness was low and stable in Inland, while in Entre Ríos, increased in time. We found no clear trends in richness in the Soybean sub-region. Our results provide baseline information for decision making, to reconcile bird conservation with agriculture at regional scales.

10479 EXTENSIVE LIVESTOCK IS A KEY FOOD RESOURCE FOR THE ENDANGERED EGYPTIAN VULTURE (*Neophron percnopterus*)

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Diet is a basic aspect of animal ecology with important conservation implications. The current global crisis affecting vultures is mainly related to human-mediated food resources: consumption of carrion contaminated with diclofenac in Asia, lead in America and Europe, and poison and antibiotics in Europe and Africa, and reduced carrion availability due to outbreak of bovine spongiform encephalopathy (BSE) in Europe. The Egyptian vulture (*Neophron percnopterus*), classified worldwide as "Endangered", is severely affected by these feeding problems. However, the diet of most local populations is unknown, which makes it difficult to assess the real impact of the availability and quality of trophic resources in their conservation. We analyzed the diet of the Egyptian vulture in León (northwestern Spain). The estimated 59 couples in this area represent around 4% of the Spanish breeding population that, in turn, supposes ~50% of the European population. We identified 312 items (range: 7-58 items/nest) collected (by climbing) in the years 2007, 2009 and 2010. Livestock dominated the diet of the Egyptian vulture (24% of the remains). Sheep and goats accounted for 11.8% and cow for 7% of the total remains. Habitat structure and the

presence of human settlements and other vulture species nearby would explain the species diet. This study shows the importance of extensive livestock rearing in the diet of the Egyptian vulture in northwestern Spain. Our results agree with previous studies on the need to consider extensive livestock in the management and conservation of this endangered vulture.

10519 BIRD DIVERSITY IN AGROFORESTRY LANDSCAPES: A CASE STUDY IN URUGUAY

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In Uruguay extensive forestry is expanding continuously and it currently covers 5.6% of our territory. One of the biological groups which are considered to be negatively affected by this activity are grassland birds, and little is known about the bird assemblages which make use of these habitat types. In this study the following questions are expected to be answered: How do the ecoregion (regional factor) and the habitat type (local factor) contribute to the local variation of bird diversity in agro-forest habitats? Does forestry displace local grassland bird species while favoring forest species? During 2015-2016, 160 point count bird surveys were conducted for each habitat type: native forest, grassland, artificial forest. These were distributed in the same proportion along four of the country's ecoregions, as well as in summer and winter seasons. Six alpha diversity and species composition variables were assessed by means of ANOVA and ANOSIM respectively, taking into consideration these three factors: ecoregion, season and local habitat type. Local habitat type was the main determinant of the variation in species diversity and composition ($0.43<r^2<0.79$, $p<0.001$). However, species composition varied significantly among different ecoregions ($r^2>0.12$, $p<0.001$). Furthermore, forestry caused an almost total displacement of the grassland community and the species found in this habitat type are, in their majority, generalist species with smaller populations than those found in native forests. Notwithstanding this, some forest specialist species were recorded and nesting events were confirmed, which shows the new habitat type is being used to the advantage of some species.

10520 ARTIFICIAL BIRD PERCHES PROMOTE VEGETATION REGENERATION

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A large proportion of agricultural fields are often abandoned after a few years of use. Without any intervention, these landscapes show a slow reversion to native ecosystems, or to ecosystems dominated by anemophilous species. One of the main barriers to regeneration of vegetation is poor supply of seeds. In relation to this limitation, the use of artificial perches is an emergent restoration technique that favor the arrival of seeds in open areas where dispersion by birds is limited by lack of trees. To evaluate the effectiveness of this practice, we conducted a global scale meta-analysis and a local scale

field experiment in the Espinal forest of Entre Ríos, evaluating seed dispersal of woody species with fleshy fruits in deforested sites with and without perches. The result of the meta-analysis showed that, at global scale, the establishment of artificial perches increases abundance and richness of seeds that arrive at degraded areas adjacent to relics of woody vegetation. The same effect was detected in the local scale experiment (average of 37,235 seeds/m^2 ± 91,013 for perches compared to 0,345 seeds/m^2 ± 2,870 for control treatment). Perches also favored the rapid arrival of species that without active restoration would appear in later stages of succession. Our results show that the use of artificial perches allows overcoming the problem of the low availability of seeds in degraded agricultural landscapes, promoting and / or accelerating vegetal regeneration. Seed rain under perches generates "recruiting nuclei" which can expand, replicating the species composition of the surrounding landscape.

10629 ASSESSING THE INFLUENCE OF ENVIRONMENTAL VARIABLES IN THE BIRDS RESPONSE TO AGRICULTURAL INTENSIFICATION IN THE DRY CHACO

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Over the past two decades, farmland intensification and expansion at the expense of natural habitats has drawn conservation attention to the Chaco region. Its effects on biodiversity have been scarcely studied at regional scale, disregarding the potential interaction of landscape structure and local management intensification. We analyzed how agricultural intensification affects bird communities across the Dry Chaco region taking into account habitat availability and climatic heterogeneity. Data for bird occurrence was aggregated from 2009 to 2014 (n=235 sites). We modelled occupancy and estimate richness per site using Bayesian hierarchical multi-species models, and evaluated its relationship to: a) net annual revenue per hectare, as an indicator of intensification; b) percentage of forest cover within a six kilometers buffer, and c) annual rainfall, to account for environmental heterogeneity. Agricultural intensification resulted in an overall negative effect on bird occupancy at community level (beta: -0.373, CRI95%: -0.524; -0.219). Whereas forest cover (beta: 0.168, CRI95%: 0.075; 0.260) and annual rainfall (beta: 0.155, CRI95%: 0.075; 0.236) showed a positive relationship with the bird community. There was a positive interaction between forest cover and annual revenue (beta: 0.360, CRI95%: 0.294; 0.428) for most species, resulting in a mitigation of the negative effects from the latter as forest cover increased. Our results demonstrate that there is a differential effect of agricultural intensification depending on forest habitat availability in the surrounding landscape. This information

can contribute to integrate biodiversity conservation and land use planning to achieve sustainable productive landscapes.

BEHAVIOR

10216 TERRITORIAL BEHAVIOR OF *Colibri coruscans* IN THE PRESENCE OF NECTARIVOROUS SPECIES SINGING, IN PATCHES OF NICOTIANA GLAUCA IN THE LA PAZ VALLEY

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The observation regarding the decisions that the animals make is fundamental to understand the animal behavior. These decisions are given through cognitive processes, these processes being fundamental to the understanding of the rational decision, which consists in choosing that behavior that maximizes profit based on costs and benefits. The assembly of nectarivorous birds offers an interesting opportunity to study the processes associated with rationality. It was evaluated whether *Colibri coruscans* presents different levels of territorialist behavior against nectarivorous competitors. In order to trigger responses to territorial behavior, recordings of songs of four species (*C. coruscans*, *Patagona gigas*, *Sappho sparganurus* and *Diglossa carbonaria*) were reproduced. It was found that the behavior of *C. coruscans* varied significantly before the stimuli of the four species. There was a smaller number of territorial behaviors before *S. sparganurus* (trapliner specie), and a greater number before its specific species (territorial specie). Therefore, it could be said that *C. coruscans* presents different types of behavior to different species of nectarivores, which present different strategies of food behavior and territorialism, in order to associate a scenario of energy saving and rational decision making.

10218 EVALUATION OF THE VARIATION IN ESCAPE DISTANCE BETWEEN NATIVE BIRD POPULATIONS OF THE INTERIOR AND EXTERIOR OF THE URBAN MATRIX OF THE CITY OF LA PAZ-BOLIVIA

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This study evaluated whether there is an inter- and intra-specific difference between populations of four native bird species (*Zenaida auriculata*, *Turdus chiguanco*, *Phrygilus punensis* and *Zonotrichia capensis*) that are present in both urban and peri-urban areas. For this purpose we evaluated the “Flight Initiation Distance” (FID), which is the distance between a person approaching and the bird at the time it escapes flying. Regarding the intra-specific variation, it was found that the populations of the four species have higher FIDs in the peri-urban areas compared to the urban ones. When analyzing the inter-specific variation, it was found that the species *P. punensis* is the species that significantly presents the highest FIDs in relation to the other species, both for the urban zone and for the peri-urban zone. Therefore, it can be said that there is a difference in the level of tolerance between urban and periurban bird populations where urban bird

populations have modified their behavior in response to anthropogenic activities. It can also be said that bird species differ in degree of tolerance due to intrinsic factors of each species.

10271 NEOPHOBIA AND DOMINANCE-SUBORDINATION INTERACTIONS IN THE OLROG'S GULLS (*Larus atlanticus*)

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Many animals show aversion to novel situations, a response termed neophobia. This behavior can be affected by agonistic interactions during social foraging. The aim of this study was to analyze the behavioral response to novel objects in the Olrog's Gulls and to quantify the dominance-subordination interactions during social foraging. This study was carried out during the months of July-August 2016 at Mar Chiquita Reserve (37° 46'S, 57° 27'W). The recording of interactions and the neophobia level was performed in baiting stations, using as novel object different models of road cones. During the experiments (n=20), 91 interactions were recorded, of which only eight percent occurred in the presence of the novel object. More than 80% of interactions were initiated by juveniles (11.8% adults and 5.4% sub-adults). The probability of an individual entering the baiting station in presence of a novel object was affected by object type and by the number of adult individuals during the experiment. The probability of ingestion was affected by the factors previously mentioned, as well by the age class of the individual. No habituation to the object was observed after repeated presentations to the individuals. The information generated in this study contributes to the understanding of risk-taking behavior in novel situations and social feeding of a threatened seabird. This represents a key information to promote its conservation in environments that are constantly changing, such as the coast of the Province of Buenos Aires.

10275 QUANTIFYING PERSONALITY OF WILD BIRDS: CONTRASTING TWO MOBILE FIELD ASSAYS

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When species co-occur, behavioral differences between them may dictate the outcome of ecological and reproductive interactions. Exploratory behavior is an ecologically relevant measure of personality associated with speed-accuracy tradeoffs. Behavioral differences between species coming into contact could affect mate choice and social dominance relationships, ultimately determining where they occur and whether they hybridize. We measured exploratory behavior in wild Carolina (*Poecile carolinensis*) and Black-capped (*P. atricapillus*) chickadees, as well as their hybrids, in the field using two different mobile assays: a screen tent used during a pilot study, and a wooden,

illuminated box designed to reduce outside influences. We scored exploratory behavior for both assays by recording variables describing activity and latency to reach different sections within the chamber, and then produced a composite score using principal components analysis. Within each species, individuals exhibited a wide range of exploratory scores, but black-capped, Carolina, and hybrid chickadees did not differ in mean scores for either assay. The box and tent scores did not correlate, suggesting that these assays are not measuring the same behavior. Tent score was nearly repeatable ($n = 14$, $p = 0.059$; $r = 0.52$). The box score was highly repeatable ($n = 28$, $p < 0.001$; $r = 0.62$), suggesting that box score represents individual personality and that the box successfully reduced outside influences. Most of the variation exists between individuals, not species, suggesting that these sister species display high behavioral overlap. Behavioral similarity may play a role in these species' willingness to hybridize in the wild.

10391 THE EFFECT OF COLOR IN THE FORAGING BEHAVIOR OF THE RED SISKIN (*Spinus cucullata*)

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The origin of color preference in animals may have arisen from foraging or reproductive contexts or from a sensorial background, when color preference is expressed in different situations. Here, we observed the color choice in 20 individuals of the red siskin (*Spinus cucullata* (Swainson, 1820)). Focal behavioral sessions of five minutes in individual cages were made to test whether there is a color preference in the species and also if there is a sensory bias in choice, by checking if individuals would prefer to feed on items with similar coloration of their plumage. Artificially colored grains in the colors green, red and yellow were used as options for color choice. There was a strong preference for the green grains in the first choice and in the total number of visits per color during five minutes. Although it was not correlated with the plumage coloration, the significant green color preference indicates a color sensitivity in the species and raises the question if there is a sensory bias associated to related lineages or if individuals associate color with food composition.

10457 BEHAVIORAL RESPONSES TO POST-FIRE SUCCESSION: PLASTICITY OR SELECTION FOR PERSONALITY?

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Behavioral flexibility is favored in unpredictable or rapidly changing environments. Some behaviors may fluctuate readily with different environmental or social contexts while others may be constrained by genetics, physiology, or early environmental experiences. Alternatively, selection could favor alternative behavioral phenotypes which differ among individuals but are consistent in different contexts. Florida Scrub-Jays

(*Aphelocoma coerulescens*; FSJs) occupy recently burned oak scrub. Post-fire succession is rapid and renders habitat unsuitable for jays within 15-20 years. The maximum longevity of jays is 15+ years, thus many individuals experience dramatic succession within their life span which may favor behavioral plasticity; however, jays show distinct personalities which can constrain individual behavioral responses. As part of a long-term study, we hypothesize that intense competition for early-successional post-fire habitat leads to selection for bold, aggressive birds that can successfully compete but experience little selection for behavioral flexibility because they occupy optimal habitat for most of their breeding lifespan, and for shyer, less aggressive birds that avoid the costs of competition by settling in later successional patches, but experience habitat change that favors behavioral flexibility. Using Giving-Up Density experiments, behavioral assays, and social networks, we are beginning to test predictions of our hypothesis. We present preliminary data on behavioral flexibility relative to time since fire, habitat preferences relative to time since fire by birds of differing behavioral phenotype during pre-breeding exploratory forays, and patterns of social behavior relative to phenotype.

10530 COMPARISON OF BLUE MANAKIN DISPLAYS AND SOLO DURATION ON COPULATION SUCCESS

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In birds, ornaments and displays can direct sexual choice by indicating individual quality. In lek polygyny in which displays are cooperative, males of different hierarchical status gather in the same arena for exhibitions. An example includes the blue manakin (*Chiroxiphia caudata*), a remarkable species for its flight displays. Here we tested whether there are differences between arenas and between dominant and subordinate individuals in relation to motor displays parameters (male approximation to females, height and duration of vertical flight and flight speed). We also tested whether there is a relationship between copulation occurrence and the duration of solo display, which is performed by a dominant male, usually after the cooperative display. In 2015/2016 and 2016/2017 reproductive seasons, we marked and filmed blue manakin in Mananciais da Serra, Piraquara-PR. We recorded copulation occurrence to register the reproductive success of each male. We found differences between arenas for all parameters ($X^2_{approximation}$=59.96, X^2_{height}=51.29, X^2_{speed}=46.73, p<0.05 for all), except for vertical flight duration ($X^2_{duration}$=0.88, p=0.83). There was a difference between dominant and subordinate males in the duration of vertical flight ($X^2_{duration}$=5.01, p=0.02). There was no relationship between copulation success and solo duration (X^2_{solo}=2.47, p=0.12). Our results showed differences in individual level and among male arenas in display traits. Even though solo duration was not important for reproductive success, we suggest that variations in cooperative display parameters can be important signals to female choice, as well as for hierarchy establishment among males within an arena.

BIRDS IN URBAN & DEVELOPED SYSTEMS

10255 BEHAVIORAL RESPONSES OF URBAN BIRDS TO ANTHROPOGENIC DISTURBANCE IN GREEN AREAS IN CURITIBA, PARANÁ (BRAZIL)

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Proximity to humans can influence behaviors that are essential in a bird's life, such as breeding, foraging and flight. In urban parks, which are important natural shelters to birds, human activity varies broadly in time such that attentiveness and escape behavior of birds may be intensified when density of humans increases. In this study, we tested this hypothesis in six green urban areas at Curitiba, S Brazil and using three common urban bird species as models, the Rufous Hornero (*Furnarius rufus*), the Southern Lapwing (*Vanellus chilensis*) and the Rufous-bellied Thrush (*Turdus rufiventris*). More specifically, we tested if foraging rate, alert distance (AD), flight initiation distance (FID) and flight distance (FD) are related to the number of humans within a bird's home range area. Through linear mixed model, we found no influence of humans on birds foraging rate, whereas AD, FID and FD decreased with human density in the bird's surroundings. We also found differences in birds escape strategy; "flying" strategy was associated with higher AD, FID and FD than "walking" strategy. Results also indicate that bird's vigilance and flight responses were temporally affected by human presence and apparently reflect a strategy that ensures constant foraging rate irrespective of human density. Our study provides evidence of behavioral plasticity of the model species to the intensity of human use of their living area, which also highlights the importance of further efforts in creating refuges within these urban parks to minimize anthropic impacts on urban species.

10354 DISTRIBUTION OF CAVITY-NESTING BIRDS AND THEIR POTENTIAL NESTING-SITES IN A TROPICAL URBAN FOREST FRAGMENT

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Populations of bird species that use cavities and are not excavators, are often limited by the availability of nesting sites. Undisturbed oldgrowth forests have high abundance and richness of species that use cavities because they harbor a larger proportion of large live trees and dead standing trees (snags). These trees are a notable source of nesting-sites for cavity-nesting birds, and therefore, their abundance is often a good surrogate for the availability of potential nesting sites. The goal of this study was to describe in an urban forest fragment of ca. 700 ha, how large-live trees, large-live palm trees and snags are distributed in relation to the edge of the forest fragment and also determine if the richness and abundance of cavity-nesting birds is related to the presence of these resources. We conducted this study in the forest fragment of the Federal University of Amazonas campus, in Manaus, Brazil. We established 20 transects of 120 m each

(distributed 30 - 500 m from the forest edge) where we captured birds using mist-nets and counted the trees. We found no relation between the number of large-live trees, large-live palms and snags with the distance to the fragments edge. However, the richness and abundance of cavity-nesting bird species is higher in sites with the highest number of snags. These results reaffirm the great ecological value of snags and demonstrate their importance for the persistence of cavity-nesting bird populations in urban forests.

10377 FRAGMENTATION, URBANIZATION AND CONSERVATION OF BIRDS IN RIPARIAN FORESTS.

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The objective of this study was to evaluate the influence of the fragmentation and urbanization on the structure and composition of bird communities in riparian forest in São Paulo, Brazil. The work was carried out in six fragments of the riparian forest in the months of June to August in 2016 and 2017. A fixed point method (15min) was used and the number of points varied according to fragment size. Each point was visited three times during each month. The explanatory variables were: (1) landscape scale: highways, urban area, and river distances and fragment size; (2) fragment scale, in an area of 5mradius: average height of trees, number of trees above 2m, number of shrubs <2m, and the percentage of canopy opening. The observations resulted in 87 species of birds belonging to 34 families, the most predominant trophic groups were insectivorous (54%), omnivorous (11.5%) and frugivorous (10.3%). The most representative families were Tyrannidae, Thraupidae and Picidae. The results obtained at the fragment scale showed that the number of trees explained the variation in abundance. The landscape characteristics analyses showed that the size of the area had a positive and linear relationship with total abundance and abundance of frugivorous species. Richness was inversely proportional to the distance from the river. In addition, distance from highways, urban areas, and from the river positively influenced species abundance. In conclusion, the bird community in riparian fragments was impacted by loss of trees above 2m and urbanization, mainly leading to loss of frugivorous species.

10399 PATTERNS OF LOCAL BIRD DIVERSITY IN THE CITY OF BRASILIA

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The Brazilian capital Brasília was inaugurated in 1960 in the center of the Cerrado region, in a predominantly rural area without major urban centers. Since then it has grown to over two million inhabitants in the city and surroundings. The city has fragments of cerrado savanna and associated habitats in city parks, as well as major reserves around the city adding up to nearly 100,000 hectares. The purpose of this study was to assess species composition and heterogeneity in two cerrado fragments on the University of

Brasília campus.We established two transects at different sites with a length of 1.1 km (CRAD site) and 1.7 km (CO site). We sampled each for the same time duration, between 6:15 and 8:00 AM or from 4:15 to 6:00 PM, eight times each from 19 August to 25 November 2016. The CRAD site had 49 species, and the CO site 73 species, of which 41 were shared, and communities were significantly different (Mann-Whitney, U=2549, $p<0.05$). Although species richness per km was similar between sites, the CO site had higher proportion of unique species, due to its being beside a lake and having wetland habitats. Overall nearly 18% of the Federal District avifauna was recorded on the university campus.

10418 AVIAN ELECTROCUTION IN POWER LINES: THE OVERLOOKED THREAT FOR NEOTROPICAL RAPTORS

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Electrocution with power lines may represent a serious mortality factor for birds of prey. However, the impact of this threat has been largely ignored for raptor populations in the Neotropics. Here we evaluate raptor electrocution risk and power line mortality in semiarid landscapes of central Argentina. Power lines surveys were conducted from July to September 2016 along 160 km of three-phase distribution lines (13.2 Kv) in La Pampa province. A total of 194 individuals belonging to three raptor species were found electrocuted beneath of the 2,024 pylons examined. The bulk of electrocuted birds belonged to the Black-chestnut buzzard-eagle (*Geranoetus melanolecus*; 162 individuals), followed by the Variable hawk (*Buto polyosoma*; 27 individuals) and the Turkey vulture (*Cathartes aura*; 5 individuals). Electrocution rate was five times higher in pylons made completely of concrete with wire jumpers above the crossarm (4% of all pylons surveyed, 57.6 electrocuted birds/100 pylons) than in pylons with poles made of concrete with wooden crosarmas but without jumpers (65%, 10.9 birds/100 pylons). Pylons with both wooden poles and crossarms represented 31% of the total surveyed but accounted by only one bird electrocuted. Our results reveal the importance of avian electrocution as a mortality factor for Neotropical raptors and highlight the link between avian electrocution risk and pylon design and material used for its construction. Future research should be focus on the impacts of avian electrocution mortality on raptor populations at a broader spatial scale as well as on the implementation of mitigation measures to avoid raptor electrocutions.

10429 BIRD-WINDOW COLLISIONS: A GLOBAL REVIEW

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Up to one billion birds are estimated to be annually killed by collisions with glass panes in North America alone, which is one of the major causes of bird deaths due to anthropogenic causes. However, little attention has been given to this problem, especially in the tropics, and more research has been published only in recent years. Thus, we aimed to review the factors that cause collisions of birds with glass panes in the indexed bibliography, as well as mitigation solutions. There is a large concentration of papers published in the broad scientific literature in the Northern Hemisphere. It is difficult to extrapolate these findings to the rest of the world, since many factors are local-specific on a greater or lesser scale. The main factors influencing rates of mortality by collision with glass panes were large areas of continuous glass, vegetation very close to panes, passage of migratory species, presence of feeders, abundance and behavior of birds. The application of stripes or other patterns that cover the glass evenly, or external use of curtains and paracords, were effective methods to mitigate the collisions. It is necessary to reach citizens in order to really solve this problem. They must be warned about the risks that their windows represent to birds and let them know about the suitable mitigations. Further studies in the tropics are also needed to generate data that support appropriate public policies.

10455 URBAN BENEFITS ON BURROWING OWLS' BREEDING BIOLOGY IN THE SE PAMPAS ECOREGION (ARGENTINA)

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Urban habitats represent adaptive challenges for many species given the intense modification of native environmental conditions. However, urban habitats also represent a relaxation in predation pressures and an attenuation of extreme climatic conditions. Consequently, certain species might perceive urban habitats as ecological opportunities that would allow them to be successful in their reproduction and to expand their distribution range.The Burrowing owl (*Athene cunicularia*) is a small size raptor that has managed to live in modified habitats. This species is frequently found in natural and rural habitats as well as in urban areas. Our aim was to study and to compare reproductive parameters, reproductive chronology and reproductive behaviour of Burrowing owls in urban and rural habitats in order to understand how this species manage to live in urban habitats. Then we monitored urban and rural owl nests by using an infrared camera and HD video cameras. Productivity was similar between habitats, but urban owls were more successful than rural ones. In addition, breeding season was longer in urban environments. In general, rural owls tended to spend more time being alert than urban ones indicating a difference in predator pressure between environments. All these results indicate that the urban habitats represent opportunities for Burrowing owls and its characteristics would allow them to reach a better breeding performance.

10513 SCALE DEPENDENCE OF BIOTIC HOMOGENIZATION BY URBANIZATION: A COMPARISON OF URBAN BIRD COMMUNITIES BETWEEN TWO CONTINENTS

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Recent studies showed contrasting results about the homogenizing force of urbanization on bird community composition at large and regional scales. We studied whether urbanization promotes the homogenization of wintering bird communities and if this is scale-dependent. We used qualitative and quantitative similarity indices in comparing communities. Processes governing bird community dissimilarity were examined with the partitioning of Sörensen index in species turnover and nestedness. We made bird surveys in town centres and suburban habitats of three cities located in the Pampean region of Argentina and in the boreal region of Finland using a single-visit study plot method. Species richness did not differ amongst the town centres between the continents, but it was higher in the suburban areas of Argentina than in Finland. At the continental scale, we found a higher similarity amongst the town centres than amongst the suburban areas; whereas at the regional scale similarity between town centres was comparable to similarity between suburban areas. The use of a quantitative index produced a higher similarity between town centre communities of both countries than when using a qualitative index. Dissimilarity between habitats in Argentina was related to nestedness, and to species turnover in Finland. Our results indicate that it is necessary to consider the spatial scale and include abundance data when analysing the homogenization of bird communities promoted by urbanization. Moreover, processes of community dissimilarity between urban habitats may differ with latitude.

10565 TEMPORAL VARIATION IN THE AVIFAUNA OF A UNIVERSITY CAMPUS IN THE STATE OF SAO PAULO, BRAZIL

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Environmental changes caused by agriculture and urbanization are among significant causes of alterations in the Neotropical avifauna. Thus, community-level studies are useful for understanding biological responses to environmental impacts in order to propose effective mitigating actions. Therefore, this work evaluated the temporal changes in the avifauna of a university *campus* in the state of Sao Paulo, Brazil (47°31'28"O, 23°34'53"S), during its implantation and after nine years. For this, we conducted transect surveys throughout the *campus*, considering data on bird richness, abundance and diversity, from July to December in 2007 and 2016. At this time scale, the richness were similar (χ^2=0,17; gl=1; p=0,68), with 105 and 110 species, respectively; but the temporal variation in the species composition resulted from turnover (βsim=20%). The abundance decreased 10% between the years, from 3296 to

2951 individuals observed (χ^2=19.05, gl=1, p<0.001). The diversity (H') ranged from 3.9 to 3.2 and the equitability ranged from 0.84 to 0.68. There was no temporal shifts in species richness regarding overall trophic categories (p>0.05 for all groups, n = 5). Omnivorous and carnivorous birds maintained their abundances over time (p> 0.05), while granivorous birds increased 56% (χ^2=105.43; gl=1; p<0.001). However, there was a temporal decline in the abundances of specialized trophic categories: nectarivores (χ^2=63.08; gl=1; p<0.001) and insectivores (χ^2=213.31; gl=1; p<0.001), with 57% and 48%, respectively. Therefore, the dynamics of temporal variation in avifauna abundances has occurred, mainly by trophic requirements, even in those generalists and regionally abundant species.

BREEDING BIOLOGY

10243 BREEDING BIOLOGY OF NEOTROPICAL ACCIPITRIFORMES: STATE-OF-THE-ART, RESEARCH PRIORITIES, AND CONSERVATION

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Knowledge about breeding biology of Accipitriformes plays a key role in their management and conservation, also enabling greater efficiency of studies on their biology. In 1995, R. O. Bierregaard reviewed the literature on the biology of Central and South American diurnal raptors, to highlight information gaps. Similar works have been locally done in some South American countries recently, but there is still a lack of a comprehensive survey of the state-of-the-art of knowledge spanning the entire Neotropical region. We performed an analysis of the literature produced in the last 22 years, across the entire American continent, that reported breeding of 56 species of Neotropical Accipitriformes. By means of searches by keywords in Scholar Google, and in bibliographical sources, we found 441 references. Of 11 species for which the nest was undescribed in 1995, six remain in the same situation, and other two have only anecdotal data. Breeding behavior is still unknown for five species, and an additional five showed very little progress on this subject. The former "*Leucopternis* clade", now known to be polyphyletic, remains the most problematic case of lack of knowledge. Nevertheless, *circa* 64% of the evaluated species had an improvement on the state of knowledge in at least one of these breeding traits. Research continues focusing disproportionately on a few regions and species, and there is still a great lack of data on South American populations, subspecies and/or species. By incorporating current conservation relevance, we have prepared a list of 24 priority species for studies.

10257 POTENTIAL MECHANISMS THAT INFLUENCE FIRST-BREEDING SITE SELECTION AND QUALITY

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In cooperatively breeding species that delay dispersal, the proximate mechanism that drives variation in dispersal timing and subsequent selection is often unclear. We studied potential mechanisms that drive differences in first-time territory acquisition in the cooperative breeding, permanently territorial corvid, the Florida Scrub-Jay (*Aphelocoma coerulescens*, FSJ). A habitat specialist confined to fire-maintained, early successional oak scrub, FSJs experience increased fitness in high quality habitat in terms of recent fire history and amount of oak scrub available in the territory. We hypothesized that competition for the highest quality habitats helps explain the observed variation in timing of territory acquisition and in territory quality acquired by novice breeders. We examined three potential mechanisms – social dominance, duration of delay in dispersing, and mode of territory acquisition – that could affect territory acquisition. The hypotheses predicted that 1) more dominant and 2) older individuals disperse into higher quality habitat, and 3) certain acquisition modes are associated with habitat quality. We also predicted that males and females would differ. Using long-term data from Archbold Biological Station, FL, we looked at 439 individuals that became breeders between 1980 and 2015. We used linear mixed models to test for fixed and random effects. The results of the models showed that while dominance was not a significant predictor, the predictors sex, age at first breeding, and territory acquisition type were associated with differences in territory quality overall. This suggests that various mechanisms influence individual habitat selection, contributing to the variation observed.

10263 FEMALES NEED A BOND: WHAT CAN WE LEARN ABOUT CALLING BEHAVIOR AND OPPORTUNISTIC BREEDING?

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Opportunistic breeders typically express reproductive behaviors only when specific environmental conditions co-occur. In this respect, food and water availability have been described as major cues for many species. But, can social bonds influence an individual to respond to these cues by breeding? Is this reflected in their hormonal response? We tackled these questions by investigating soft call usage and sex steroid hormones in male (n=15) and female (n=18) captive zebra finches (*Taeniopgygia guttata*). We formed same-sex trios and equipped the birds with miniature wireless microphones that continuously recorded individual vocalisations during the eight days of experimentation. During the first four days, we simulated a “drought-like” environment and then triggered breeding onset by adding a variety of food, excess water, green plants, nesting material and nest boxes for an additional four days. Hormonal levels were measured at the beginning and at the end of the experiment and daily focal observations were made. The strongest bond within each trio was identified and the bird’s social status was classified as “bonded” or “single”. Males increased the amount of breeding calls after the breeding onset, but no physiological changes were

detected independent of social status. Intriguingly, all females showed a physiological response towards the breeding onset, but only females with a bond changed their vocal behavior consequently to the breeding onset. Overall, our findings reveal sex-specific strategies and sensitivity towards breeding triggers, and a decoupling between vocal and physiological adjustment in response to the breeding onset.

10320 SONG POST SELECTION AND TERRITORY LOCATION BY RESIDENT SPARROWS IN THE CENTRAL MONTE DESERT

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The study of habitat selection by birds is crucial to understand their requirements and promote their conservation. In the central Monte desert, Argentina, many patterns of habitat selection by sparrows in relation to vegetation are apparent during spring and summer but dilute during autumn and winter. We hypothesize that activities related to reproduction, which occur only during spring and summer, explain those changes in space use. We evaluate the hypothesis by studying the establishment of territories by three resident species (Ringed Warbling- Finch *Poospiza torquata*, Many-colored Chaco-Finch *Saltatricula multicolor*, and Rufous-collared Sparrow *Zonotrichia capensis*) in an open woodland of Ñacuñán Reserve, Mendoza province. We sampled vegetation and mapped territories during 2005-2008. We evaluated song post selection and used null models to test its association with the location of territories. Consistently, the three species selected algarrobo trees (*Prosopis flexuosa*) as song posts, established their territories in areas with higher density of algarrobos and with higher algarrobos in the periphery than in the center of the territories. Patterns found at different scales (territory and intra-territory) and behaviors (territorial defense) that had never been explored in the area provided plausible explanations for selection patterns observed in previous studies. The height, density and spatial configuration of algarrobos may be important in the selection of territories. This should be considered to develop management plans for algarrobo woodlands to prevent negative effects in birds due to the increasing loss of these woodlands.

10370 EFFECT OF *Molothrus bonariensis* PARASITISM ON NESTS DAILY SURVIVAL RATE OF *Polioptila dumicola*

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Brood parasitism is one of birds' main causes of nest failure. *Molothrus bonariensis* parasitism is relevant for Polioptila dumicola, as the parasitism event usually implies nest abandonment due to the host egg's breakage. Taking into account that modified environments support larger populations of M. bonariensis, the aim of the study was to

evaluate if there is a higher rate of nest failure due to M. bonariensis parasitism in isolated forest zones during laying and incubation stages. Nests were systematically searched and monitored for 2 breeding seasons in northeastern of Buenos Aires province (Argentina), recording the encounter date, initiation date (first egg layed) and fate (success or failure). A nest was considered successful if a host egg hatched. The study area was divided into 2 plots: isolated forest fragments immersed in a pasture matrix ("isolated") and forest fragments with greater continuity and connectivity ("continuous"). We monitored 33 nests in isolated forests and 58 in continuous forests. We built models with the variables of interest using MARK software. The best model included the additive effect of forest type and the occurrence of parasitism, indicating that parasitism had a negative effect on nests daily survival rate, which also decreased in isolated forests. These results are relevant for the conservation of P. dumicola populations and for taking action against the increasing degradation of Talares native forests.

10379 GREEN-BARRED WOODPECKER AND CAMPO-FLICKER NEST SURVIVAL ON BUENOS AIRES NATIVE FORESTS, ARGENTINA

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Woodpeckers are important birds as one of nature's cavity creators and very little is known about their reproductive biology. In this contribution, we analyzed the Green-barred Woodpecker (*Colaptes melanochloros*) and Campo Flicker (*C. campestris*) nest survival on native forests of northeastern Buenos Aires, Argentina. We systematically surveyed nests between September and January on 2015-16 and 2016-17 breeding seasons. We found 63 Green-Barred Woodpecker nests (53 breeding pairs) and 32 Campo Flicker' (29 pairs). Both species were analyzed together, due to the similarities on their reproductive biology and phylogenetic proximity. Of the total, 40 nests were successful (2,1 ± 0,8 and 1,9 ± 0,8 nestlings per nest; Green-Barred and Campo Flicker respectively), 27 predated and 28 abandoned (the latter due to a combination of adverse climate conditions, competition with other species and undetermined causes). Using program MARK we found that each nest had an estimated chance of survival along breeding season of 48.1% and that daily survival decreased with time of breeding and increased with the height and downward inclination of cavity entrance. These results would not discriminate between aerial nor terrestrial predators, although both of them would have their chances to find the cavity entrance reduced, as inclination and height arise. Inclination could also reduce nest exposure against adverse climate conditions. We consider relevant to point out that mature forest fragments with high trees should be conserved in order to provide appropriate nest-sites for this species.

10463 FEMALE AND MALE RUFOUS HORNEROS EJECT SHINY COWBIRD EGGS USING A MENTAL IMAGE OF THE SIZE OF THEIR OWN EGGS

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Brood parasites reduce the reproductive success of their hosts, which selects for the evolution of antiparasitic defenses, like recognition and ejection of parasite eggs. Most hosts use differences in color between their own and parasite eggs to discriminate the foreign eggs, but there are a few hosts that use differences in egg size as a cue. Generally, females are the sex responsible for ejecting the parasite eggs, but in hosts where incubation is shared, males also can eject them. Hosts may require the simultaneous presence of their own and parasite eggs to discriminate between them (i.e. they use a discordancy rule), or they may use a mental template of their own eggs. The Rufus Hornero, (*Furnarius rufus*) is a common host of the Shiny Cowbird (*Molothrus bonariensis*) that ejects parasite eggs using egg size as a cue. We studied the cognitive mechanism underlying this discrimination by parasitizing hornero nests with artificial eggs of different size, with and without the presence of host eggs. We also studied which sex was responsible for ejecting the parasite egg. We found that horneros do not need to compare the parasite egg with their own eggs, which is consistent with the hypothesis of a mental template. Both sexes ejected parasite eggs with similar frequencies and latencies. Our results provide new knowledge on a remarkable parasite-host system, as the hornero is the first host in which both sexes eject parasite eggs using egg size as a cue paired with a template based cognitive mechanism.

10582 BREEDING BIOLOGY OF THE SAFFRON-COWLED BLACKBIRD (*Xanthopsar flavus*) IN ARGENTINA AND PERSPECTIVES FOR INTENSIVE MANAGEMENT OF COLONIES

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The Saffron-cowled Blackbird is a vulnerable species endemic to the temperate grasslands of southern South America. The objective of this study was to deepen the knowledge on the basic reproductive parameters of the two populations left in Argentina in order to contribute to its conservation. In the breeding seasons of 2015 and 2016, we studied 102 active nests distributed in 15 colonies in the provinces of Entre Ríos (ER) and Corrientes (CO). The breeding season extended from October to February. The colony average size was 7-10 nest, and the clutch size was 3.78±0.99 and 3.37±0.68, in ER and CO respectively. The incubation period was of 13 days, and the nestlings period was 10 days. Hatching success was 0.91±0.14 (n=3) and 0.82±0.23 (n=14) in each year in ER, and 0.93±0.15 (n=5) and 0.89±0.17 (n=16) in each year in CO. The reproductive

success (successful nests/ total nests) was 5% and 26% in each year in ER, and 0% for each year in CO. Brood parasitism of *Molothrus bonariensis* was recorded in 63% of nests in 2015 and 20% in 2016. Predation was the main cause of nest failure (62%). We tested some intensive management techniques to protect nests from parasitism (chicks removal) and predators (exclusion of nests) in 37 nests, and organized a crew of "colony guardians" to protect each colony from poaching and other threats (agrochemicals, fire, agricultural machinery). Differences between current and previous reproductive parameters are discussed, as well as the differences between populations and the management practices.

10596 REPRODUCTIVE SUCCESS AND CAUSES OF BREEDING FAILURES OF *Buteogallus coronatus* IN CENTRAL ARGENTINA

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Between 2009 and 2015 we monitored 27 Crowned Solitary Eagle reproductive territories which we recorded active and inactive nests and we evaluated the reproductive success of this endangered species in central Argentina. In all reproductive events, the laying size was a single egg (n = 57) and we confirmed that the Crowned Solitary Eagle tries to breed every year although only few pairs can do it successfully. Hatching success per pair/year was 0,71 ± 0,16 (range = 0,50-1, n = 57), while total reproductive success was 0,60 ± 0,13 (range = 0,50-0,83, n = 57) chicks per pair/year. We recorded a greater failure during the incubation stage (n = 18) than in the rearing stage (n = 6). Infertility of the egg (n = 9) and anthropic disturbances (n = 5) were the main suspected causes in the incubation. Storms (n = 3) and fires (n = 2) were the natural factors that determined failure in both stages. Predation of a chick and drowning were exclusive causes of failure during rearing (n = 2). The drowning of an adult had generated the desertion of the nest by the other adult with the consequent death of the chick by starvation. Environmental education activities, working together with local farmer to reduce disturbances in the vicinity of nest during breeding, maintenance of firebreaks and the use of effective mitigation measures such as wildlife rescue ramps in the Australian tanks could decrease considerably the reproductive failure contributing to the recovery of the species in the region

CLIMATE

10209 CURRENT AND FUTURE DISTRIBUTION OF SPECIES AT RISK OF THE *Geothlypis* GENUS IN MEXICO

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In this work we modeled the current distribution and projected the future distribution of the three endemic species to Mexico of the genus *Geothlypis* that are in danger of extinction: *G. beldingi*, *G.flavovelata*, and *G. speciosa*. To model the distribution of the species in the present and in a context of climate change maps were generated from occurrence data product of field work and historical records. We used climatic variables from WorldClim and run the models in MaxEnt. In regard to future models we used the RCP 2.6 and 8.5 climatic scenarios for the years 2050 and 2080. For the analyses of land use and vegetation change we used the national covers of CONABIO series I (1997), IV (2009) and V (2013). The analysis showed a considerable habitat reduction of the three species, in water bodies, clumps of cattails and hard-stemmed bulrushes, due to the increase of agricultural soils, urban areas and human settlements. In the three species the distribution surface has been reduced an average of 39.8% between the years 1880 - 2017 and starting from 2017 is expected than their habitats will be reduced an average of 27.5% in the year 2050 and 52.6% in the year 2080. The fieldwork confirmed this reduction. We conclude that the species faces an alarming situation because of the fragmentation and loss of habitat. Therefore the implementation of conservation strategies that promote the conservation of these three species is urgently needed.

10219 UNUSUAL DISPERSION AND MORTALITY OF ROCKHOPPER PENGUINS. AN EVENT RELATED TO ADVERSE MARINE CONDITIONS?

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Between February and May 2016, a large number of Southern Rockhopper Penguins (*Eudyptes chrysocome*) were found molting and in part subsequently dying, apparently from starvation, along the southernmost coasts of Argentina. In order to report on the extent of this unusual dispersion and mortality event, direct counts of live and dead penguins were conducted along several coastal sites of Santa Cruz and Tierra del Fuego Provinces. To determine if this event might be related to changes in oceanographic conditions, chlorophyll a concentrations (productivity) and sea surface temperatures of the Southwest Atlantic Ocean were obtained for February and March 2016; and then

compared with the 2010-2015 averages of the corresponding month. At least 1039 molting Rockhopper penguins were reported along the surveyed shores and 50-89 % ended dying, depending on the site. The 2016 oceanographic data showed lower productivity and higher sea surface temperature around Islas Malvinas, supporting the hypothesis of a shortage of food late summer close to breeding and feeding grounds from these islands, which could explain the dispersion of these penguins towards the Patagonian shores, and which finally led to a massive starvation event. This mortality event is a reminder of one that occurred in 1986 which was suspected to be related to El Niño event. Coincidentally during 2015-2016 El Niño manifested itself with great intensity. This study highlights the severe effects that changes in oceanographic parameters prior to a critical period (molting) might have on the survival of this endangered (Vulnerable) penguin species.

10289 RAPID RANGE-WIDE CHANGES IN MIGRATORY TIMING IN VAUX'S SWIFTS (*Chaetura vauxi*)

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Rapid changes in climate have drastically altered the phenology of plants and insects worldwide. Whether migratory birds can adapt to these changes remains a paramount concern, especially in light of declining populations. In North America, aerial insectivores have experienced persistent and widespread declines over the past several decades. This guild of birds is highly diverse in their ecology and behaviour, but are united by their common diet. Changes to insect emergence dates could thus be especially challenging to aerial insectivores if they are unable to quickly adapt their migratory schedules. Here, we examine changes in migratory timing over the past decade in the Vaux's swift (*Chaetura vauxi*), a small western North American migrant with a unique migratory behaviour wherein hundreds to thousands of individuals roost communally throughout migration. Data collected by citizen scientists over the past decade provides an almost unprecedented opportunity to examine migratory timing in an estimated 80% of the entire population of Vaux's swifts. Our analysis demonstrates a rapid advancement of spring migration across much of the species' flyway. This change in migratory phenology may indicate that Vaux's swifts are able to acclimate or adapt to changing environmental conditions, which may in part explain why this species, amongst the aerial insectivores, is experiencing a less drastic population decline.

10644 EFFECTS OF CLIMATE CHANGE ON CLUTCH SIZE OF *Tyrannus* (AVES, TYRANNIDAE) SPECIES

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Reproductive strategies vary geographically as result of environmental variables but may also vary temporally due to climate change. Global temperature increased about 0.6ºC and land precipitation increased by about 2% over the last century. To date, few studies have evaluated its impacts on Neotropical species. We tested if clutch size of species pertaining to the genus *Tyrannus* varies temporally across the New World as result of temperature and land precipitation anomalies (difference between variable value in a specific year and its historical mean). We gathered breeding and climatic (temperature and precipitation) data from 1901 to 2016. We tested the relationship of clutch size with anomalies on minimum temperature (AnTmin), minimum land precipitation (AnPmin), temperature isothermality (AnIsot), and precipitation seasonality (AnPseas) using mixed models and model selection by AICc. Clutch size was positively related to AnTmin (0.006*, w*=0.40) and negatively related to AnPseas (-0.001, *w*=0.21). The responses to climatic variables indicate that individuals increase breeding investment after years with higher AnTmin and lower AnPseas, probably due to better condition of individuals after milder or less seasonal years. Impacts of climate change on clutch size may affect population dynamics through adaptive value of the individuals and, thus, represent a challenge to species persistence.

10674 EXPOSURE OF THE SPECIES OF THE GENUS *Hemitriccus* (AVES, RHYNCHOCYCLIDAE) TO FUTURE CLIMATE CHANGE

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Human-induced climate change (CC) may cause global mean temperature to rise from 1.5-4.5°C before 21st century ends. CC will have far-reaching impacts on biodiversity, including changes in species distributions and extinction rates. Ecologic Niche Models provide a useful tool for assessing exposure to CC, particularly in tropical regions that will be highly affected by CC and harbour most of the endemic and threatened species.Here, we applied ENM to assess the exposure of *Hemitriccus* species to future CC and implications for their conservation status. Endemic from South America, this genus presents 22 species in different biomes. We used eight algorithms in an ensemble forecasting approach to model current and future suitability. Occurrence data (from scientific collections, literature and online databases) were associated to current climatic variables and scenarios for 2050 (RCP 8.5: CCSM4, HadGEM, MIROC). Predictors were selected based on Variance Inflation Factor. Consensus models indicated loss of suitable area in 2050 for most species (16 from 21). Estimated losses indicated worsening in conservation status for 10 species. Contraction was predicted for Andean, Western Amazon and Atlantic Forest species (except *H. kaempferi*), while gains were predicted for Eastern Amazon species and generalists. Species can develop four responses to CC: dispersion, acclimation, adaptation and extirpation. For *Hemitriccus*, small non-migratory birds with low dispersal ability, dispersion is restricted to neighboring areas. Acclimation may be a response in areas with mild climatic variations,

whilst there is no time for genetic adaptation. Therefore, in no longer suitable areas, the most likely response would be extirpation.

10681 CLIMATE AND NOT LATITUDE SEEMS TO DETERMINE NESTING PHENOLOGY IN *Spizaetus isidori*

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Birds must adjust their breeding phenology to environmental variation and resource availability to maximize their fitness. In temperate climates, birds reproduction is usually seasonal and changes latitudinally. In the Neotropics, these patterns are less clear with some species having marked breeding seasonality and others a less clear pattern. The Black-and-chestnut Eagle (Spizaetus isidori) is a South American endemic, classified as Endangered according to the IUCN. It inhabits forest in the Andes slopes from Colombia and Venezuela to northern Argentina. Here we analyze relationships between latitude, bioclimatic variables from Wordclime and breeding phenology in this species. We estimated laying date for 18 breeding events from 10 different breeding pairs from Colombia, Ecuador, Bolivia and Argentina. Laying date in nests located in the three last countries were between ends of April and mean June without clear variation despite large latitudinal differences. Nests from Colombia showed much larger variation with earlier laying dates in nests in Cordillera Occidental, very late laying dates in Cordillera Oriental and great variation in nests located in the area where Oriental and Central Cordilleras diverge. Precipitation in the wettest quarter was related to laying date. Therefore, climatic factors and not latitude seem to explain breeding phenology in this species.

COMMUNITY ECOLOGY

10500 SPATIAL-TEMPORAL CHANGES IN FUNCTIONAL DIVERSITY OF SEED-EATING BIRD ASSEMBLAGES OF THE MONTE DESERT

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Environmental variability can promote changes in the functional diversity of communities by modifying abundances, removing species and favoring the arrival of species with traits better adapted to the new conditions. The Monte is an extensive desert region with marked climatic seasonality, so an important influence of the environmental spatial-temporal variability on the functioning of the communities is expected. To explore this idea, we used data of seed-eating bird assemblages and seed supply obtained in winter and summer for two years at three study sites in the Monte desert. We evaluated the structure of seed-eating bird assemblages expressed in the functional space through the analysis of morphological traits that describe ecological

functions performed by birds. The functional richness and functional dispersion of the assemblages differed between sites but not between winter and summer seasons, and were negatively related to the supply of grass grains. We determined the importance of particular functional bird traits and the identity of the species on the patterns observed at the assemblage level, where the degree of functional specialization of the birds and the type of seeds had a preponderant role. Functional ecological analyses linked to granivory through different assemblages provide a conceptual framework that allows the identification of community responses to environmental variables such as productivity and resource supply.

10502 BIRD THAT FED STAY: FOOD AVAILABILITY AS A BIRD COMMUNITY STRUCTURER IN CENTRAL ARGENTINA

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Food availability plays a key role in the environmental usage by animals. Year round fluctuations on food resources are a fact among temperate and subtropical regions. In central Argentina winter is characterzied by a decrease in the availability of fleshy-fruits. However at the same time some alien species fruit in that period of scarcity. The objective of this work was to test the effect of fruit availability of fleshy-fruited alien plants on the community of birds of Traslasierras Valley of Cordoba, Argentina. We conduced bird point counts in three invaded and three non-invaded sites in five periods during the year. We estimate three Hill numbers (Shannon, Simpson and Evenness) and we compare that as a function of condition and period. We found that there is an effect of the interaction between factors for each hill number (H', $p<0.0001$; D, $p=0.0001$; Evenness, $p=0.01$). In the evenness index we found a remarkable decrease that could suggest that a bottom-up effect of fleshy fruited alien plants is taking place the studied bird community.

10541 LOW AND HIGH ELEVATION UNDERSTORY BIRD ASSEMBLAGES AT THE SOUTHERNMOST PORTION OF THE ATLANTIC FOREST

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The mechanism of community assembly depends on a basic process: abiotic conditions in combination with biotic interactions define the boundaries within which a given species can inhabit a certain region. Regions with steep elevational gradients occur throughout the range of the Atlantic Forest biome and are characterized by differences in richness, abundance and species composition in several vertebrate groups. We evaluated the composition, richness, diversity and functional diversity of the bird assemblage in two elevational ranges of the Atlantic Forest in its southernmost portion in Brazil. Birds were sampled with mist nets in two environments: Araucaria Forest (900

– 1.020m) and Rain Forest (100 – 200m). Rarefied richness showed no differences in the number of species between the low- and high-elevation. ANOSIM revealed differences in species composition between the groups. There was no difference in functional diversity between altitudes. Differences in composition and diversity in avifauna at different gradient altitudes are a reflection of the vegetation structure and potential difference in the availability of resources found in these environments. Bird species ecological optima seem to be influenced by the altitude and/or complexity of the vegetation, which has immediate consequences for the management and conservation of birds in the Atlantic Forest. The maintenance of the regional species richness depends on the preservation of the species present at the two altitudes, as they harbor distinct compositions and contribute, equitably, to the region's species pool.

10599 EVALUATING THE EFFECT OF THE MESOPREDATOR RELEASE HYPOTHESIS ON THE NEST SURVIVAL OF GRASSLAND BIRDS IN NE ARGENTINA

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The “mesopredator release hypothesis” suggests that, in the absence of top predators, mesopredator populations will increase disproportionately, causing local prey populations to decrease or disappear. In Corrientes, there are no stable populations of cougar (*Puma concolor*), and the jaguar (*Panthera onca*) has been extinct for more than 60 years. In contrast, eastern Formosa maintains abundant cougar populations. In 2015, we used camera traps to study the community occupancy of nest predators in both sites, and found a pattern corresponding with the mesopredator release hypothesis (Fox occupation: 0.99 in Corrientes and 0.26 in Formosa). The aim of this study is to evaluate if there are differences in the nest survival of the Strange-tailed Tyrant (*Alectrurus risora*) and Tawny-bellied-Seedeater (*Sporophila hypoxantha*) between these two areas. The study was conducted in the Reserva El Bagual (REB), Formosa, and the Reserva San Nicolás in the Iberá Wetlands (RNI), Corrientes. During 2016, we monitored 96 nests. The daily survival rate (DSR) of A. risora was greater in REB for the nestling period (DSR= 0.951 and 0.881 respectively, $\chi 2$= 4.32, P= 0.0376); however, no differences were observed during the incubation period. In the case of S. hypoxantha, no differences were found in either of the periods (mean DSR= 0.94). The difference in the DSR of A. risora could be explained by the greater abundance of mesopredators in RNI. However, the DSR of S. hypoxantha could be attributed to differences in nest visibility due to different nest substrates: RNI (hidden between grasses) and REB (visible in herbaceous plants and bushes).

10650 ALIENS WILL PROVIDE: RESPONSE OF TROPHIC GUILDS AND DISPERSER BIRDS TO A NEW TEMPORAL RESOURCE OFFERED BY ORNITHOCOROUS EXOTIC SHRUBS

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Frugivorous birds detect and respond positively to spatio-temporal changes in fruit availability. The fluctuation of these resources, common in temperate environments, can be modified by the naturalization of ornithocorous plants. In the mountain forest of central Argentina the exotic shrubs of the genus *Pyracantha* provide a new temporary resource, because they fructify in autumn-winter (asynchronously with respect to native plants). We evaluated, using point counts during five periods of the year, how the fluctuation of resources between invaded and non-invaded sites affects the abundance of bird trophic guilds and seed dispersers. A GLMM showed that the interaction between the presence of *Pyracantha* and time period significantly affected the abundance of frugivores ($\chi^2_{4,768}$ = 75.99, P <0.001), which were more abundant in autumn-winter in sites with *Pyracantha* and similar in spring-summer between situations. Granivores and insectivores were not related to the presence of *Pyracantha*. As for the most common dispersers (*Turdus chiguanco, T. rufiventris and T. amarochalinus*), the interaction between period-presence of *Pyracantha* significantly affected their abundance, showing a similar pattern to the frugivorous guild. The results indicate that the abundance of frugivorous birds (and the abundance of the main dispersers) is temporally and spatially associated with fruit availability provided by the exotic. The patterns suggest that the availability of fruits is an important ecological factor affecting the abundance of frugivorous birds and, the main *Pyracantha´*s dispersers have a strong association with fruits, which may contribute to the effectiveness of *Pyracantha* dispersal.

10671 REGIONAL EQUIVALENCE IN SEED DISPERSAL OF CORE BIRD SPECIES: THE KEY TO EXPLAIN SEED-DISPERSAL SYNDROMES EMERGENCE?

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Most mutualistic networks have a great number of species interacting in a given moment and space, and a core of few species disproportionally affecting the remaining species. Geographical variation in core disperser diversity would intuitively avoid the emergence of seed-dispersal syndromes. However, if different core species from different sites were equivalent in the seed dispersal provided, they could act as a unique selective force for fruit traits in a regional scale. We monitored bird-fruit interactions in 10 sites of Yungas forest, in three latitudes and three altitudes. We recorded 3579 interactions between 54 bird and 69 fleshy-fruited plant species. Previous analyses have

determined eight core bird species, and six functional groups of fleshy-fruited plants in the study area. For each plant group, we calculated the quantitative component (QC) of seed-dispersal effectiveness provided by each core bird species at each site. We built bi-plots with mean QC at x-axis and ΔQC at y-axis, comparing QC's of all core bird species pairs from different altitudes in a given latitude, and vice-versa. We found (1) pools of 1-3 core birds per site with high and equivalent QC's provided to all plant groups, recognized as point groups close to the right lower corner of bi-plots; and (2) core species with even higher QC's in 1-2 sites, without equivalencies, provided to singular plant groups. We discuss how the combined action of these two core bird groups could be implied in the emergence of seed-dispersal syndromes at a regional scale.

CONSERVATION

10353 FUNCTIONAL DIVERSITY AND HABITAT SPECIALIZATION OF BIRDS AS TOOLS TO TEST FOR FOREST VEGETATION DISTURBANCE

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Forest understory insectivorous birds are one of the most sensitive groups to vegetation disturbance. We evaluated if functional diversity (FD) and habitat specialization (HS) of suboscine species (antbirds-ovenbirds), mainly understory insectivorous birds, could detect vegetation disturbance. Our study areas are two large blocks of seasonal forest in the Atlantic rainforest, southern Brazil: the Iguassu National Park (INP; 187,000ha), which is a well preserved area, and the Biological Reserve of Perobas (BRP; 9,000ha), which had selective logging and fire actions. Because BRP is composed of a mosaic of secondary forest and relatively preserved areas, we tested if the values of FD and HS of this Reserve are lower than INP. We used point counts for four years to census birds in 5 sites of 1km each in both Reserves. Traits used to obtain those FD values were foraging strategies and morphological measurements. Levels of habitat specialization of each bird species was obtained in a previous study. Based on the occurrence of species, we calculated the average of specialization of each bird assemblage of each 1km site in both Reserves. We recorded 24 species in INP and 27 species in RBP. We found that the average HS in RBP was lower than in INP ($t = 2.424$; $df = 7.365$; $p = 0.044$), but found no difference in FD values. However, when considering only the foraging traits, FD ($p = 0.048$) was higher in INP than in RBP. HS and FD of suboscines were good predictors of vegetation disturbance.

10428 EVALUATION OF PRESENCE AND HUMAN-RAPTOR CONFLICT WITH *Spizaetus isidori* IN ARGENTINE YUNGAS USING LOCAL KNOWLEDGE

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The Black-and-chestnut Eagle, *Spizaetus isidori*, inhabits subtropical and tropical montane cloud forests of the Andes slopes, along a vertical line that extends from Northwestern Venezuela to Northwestern Argentina. Categorized as Endangered, the species is persecuted in Colombia and Ecuador because they frequently prey domestic fowls. Although there are scarce records of the species in Argentina, the Black-and-chestnut Eagle partially feeds on chickens in the only known nest of the country. In order to obtain new records and to evaluate the existence and degree of conflict between the species and local settlers, we conducted 115 semi-structured interviews during 2016 in different areas of montane cloud forests in the Yungas of Jujuy and Salta provinces. We studied the perception, interactions and knowledge of local actors of diverse ethnic adscription and occupations, including rangers, cattle-breeders, school teachers and touristic guides. Only 27% of the interviewees reported they had seen the eagle at least once, and 8,7% recognized its vocalization but they had never seen the species; therefore, we identified 67 new possible sightings for *Spizaetus isidori*. Although 67% of the interviewees have domestic fowls none of them reported conflicts with the Black-and-chestnut Eagle, with the exception of three cases where the identity of the eagle could not be determine. On the other hand, the interviews allowed us to recognize the existence of conflicts with other species. Further and deeper studies on the relationship between local settlers and wildlife are needed, in order to detect and prevent potential conflicts and to reduce present problems.

10485 A NEW FLIGHT TRAINING PRE-RELEASE PROTOCOL TO INCREASE ADULT SURVIVAL PROBABILITY OF REINTRODUCED GREEN-WINGED MACAWS *Ara chloropterus*

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Reviews on Psittacine reintroduction discuss flight training as a pre-release procedure. However, they do not quantify their direct effects in the success of reintroduction programs nor do they provide details of more convenient techniques. When flight training was used, persons, using hand nets, made birds fly repeatedly inside the cage. As part of a reintroduction project of Green-winged Macaws (*Ara chloropterus)* in the Iberá marshes, (Corrientes, Argentina), we designed a pre-release training program that considers individual motivation and cognitive ability, without direct contact with the handlers. We worked with nine adults from Zoos with no previous training. We carried out, for each subject, daily sessions, spending not less than 15 minutes, in an outdoor cage (25x4x4 m). Each session consisted of at least 38 flights of 25 m each (approximately 18 km/h flight speed), reinforced with sunflower seeds and peanuts,

covering 35% of the daily energy requirements for flying macaw (88/355 kcal.). We administered reinforcements with a control remote operated feeder, designed for this project. We used vegetation obstacles to control the flight height and changes in direction. The feeders had perches with variable shape, width and stability to exercise landing. After release, we observed the macaws feeding from natural sources and/or distant controlled feeders. We suggest that this kind of pre-release training can increase survival probability of reintroduced captive-reared macaws, thus contributing to the conservation of the species.

10498 DENSITY DECREASE IN RESTINGA POPULATIONS OF THE SERRA ANTWREN (*Formicivora serrana littoralis*)

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Habitat loss and introduced species are among the main threats to the survival of small-ranged species. The Serra Antwren is a bird endemic to the Atlantic Forest with populations inhabiting forest and restinga habitats. Here we estimate the density of the population of *Formicivora serrana littoralis*, which is regionally and nationally categorized as Vulnerable. In 2016, we estimated the density of this taxon in four restinga areas through ten point counts (200m apart each other) in each area and compared the results estimated with the same methodology and areas in a study of 2006. Additionally, we measured the restinga habitat cover in the study areas between the two years by measuring the vegetation area in a buffer with a 1km radius around the central point count using Google Earth Professional imagery. We used a paired t-test to compare densities, and Wilcoxon test for habitat cover. The Serra Antwren density decreased significantly (average 89.2ind/km^2 in 2006 and 81.5ind/km^2 in 2016; t paired test = 10.78; p = 0.001) by 8.7% in the last ten years in all areas monitored, although no significant difference in habitat cover was detected. Therefore, the population decline cannot be explained by habitat loss, as measured here. High predation rates may possibly be the cause behind that decline. A recent study monitoring nest predation with cameras trap revealed exotic and invasive marmosets (*Callithrix* spp.) as the main predators of the Serra Antwren in restinga.

10529 REDLINE: CONSUMPTION OF BIODIVERSITY THROUGH ILLEGAL TRADE IN WILD BIRDS

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Traffic of wild animals is an ancient practice in Brazil. The objective of this study was to understand the species trafficked, to characterize the illegal trade, to associate the contribution of traffic to the risk of extinction and to trace possible routes of traffic in Brazil. The study was conducted in the metropolitan region of Recife (MRR),

Pernambuco, Brazil. There was n=37 visits in seven illegal trade areas in the MRR, each visit lasted one hour, where was note the species and quantities of them, as well as questions to the merchants. It was asked the price of the species and origin of the birds. Was found 93 species belonging to 19 families, four species not found in previous studies in the MRR, 12 of them are at some level of threat. More than 22.000 birds were registered in this study. Prices range from R$3.00 to R$1,200.00, a financial transaction estimated at R$20,000.00 per day of illegal trade. Bahia is the most cited place as the origins of birds, including species that do not have their geographical distribution in the state, leading to hypothesis that the state is the center of distribution of traffic in the region. *Paroaria dominicaca* and *Sporophila nigricollis* were the most frequent and abundant species. It was found that there is no direct relation between value and rarity of birds, other characteristics are considered, such as singing. In singing species, the region of origin has an influence on price, due to vocal variation.

10538 A DIAGNOSIS OF ATLANTIC FOREST AVIFAUNA IN THE PARAGUAY BIODIVERSITY CORRIDOR

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The Upper Parana Atlantic Forest (UPAF) is the most threatened ecoregion and with the richest avifauna in Paraguay. It has been reduced to less than 30% of its original coverage, with only 1.8% in protected areas. The Paraguay Biodiversity Corridor seeks to connect the remaining protected areas of UPAF, through conservation, restoration, and sustainable management, in an area of 1,220,000 hectares in six departments. With the objective of defining strategies and priorities, a biodiversity diagnosis is being carried out, seeking to identify areas with high conservation and restoration value, and determine their main challenges. From November 2015 to May 2017, 17 protected areas were visited, totaling 55 days of sampling. Birds were counted using 10-min point counts and 10-species McKinnon lists. Previous studies were reviewed, obtaining a total bird list for each area. Five hundred fifty-five bird species have been recorded in the Corridor, representing more than 80% of the birds and 78 endemic species of UPAF of the country. Fifty species (9% of the total) are of global conservation concern, of which 21 are UPAF's endemics. The areas with highest species richness, endemism, and global conservation concern are San Rafael Reserve Area for National Park (426 species, 70 endemics, 30 global conservation species), Mbaracayú Forest Natural Reserve (409, 61, 31), Tapytá Nature Reserve (377, 65, 28), Ypetí Nature Reserve (351, 58, 14) and Itabó Biological Reserve (341, 66, 20).

10648 MONITORING OF BLUE-FRONTED PARROT (*Amazona aestiva*) IN THE PANTANAL SUL, BRAZIL: 20 YEARS OF ECOLOGICAL STUDIES

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The Blue-fronted parrot (*Amazona aestiva*) stands out among species of parrots because it presents great ecological plasticity, occupies different biomes of South America (Brazil, Bolivia, Paraguay and Argentina) and is much appreciated as a pet. In Mato Grosso do Sul (MS), more than 9.000 individuals have been taken out of the wild to supply parrot's traffic since 1988. This great threat has led to the establishment of the "Blue-fronted Parrot Project", which has generated ecological information that contributes to conservation of the species since 1997. Research actions are carried out; conservation education; mapping traffic and fomenting public policies, with the MS (Pantanal, Cerrado and Atlantic Forest) as the core area. In the 20 years of project, many results were achieved, with emphasis on the breeding monitoring of the species, in 450 cavities in 25 tree species of 16 families, resulting in 638 active nests, 1,148 eggs, 625 hatched and 428 youngsters that fledged. Monitoring the fluctuation of populations throughout the year has indicated numbers between 76 to 3,156 parrots / month in the roostings sites. Diet study showed the consumption of mostly dried seeds of 48 plant species. Conservation education activities, with the motto "A happy parrot does not talk, it flies", include puppet theater, lectures and mini-courses that have already reached directly more than 15.000 people. All of the information is widely disseminated and have significantly contributed to more effective action against parrot trafficking and habitat loss, as well as alerting society.

10673 IMPLEMENTING A NATIONAL CONSERVATION PROGRAM: ANDEAN CONDOR (*Vulthur gryphus*) IN ARGENTINA

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For thousands of years, the Andean Condor (*Vultur gryphus*), the world's largest flying bird, has been honored by the native communities of South America, who consider it a sacred nexus between men and the Cosmos. Abundant in the past, this emblematic animal, a symbolic link with our cultural past, become a conservation challenge. For this reason, in August 1991, the Andean Cóndor Conservation Program was created, carried out within the framework of the Binational Program between Chile and Argentina, which has managed to reintroduce 164 specimens throughout South America. Its main objective is to assist the conservation of these birds and their ecosystem along the mountain range. The use of radiotelemetry and satellite transmission, combined with intense fieldwork, allowed the creation of a GIS specific for this species. Thanks to this technology, it is possible to know the use they make of the environment, their sleeping

places, their flight capacity, habitat preference, among other characteristics. This information guides the decision making that make the conservation of these fabulous birds and the balance of its majestic ecosystem. Thanks to the participation of indigenous communities of the Ande, who knew how to honor and live in harmony with this species, for thousands of years, before each release, ancestral ceremonies are performed. They are responsible for putting a prayer in their original language, as a message of respect and harmonious coexistence with all forms of life, so that the Spirit of the Andes can return to its place once again.

10688 MORBIDITY AND MORTALITY OF RAPTOR BIRDS IN WILDLIFE REHABILITATION CENTERS IN THE CENTRAL REGION OF CHILE

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It is known that in many countries, raptors are cataloged as vulnerable or endangered. The most important causes of raptors being admitted in wildlife rehabilitation centers (WRC) around the world are because of a human-raptor conflict. The main objective of this study was to know the morbidity and mortality of birds of prey entering three rehabilitation centers of Chile, and compare the results with other countries, giving a first approximation of the reality of rehabilitation in Chile. The results obtained were similar between all national WRC. The principal cause for admission was trauma (59% with 66% of them as fractures), orphaned birds (32%) and intoxication (97%) for diurnal raptors, nocturnal raptors, and Cathartiformes respectively. When we evaluated the final destination of birds admitted, we saw that 51% of them were euthanized or died, 39% of them were released and 10% were kept in captivity. In Chile, it is very important to know about the birds that come to different WRC, as they can provide background on the major causes affecting the health of birds of prey, which in turn can lead us in conservation projects of these species, either in the implementation of educational campaigns in different districts of the region, as in the monitoring and implementation of Chilean wildlife laws

CONSERVATION OF THREATENED & ENDANGERED SPECIES

10207 THE ENDANGERED BLACK-CAPPED VIREO (*Vireo atricapilla*): 30 YEARS OF RECOVERY MANAGEMENT IN OKLAHOMA, USA

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The Black-capped Vireo (*Vireo atricapilla)* was listed as endangered by the U.S. Fish Wildlife Service in 1987. Threats were loss of early-succession scrub habitat largely to fire-suppression, and brood parasitism by Brown-headed Cowbirds (*Molothrus ater*). Searches in the mid-1980's estimated fewer than 80 pairs in their historic range

in Oklahoma, U.S.A. Management efforts (vegetative and cowbird control) were undertaken on public and private lands. Efforts on public lands of the Wichita Mountains increased populations from some 50-70 pair in 1987-88 to a peak estimate of >5000 by 2010. Recent decline from a drought-cycle has occurred. On private lands, efforts to increase numbers in small groups of <20 pairs had limited success, with mostly local extirpation occurring. Two isolated small clusters persist in Oklahoma of about eight and 20 pairs. The histories and circumstances for these groups will be contrasted. Isolated individuals were seldom recorded. The large increase in numbers of vireos on public lands in Oklahoma and a few other sites elsewhere has justified their delisting as endangered, a pragmatic success story.

10461 INTERAGENCY COLLABORATION INCREASES MILITARY READINESS AND CONSERVES THREATENED AND ENDANGERED SPECIES

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The United States military conducts training missions across more than 25 million acres of land that together contain the highest density of threatened and endangered (T&E) species of any Federal land management agency. As development increases nationwide, this high concentration of T&E species threatens to constrain military activity, which could reduce the capability of our military to respond to national and international crises. In response to this potential constraint, the Department of Defense formed a close collaboration with the Department of Interior to manage T&E species. This collaboration increases mission flexibility while also conserving T&E species and their requisite landscapes on more than 300 large military installations across the US. One example of this partnership includes the work of biologists from the Departments of Defense and Interior and their use of prescribed fire, habitat restoration and species management to enhance military readiness at the largest air-to-ground training installation east of the Mississippi River. Much of this work is done to conserve one of the most endangered birds in North America, the Florida grasshopper sparrow, and to maintain the rare habitat on which it depends, the Florida dry prairie. This collaborative work between the Department of Defense and Department of Interior should provide a model for how regulators and regulatees can work together to ensure that both stakeholders reach their goals, which in this instance increases military readiness and conserves T&E species and their habitats.

10464 STATUS AND CONSERVATION CHALLENGES OF THE ENDANGERED VINACEOUS-BREASTED AMAZON (*Amazona vinacea*) IN PARAGUAY

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The Vinaceous-breasted Amazon is endemic to the Atlantic Forest of Southeastern Brazil, northeastern Argentina and eastern Paraguay. Formerly common, the species is

now considered Endangered on the IUCN Red List due to fragmented and small population size, while global population size is estimated at 600-1700 mature individuals. There is a continuing rapid decline owed to extensive habitat loss and fragmentation, compounded by illegal trade. In the early 1980s, Paraguay was considered to be the global stronghold for the species, but surveys during the late 1990s and early 2000s suggested a minimum remaining population of 220 birds found primarily at a cluster of sites in northeastern Paraguay. Recent national efforts aiming at understanding the status of the species showed a continuing decline and estimated the current population size at no more than 200 individuals. Fieldwork resulted in information on the species being captured for trade (and in doing so the destruction of nest sites), impacting the already small population. Furthermore, the Atlantic forest in Paraguay, on which the species depends, has been reduced to approximately 10% of its former range, leaving small habitat for the species to forage or nest in. The main challenge identified in recovering the species in Paraguay is the lack of habitat; to tackle this, conservation strategies such as the establishment of natural corridors connecting forest remnants and the use of nest boxes to increase nest site availability has been identified. The future of the species in Paraguay is fragile but there are good chances for recovery.

10524 NATURAL HISTORY AND CONSERVATION OF ALAGOAS ANTWREN, *Myrmotherula snowi*

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The Alagoas Antwren, *Myrmotherula snowi*, is an endemic passeriform, critically endangered, currently restricted to ESEC Murici, in the state of Alagoas. Aspects about the natural history of the species are still scarce, even though such information is of extreme importance for its conservation. The objective of this work is to estimate the size, structure and distribution of the individuals of the species population in ESEC Murici, to calculate the home range of the individuals and to verify the presence of M. snowi in mixed flocks. The ESEC Murici has an approximate area of 6,166 ha, characterized by two well defined seasons, rainy winter and dry summer with altitude varying from 530 to 630m. The data collection was done from August 2016 to June 2017. The population was counted by searches with playback in different points (200 m apart each other) in existing trails. The estimation of the size of the home range was calculated by the minimum convex polygon method. To verify the presence of *M. snowi* in mixed flocks the richness of the species that vocalized in her home range was characterized. Thirty-seven individuals were registered, of which 25 were adults (14 males, 11 females), six were juveniles (five males, one female), and six were not seen. The mean home range, which was still not stable, is 1.28 ha for the three pairs analyzed. A total of 46 species were recorded within the territory of *M. snowi*, which was not observed within mixed flocks.

10639 NEST BOX PROJECT FOR THE EL ORO PARAKEET (*Pyrrhura orcesi*) IN BUENAVENTURA RESERVE, EL ORO PROVINCE, ECUADOR

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The El Oro Parakeet (*Pyrrhura orcesi*) was discovered in 1980 is an endangered and endemic species of Ecuador, is found only in the Andes of the provinces of Cañar, Azuay and El Oro. Due to the intensive habitat loss in the region since more than a century ago, as a result of the expansion of the agricultural and livestock frontier, there is currently only 5% of the vegetation cover. For this reason, populations of the species have been reduced to less than 1000 individuals. The Buenaventura Reserve, the only protected area in the region, shelters a population of about 240 individuals, which are monitored annually since 2002. Within the Reserve are located 60 nest boxes that have been used by the El Oro Parakeet during the nesting season between December and April of each year. This artificial nest system has increased the parakeet's population in the reserve by 30% in the last six years. 2017 was a successful year for the nesting period of the parakeet, with 91 initial eggs and 67 nestlings, of which 50 fledged. Estimating that 93% of the nestlings become fledglings, by 2017 we would have approximately 62 fledglings, and this approximate number exceeds that of the previous three years.

10687 CONSERVATION AND STATUS OF *Ara ambiguus* AND *Ara macao* IN TWO REINTRODUCTION SITES: PUNTA ISLITA AND MANZANILLA, COSTA RICA

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Ara ambiguus is a threatened species typical of Central American forests, whose populations have declined dramaticaly due to poaching and deforestation, and *Ara macao* is a species that although not classified as threatened by the IUCN, is in population decline due to the loss and fragmentation of habitat, illegal trade and hunting. That is why Project Ara has focused its efforts on captive breeding and subsequent reintroduction of individuals of these two species in the lowland primary forests of Costa Rica, at 600msnm. Specifically, work is at two sites: Punta Islita, a tropical dry forest of the north Pacific coast of Costa Rica, where the reintroduction of individuals from *Ara macao* is carried out, and Manzanillo, a tropical humid forest of the Caribbean coast of Costa Rica, where the reintroduction of *Ara ambiguus* individuals is carried out. In each site 12 breeding pairs are available and 30 individuals have been released in both Punta Islita and Manzanillo, with 4 breeding pairs registered in the wild from the reintroduction releases in Manzanillo, obtaining 10 youngsters of these pairs. These results show that the population management activities of these species are successful.

ECOLOGICAL INSIGHTS

10211 RELATIONSHIPS BETWEEN TERRITORY SIZE, FOOD AVAILABILITY AND BODY SIZE IN THE TORRENT DUCK (*Merganetta armata*)

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Torrent Duck (*Merganetta armata*) is a fast flowing river specialist which inhabits exclusively the Andes Mountain Range, from southern Argentina and Chile to Venezuela. The species is highly territorial and uses a river section of one to two km long which they defend year-round if water levels remain stable. We studied territory size (n=25), food availability, and body size of dominant individuals in a latitudinal gradient of 25° between Jujuy and Santa Cruz provinces. We found that food availability decreases southwards while territories become bigger, as is to be expected regarding optimal foraging models. Within each river studied the largest male and female ducks occupied territories with greater food availability. This relates to male and female territorial behaviour and the territory obtaining process, which takes place outside the breeding season and without the partner's help. Finally, we did not find differences in body size (culmen length, body mass) in relationship with the latitudinal gradient. This turns out to be contrary to what was expected according to Bergman´s and Allen's rules that predict an increase in body size and decrease in length of limbs respectively, as temperature drops. Probably, the difference in altitude between the studied sites could explain these differences.

10301 STRIATED CARACARA *Phalcoboenus australis* IN FRANKLIN BAY, STATEN ISLAND: USE OF RESOURCES ON AN INVADED SCENARIO

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The striated caracara *Phalcoboenus australis* is a raptor restricted to islands in Southern Argentina and Chile, which during the breeding season (from October to March) is associated with seabird colonies, where it feeds and reproduces. We studied the breeding density, spatial pattern of nest sites and their characteristics of P. australisbreeding population on Franklin Bay (Staten Island, Argentina) during 2014-2015 and 2016-2017 breeding seasons. We found one of the lowest breeding density values report for this species (5.4 nests/Km2, n=20), although this population is associated with one of the biggest colonies of the world of Rockhopper PenguinEudyptes chrysocome. The main material used for the construction of Striated Caracara nests was tussac grass, though only half of the nests were placed in grassland. The spatial pattern

for nest sites corresponds with global and local clustering. All successful Striated Caracara nests were at least 250 m away from the nearest neighboring nest and were closer to the Rockhopper Penguin colony than failed nests. Breeding success was 0.73-0.83 successful nests/active nests and productivity was 1.27-1.42 young/active nest. The presence of invasive wild goats (Capra hircus) and red deer (Cervus elaphus), introduced in 1856 and 1974 respectively, is proposed as a factor that could be restricting P. australis nest site availability and modulating part of their population dynamics in the study area.

10308 PREY SELECTION BY THE LITTLE BLUE HERON (*Egretta caerulea*) IN GREAT WHITE HERON NATIONAL WILDLIFE REFUGE, FL, USA

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In coastal Florida where the Little Blue Heron (*Egretta caerulea*) population is declining, it is unknown if prey selection influences nest success. Little Blue Herons (LBHE) are generalists that eat insects, crustaceans, and fish, but little is known about their diet preferences. We investigated prey selection by LBHE in Great White Heron National Wildlife Refuge (GWH) in Florida, USA during the 2016 breeding period. We sampled prey communities (n=74) along mudflats using a 1-m^2 throw trap to determine prey availability. We collected stomach regurgitate (bolus) (n=53) from nests (n=26) to assess prey selection. Fish occurred in 100% of nests, contributed to 32% of available prey biomass and comprised 56% of the boluses. Gulf toadfish (*Opsanus beta*) occurred in 57% of nests, contributed to 38% of the boluses, and 12% of the available prey community. Shrimp contributed to 23% of the available prey community, occurred in 89% of nests and 39% of the boluses. LBHE did not select for crabs as they made up 45% of the available prey biomass, but were only found in 1% of boluses. Terrestrial prey contributed to 4% of the diet. These results indicate that LBHE at GWH prefer fish and shrimp, and select for *O. beta* as an essential prey species. Consumption of terrestrial prey suggests foraging habitat is not exclusive to tidal flats. Understanding how prey community composition influences LBHE habitat selection will facilitate conservation decisions, allowing managers to predict how wading bird populations are affected by environmental variations.

10355 DIET OF *Chunga burmeisteri* (CARIAMIDAE) AND THE POTENTIAL ROLE AS A SEED DISPERSER IN THE DRY CHACO FROM SALTA, ARGENTINA

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The Black-legged Seriema, *Chunga burmeisteri* (Hartl.) (Cariamidae) is a neotropical, terrestrial bird, endemic to the Great Chaco, and their diet is little known. The aim of this study was to characterize the seasonal diet of *Chunga burmeisteri* and the potential

as a seed disperser. A total of 220 feces were collected monthly (20 / month) during 1995. The diet was omnivorous and was composed of fruits (71%), arthropods (28%) and vertebrates (1%). Fleshy fruits dominated the diet during the wet and dry seasons, and contributed 62%, 74% and 79% of the frequency, volume and total weight, respectively. Most of the fruit diet was provided by *Prosopis* (*P. nigra, P. elata*) (Fabaceae), *Sarcomphalus mistol* (Rhamnaceae), *Prosopis torquata* (Fabaceae), *Celtis chichape* (Celtidaceae), *Capsicum chacoense* (Solanaceae). The most commonly consumed animal prey were arthropods of the order Coleoptera. Other animal groups which represent a smaller fraction in the diet were: Orthoptera, Hymenoptera (Formicidae), Scorpiones, Scolopendromorpha, Arachnida, micromammals, birds and reptiles. There were no significant seasonal variation in the frequency of the main food groups, but there was marked seasonality in the frequency of fleshy-fruited species. The breadth of the diet was similar between wet and dry seasons. There were 15,861 seeds (9,392/Wet season, 6,469/Dry season), 95% of which were intact and potentially viable. The most numerous seeds corresponded to *C. chacoense, C. chichape, Prosopis sp., P. torquata, S. mistol* and *Lycium boerhaviaefolium* (Solanaceae).

10441 DIET VARIATION IN BREEDING IMPERIAL CORMORANTS: IMPLICATIONS FOR TROPHIC STUDIES AND MONITORING

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Differences in diet composition were assessed between Imperial Cormorants (*Phalacrocorax atriceps*) breeding at Isla Arce and Isla Vernacci Este, Golfo San Jorge, Argentina. Both colonies are located within the Patagonia Austral Marine Park and important commercial trawl fisheries operate in adjacent waters, thus knowledge of their food requirement is fundamental to assess potential conflicts and monitor interactions. Induced regurgitations were obtained from 63 breeding adults, 32 at Isla Arce and 31 at Isla Vernacci Este, during two stages of their chick rearing period in the breeding season 2014. A total of 27 prey taxa were recorded in stomach samples at Isla Arce and 30 at Isla Vernacci Este, and at least 21 were common to both islands. Significant differences in diet composition in terms of importance by mass were found between colonies. In addition, significant differences were found between the young and old chick stages at Isla Arce but not at Isla Vernacci Este. Imperial Cormorants consumed benthic, demersal and pelagic prey confirming their plasticity in feeding habits, but their contribution differed depending on the site and chick stage. Results suggest that diet assessments and monitoring of the potential interaction between Imperial Cormorants and fisheries cannot be based on information from a single breeding stage or location, but requires the analysis of diet composition throughout the breeding cycle at a representative sample of the 17 colonies within the marine park.

10484 ECTOPARASITISM BY *Amblyomma* sp. (ACARI: IXODIDAE) IN BIRDS IN A FOREST FRAGMENT IN BRAZILIAN AMAZONIA

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Amblyomma ticks parasitize birds, and may act as disease vectors, impacting their hosts. This study investigated the ectoparasite fauna of wild birds in a forest fragment in Brazilian Amazonia. Data were collected between September 2016 and February 2017 in primary and secondary forest, and an open area on the Catuaba Experimental Farm in Senador Guiomard, Acre. The birds were captured using mist-nets and the ectoparasites were collected with tweezers, placed in labeled flasks (70% alcohol), and identified in the USP Laboratory of Parasitic Diseases (VPS/FMVZ/USP). Overall, 11.61% (n=28) of the 241 birds captured were parasitised by tick nymphs (Ixodidae), which were identified to genus or species. One species, *Amblyomma* sp., was recorded on 66.66% (n=16) of the parasitized birds, belonging to the species *Monasa nigrifrons*, *Hypocnemis subflava*, *Sittasomus griseicapillus*, *Xiphorhynchus guttatus*, *Pipra fasciicauda*, *Poecilotriccus latirostris*, *Hemitriccus flammulatus*, *Ramphotrigon megacephalum*, *Turdus amaurochalinus*, *Ramphocelus carbo*, and *Dendrocincla fuliginosa*. *Amblyomma nodosum* was recorded on 20.83% (n=5) of the infected birds, representing *Poecilotriccus latirostris*, *Ramphotrigon megacephalum*, and *Ramphocephalus carbo*, while *A. humerale* was found on 16.66% (n=4), belonging to the species *Momotus momota*, *Sittasomus griseicapillus* and *Xiphorhynchus guttatus*, and *A. longirostre* on 16.66% (n=4), belonging to *Dendroplex picus*and *Ramphocelus carbo*. These wild birds act as amplifiers of the ectoparasites. The immature *Amblyomma* exploit the blood supply of their hosts. The results of the study indicate low rates of infection by *Amblyomma* nymphs in the wild birds of the study area.

10501 GOLONDRINAS DE LAS AMERICAS: PACE OF LIFE AND LIFE HISTORY EVOLUTION IN *Tachycineta* SWALLOWS.

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Variation in life histories within and across species is one of the enduring research questions in evolutionary biology. One promising conceptual framework for examining interspecific variation is ‘pace of life’, the hypothesis that closely-related species in different environmental conditions will differ consistently in physiological and behavioral traits linked to their life histories in a way predicted by selection for the maximization of life-time reproductive output. Here we present an overview of our preliminary findings from a large comparative study of *Tachycineta* swallows across the Western Hemisphere in the Golondrinas de las Americas project. Overall, life histories differ consistently between tropical and temperate species, with tropical species showing smaller clutch sizes, lower parental care, slower growth rates and

thermoregulatory development, and lower incubation investment. These patterns are consistent with a slower pace of life in species found closer to the Equator. However, we also find results that confound a simple pace of life explanation. In particular, while time spent incubating is lower in the tropics, tropical species show higher incubation temperatures and greater thermal sensitivity of embryos. We also find higher relative investment in yolk in tropical species. Overall, our results suggest a role of both ecological conditions and evolutionary history in explaining the diversification of life histories in *Tachycineta* swallows.

10583 COLOR ABERRATION IN THE YELLOW-LEGGED THRUSH (*Turdus flavipes*) IN BRAZIL

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Color anomalies in birds may be caused by several factors. Records of aberrant white feathers are relatively frequent, and have been reported in several *Turdus* species. In this study, we describe an aberration in an adult Yellow-legged Thrush and estimate the frequency of color aberrations in this species by analyzing published photographs. We assessed 1891 photographs of adults in the WikiAves (www.wikiaves.com.br) database, taken between Nov/1999 and May/2017 in 11 Brazilian states, in addition to 27 mist-netted individuals we banded in May-August/2016 in Rio de Janeiro state. The general frequency of aberrants was 1.66%, within the expected range (1-2%) for natural populations, and was similar between males (1.69%, n=1653) and females (1.51%, n=265). In 75% of the cases, the aberrant feathers were found exclusively or predominantly on the head. All aberrant individuals had varying quantities of totally white feathers, apparently due to progressive greying or partial leucism. The only aberrant individual we captured had brown plumage, typical of the female, but several (30-40%) unpigmented feathers, mainly on the head and scattered over the body, consistent with an advanced stage of progressive greying, a non-hereditary mutation restricted to older birds and usually affecting only the plumage. However, its bill was entirely yellow, which is an exclusive trait of the male. This individual may thus represent an unprecedented case of a leucistic female whose bill lacks the dark melanin pigmentation typical of the females of the species.

10597 TROPHIC INTERACTIONS DURING CHICK REARING BETWEEN KELP GULLS AND CAYENNE AND ROYAL TERNS

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Terns are one of the most affected groups by gulls, through predation, kleptoparasitism and competition for nesting sites. These interactions have been reported in Patagonia, where Cayenne and Royal terns (*Thalasseus sandvicensis eurygnathus* and *T. maximus*,

respectively) nest in mixed-species colonies with the Kelp Gull (*Larus dominicanus*). However, trophic interactions between these species have not been yet evaluated. During 2014, we assessed their diet during the chick stage at the Bahía San Blas Protected area, through the analysis of Kelp gull chick stomach samples (n=66) and direct observation of prey deliveries (DO) in Cayenne and Royal terns (n=1747 and 1014, respectively), in addition to stable isotope analysis (SIA) of chick whole blood (n=10 per species).*Engraulis anchoita* was the main prey shared by the three species. In both tern species, this was one of the three most frequent prey (~30% DO; ~ 50% SIA), together with two silverside species, while in the Kelp Gull it showed a frequency of ~35% (both methods) followed in similar frequencies by *Cynoscion guatucupa* derived from recreational fishery waste. Both analysis indicated that the overlap between the trophic niches of Kelp Gulls and each tern species was low (Czekanowski Index<0,20, in both cases; SEAc<10%, in both cases). The trophic overlap does not seem to be relevant, but the interaction between these species should be assessed particularly in scenarios where anthropogenic resources are not available for the Kelp Gull.

ECOLOGICAL MODELS

10252 SPATIAL DISTRIBUTION OF BIRDS UNDER THE INFLUENCE OF THE TIDES IN A MUD BANK AREA IN THE ESTUARY OF CANANÉIA, STATE OF SÃO PAULO, SOUTHEASTERN BRAZIL

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The spatial distribution of individuals in a community is defined by environmental, morphological and ecological issues. In the case of estuarine bird species, the morphology directly influences the foraging and, consequently, the degree of dependence of the tidal regime. Aiming to study the dynamics of a community of birds in a mud bank (Baixio do Brocuanha) located in the City of Cananéia, south coast of the State of São Paulo, southeastern Brazil, we evaluated the spatial and temporal distribution of the species under the influence of the tide. For this, observations from a fixed point were made, counting of individuals of each species at set intervals and plotting points to estimate the location of each individual. Graphs of the mud bank's occupation dynamics and maps of spatial-temporal distribution were made based on the analysis of the collected data. From the thirty species using the Baixio do Brocuanha, Ardea alba (Linnaeus, 1758) was always the first to occupy the area and the last one to leave. The species widely distributed in the mud bank were Eudocimus ruber (Linnaeus, 1758) and Egretta caerulea (Linnaeus, 1758). Platalea ajaja (Linnaeus, 1758), Egretta thula (Molina, 1782), Ardea alba (Linnaeus, 1758) and A. cocoi (Linnaeus, 1766) were restricted to a smaller sectors of the mud bank near the water bodies. Finally, we highlight the diversity of species recorded in the area as well as the relevance of the Baixio do Brocuanha as a feeding site for resident and migratory bird species.

10260 BIRDS OF AMAZONIAN CAMPINARANAS: ARE ABUNDANCE, NESTEDNESS AND NUMBER OF SPECIES AFFECTED BY DEFORESTATION?

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Amazonian campinaranas are environments that present low primary productivity, sandy soils and a superficial water table, being under strong deforestation pressure. Such a change in this landscape may lead to shifts in abundance, nestedness, and number of animal species. Our objective was to evaluate whether deforestation in acampinaranaenvironment is altering the abundance, nestedness and number of understory bird species in the Manaus region. Six sampling sites were selected in regards to percentage of deforestation in a 500 m radius (2%, 15%, 18%, 32%, 35% and 38%). We used 20 mist nets in each site between April and May 2017. We recorded 26 species (n = 58). Sites with higher deforestation levels showed a greater number of species (nine and seven, respectively). The abundance of individuals was higher in deforested areas (GLM: R = 0.56, p = 0.0498), since individuals of species tolerant to this type of disturbance were probably able to establish themselves effectively. The number of species did not appear to be influenced by deforestation (GLM: R = 0.86, p = 0.147) or species nestedness (N = 56.94, p = 0.87), indicating that there is no major clustering of species in one site. Incampinaranasthis type of disturbance may be exerting a different influence on bird species when compared to other environments in the Amazon, probably due to their unique characteristics.

10283 SPATIAL PATTERNS OF BIRD DIVERSITY AND ESTIMATION OF AREAS OF DIFFERENT CONSERVATION VALUE IN A MEDITERRANEAN ECOSYSTEM OF CENTRAL CHILE

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The Mediterranean region of central Chile is one of the 34 global hotspots. Paradoxically it is the region most affected by human disturbance in the country and with most exotic species. This makes it necessary to understand how certain factors affect their biodiversity at the local level. A first step is to evaluate the habitat structure and its association with the biota to be conserved. Birds have been a focus of interest in determining conservation values (VC) of the territory, because it is a fundamental socio-cultural component and because many species are indicators of good environmental quality. In addition, they play an important role in the context of ecosystem services. Considering the topographic and vegetative heterogeneity of the area, plus the high taxonomic-functional avifauna diversity, we evaluated the hypothesis of high spatial and temporal variation of community structure, associated to altitude-vegetation-exposure categories, which should be consistent with different VC on a small scale. In order to determine the existence of spatial patterns of avifauna structure at microscale and its association with different habitats in a Mediterranean ecosystem, we characterize the

community structure of birds and habitat attributes, associating both types of data. In addition, we estimate VC of different areas based on community attributes: richness, diversity and taxonomic distinction. Spatial patterns suggest associations to highlands, forested vegetation and areas of the western slope. This generated significant VC differences between habitat types. The results are discussed in a ecological context and factors to be considered in the future in terms of conservation.

10547 A NEW METHODOLOGICAL APPROACH TO ASSESS THE CONSERVATION STATUS OF THE BARE-FACED CURASSOW (*Crax fasciolata*) at the southern end of its distributional range

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The Bare-faced Curassow (*Crax fasciolata*) inhabits the forest of eastern Bolivia, Paraguay, northeastern Argentina and south-central Brazil, with an extent of occurrence (EO) of 4.720.000 Km2. In 2014, the Bare-faced curassow was categorized as "Vulnerable" at global level by IUCN, on the basis of a study that suggests that in the next 35 years, the species will lose 24-36% of its habitat due to the deforestation of the Amazon forest. Nevertheless, their records in the Amazon are scarce, and there are no population estimates in other ecoregions. Because the main threats of cracids are habitat loss and hunting, we modeled the distributional range of the Bare-faced Curassow, including these variables in the southern limit of the species. We combined the results of an occupancy model, the availability of habitat and the areas of current presence known from direct observations and surveys to local people. The occupancy model indicated the presence of the Bare-faced Curassow in gallery forests is negatively affected by the village proximity. Occupancy values of >0.45 were reached from 6 km of populated areas. The EO estimated by the IUCN for Argentina is 126.585 km2, and our results suggest that the area of occupancy (AO) of the Bare-faced Curassow is 8.976 Km2 (7% of EO), of which 1.5% is protected. We propose to combine the methods of ecological niche modeling to estimate EO, along with occupancy models that take into account the threats to estimate AO, to re-evaluate the conservation status of *C. fasciolata* and other cracids.

10686 FACTORS AFECTING ABUNDANCE OF FOREST BIRDS IN CERRADO BIOME

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Local abundance patterns are recognized to exist within a species' range (geographic distribution area). In order, to understand species abundance patterns is important to assess the relationship with climatic and habitat factors. Here we used GLMs with Poisson distribution to assess hypotheses related to bird species abundance across the geographic distribution - centroid-periphery and habitat suitability, and to forest cover (NDVI – Normalized Difference Vegetation Index) in a 1km buffer around survey points. We expected to find a negative relationship between species abundance and the

distance to the distribution centroid and a positive relationship with forest amount and forest cover. We estimate a suitability bioclimatic index in program MAXENT. We conducted point-counts (3-5) in 53 independent forest sites across the Cerrado central region and estimated abundance of 31 forest bird species. The mean relative abundance found to birds was 0.38 ± 0.01 EP. We found that abundance of 25 bird species had significant relationships with variables considered. Our results showed a significant positive relationship between habitat suitability and abundance of 21 species, as was expected. We found a significant relationship between NDVI and abundance just for 11 species. Contrary to our expectations this relationship was negative for 10 of the species. For distance to centroid variable we found a significant relationship only for six species. Contrary to our expectation the relationship was positive for three of them. Habitat suitability, more then distance to centroid of distribution, showed to be an important variable to predict forest bird abundance in our study area in Cerrado region.

EVOLUTION

10201 CONTRASTING EVOLUTIONARY HISTORIES: SPECIATION ACROSS THE OPEN VEGETATION CORRIDOR

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The Neotropics possess the highest avian diversity of the world with over 3,000 breeding species. Most of this richness is found in rainforests, which include some of the most biodiverse regions in the planet like the Amazonia, the Atlantic Forest and the Yungas Forest. We studied the factors and processes that have promoted diversification in two species of passerines (*Ramphotrigon megacephalum* and *Pipraeidea* melanonota) that inhabit South American forests. Then we compared and integrated the results with those of our recently published analysis of the Neotropical forest specialist *Habia rubica*. These species have disjunct, overlapping distributions that include allopatric populations in the Atlantic Forest and the Yungas-Amazonia complex. We applied an integrative approach combining genetic (mitochondrial and nuclear markers), phenotypic (plumage coloration) and behavioral (vocalizations) evidence. The results showed that the diversification processes of each of these species possess their idiosyncratic features, but were also shaped by a common evolutionary driver: the open vegetation corridor that currently isolates the Atlantic Forest from the Yungas-Amazonia complex. However, even this shared factor has affected these species in different manners. The differences found among the phylogeographic patterns of these species seem to be associated with their distinct ecologies and dispersal abilities, which resulted in contrasting evolutionary histories across the corridor. In conclusion, our work supports the idea that the diversification of the Neotropical avifauna cannot be

restricted to a particular temporal period or explained by a single evolutionary driver, and that even the influence of major diversification factors could vary across species.

10272 GENETIC DIFFERENTIATION AND HISTORICAL DEMOGRAPHY OF WOOD STORK POPULATIONS IN BRAZILIAN WETLANDS

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Wood stork, *Mycteria Americana* (Linnaeus 1758), is a key bioindicator of environmental changes and an effective target for conservation-directed monitoring in wetlands where it inhabits and reproduces. We investigated past and contemporary levels of genetic diversity, genetic differentiation and demographic processes in wood stork populations from two major wetlands in Brazil, using nine microsatellite loci and a 237-bp fragment of mtDNA. Amapá populations (northern region) showed slightly higher levels of genetic diversity than Pantanal populations (central-western region) and both populations had a low number of effective breeders. Assignment tests, *F*-statistics, AMOVA and Bayesian clustering analyses suggested ongoing gene flow among colonies within regions, but significant differentiation between regions. Bayesian coalescent analyses based on both markers indicated that the northern population exchanged migrants with unsampled populations, and that the central-western population was founded by individuals from the north. Mitochondrial estimates revealed that the timing of population divergence broadly overlapped the Last Glacial Maximum (LGM; ~20,000 YBP) and that the central-western population expanded more recently. The results support that the coastal wetlands in northern Brazil remained stable enough to shelter large wood stork populations during the LGM, and that the storks colonized freshwater wetlands in the central-western region following deglacial warming. Conservation policies should consider Amapá and Pantanal wood stork populations as genetically differentiated units and priority should be given to Amapá populations which represent the source gene pool. Continuous genetic monitoring of wood storks could help detect signs of demographic trends that could reflect alterations or degradation in wetlands.

10284 LARGE-SCALE ASSESSMENT OF MITOCHONDRIAL ADAPTATION TO HIGH ALTITUDE IN BIRDS

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Adaptation to hypoxic highlands has been widely studied in birds, mainly analyzing molecular and physiological changes in haemoglobin. Although mitochondrial genes participate in the cellular respiratory process, their adaptive role to high altitude has

been much less studied and contrasting results have been found. Therefore, broad analyses are needed to establish general patterns of mitochondrial adaptation to hypoxic environments. In this context, using a large-scale genetic library we studied COI adaptation to high altitude in the birds in the Americas. Over 22,000 COI sequences from around 2,000 avian species from the American Continent were retrieved. Using a complete phylogeny of the birds of the World we classified 155 pairs of sister species into highland-lowland, highland-highland and lowland-lowland species pairs to compare their COI sequences. Even though we did not find evidence of a generalized adaptation to high altitude in COI, there was a tendency towards more changes in amino acids and a higher proportion of sister species with differences in their amino acids in highland-lowland and highland-highland species pairs than in lowland-lowland species pairs. We also analyzed the amino acids that did differ between highland and lowland species to assess their position and whether their properties differed, to study whether the modification could affect the protein structure and function. This is the first large-scale analysis of mitochondrial adaptation to high altitude in birds, and the results suggest that the adaptation of COI to hypoxic highlands is idiosyncratic.

10372 THE EVOLUTION OF TINAMOUS (PALAEOGNATHAE: TINAMIDAE) IN THE LIGHT OF COMBINED ANALYSIS OF MOLECULAR AND MORPHOLOGIC DATA

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Tinamous, one of the earliest diverging living avian lineages, consists of a Neotropical clade of birds inhabiting both forested and open environments. Although volant, the flight capabilities of these birds are limited. Numerous studies have recognized the monophyly of tinamous and their relationships to the flightless ratites (ostriches, emus and their relatives), placing both groups within Palaeognathae, a sister clade to all extant birds. In spite of this body of work, the phylogenetic relationships among species of tinamous remained largely overlooked. Here we review the interrelationships of the fossil and living tinamous recovered from phylogenetic analyses based on different types of data (molecular and morphological). The resulting phylogenetic hypothesis is a framework to assess diversification patterns in the evolutionary history of the group and to estimate the timing of these events using the fossil record to calibrate the tinamous phylogeny.

10381 PHYLOGENY, EVOLUTION AND CLASSIFICATION OF CUCULIFORMES BASED ON OSTEOLOGY, PLUMAGE ECOLOGY AND BEHAVIOR

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The cuckoos are cosmopolitan, except in Antarctica and Arabic regions (North Africa and West Asia). It is an ancient lineage of Neoaves, with ancestral roots in Gondwana and

about 70 mya estimated from both molecular analyses and oldest fossil record of Paleocene in Brazil. We performed a phylogenetic analysis based on parsimony of 402 characters from skeleton (n=230), plumage (n=152) and ecological/behavioral (n=20) data obtained from the examination of all currently recognized species (n=132). This analysis resulted in 89 equally parsimonious trees (1.339 minimum steps). The Bootstrap and Bremer indices indicated most nodes to be robust at all hierarchical levels and the majority of species was validated. Two main groups were observed: 1) Subordem Couides (Couidae: Coua/Carpococcyx and Centropodidae: Centropus) with 13 synapomorphies and; 2) Subordem Cuculides (Neomorphidae (Crotophagidae (Taperidae (Phaenicophaeidae (Saurotheridae (Cuculidae)))))) with 11 synapomorphies. The terrestrial behavior (ground-feeders and ground-nesters) is basal (Couides), the both terrestrial/arboreal (ground-feeders and tree-nesters) is intermediary (Neomorphidae/Crotophagidae/Taperidae) and the arboreal (tree-feeders and tree-nesters) is derived (Phaenicophaeidae/Saurotheridae/Cuculidae). The brood parasitism evolved twice independently (Taperidae and Cuculidae), corroborating the molecular analysis. Finally, we offer here a classification for Cuculiformes based on this systematic analysis and contrasting with molecular analysis. Crotophagidae, Saurotheridae and *Rhinortha* were considered incertae sedis because they are in conflict between molecular data and this analysis.

10410 NATURAL OR SEXUAL SELECTION: WHICH EVOLUTIONARY MECHANISM DETERMINES TAIL LENGTH IN *Tyrannus savana*?

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The morphological evolution of forked tails in birds can be the result of natural selection (NS), maximizing a bird's aerodynamic performance or via sexual selection (SS), increasing tail length due to the preference of the selective sex when choosing a partner. Migration can be an important factor that maximizes the aerodynamics of tails. In order to study which selection pressures (NS or SS) may act on the tail morphology of migratory birds, we compared tail length in two populations of Fork-tailed Flycatcher (*Tyrannus savana*) with different migratory behavior (resident and migratory). Additionally, we studied the relationship of tail length and reproductive success in the migratory population. If NS constrains SS in the migratory population, we expected shorter tails and lower variation in reproductive success among migratory males with different tail lengths. Tail length of the migratory males was shorter than that of resident males. We found no relationship between reproductive success and male tail length. A low frequency of extra-pair fertilizations was observed (5% -10%), which were not associated with male tail length. Long-tailed males mated with long-tailed females,

which supports the existence of a SS mechanism. These results support a tradeoff between NS and SS in the evolution of tail length in Fork-tailed flycatchers.

10436 COMPREHENSIVE ASSESSMENT REVEALS INTRASPECIFIC DIFFERENTIATION IN THE SOUTHERN LAPWING (*Vanellus chilensis*) IN SOUTH AMERICA

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Most of the studies of Neotropical diversification have been concentrated in the Amazon basin, the northern Andes and, in lesser extent, the Atlantic Forest. In contrast, very little is known about diversification in the southern cone of South America. In this context, we analyzed the evolutionary history of the Southern lapwing (*Vanellus chilensis*), a species that inhabits mainly open areas of the Neotropics, focusing the analysis on the differentiated lineage that is found in Patagonia and Chile. We performed a comprehensive analysis including the four subspecies currently recognized for this species, using mitochondrial DNA (COI and cytb) and vocalizations. Our analysis of genetic divergence and haplotype networks indicated that this species presents high intraspecific variation and a marked phylogeographic structure, with divergence between the two subspecies present in southern Argentina and Chile and those within the rest of the species as high as 1.7%. This is consistent with differences in vocalizations because songs from both Patagonian subspecies showed longer notes that possessed marked frequency oscillations. While further analyses including more samples, additional markers (genomics) and morphology are needed, our results show that despite the continuous distribution of the species there is a clear split between the populations from southern South America and those from the remainder of its distribution. This could be due to the isolation of these former in refuges during late Pliocene and Pleistocene glaciations followed by an expansion from these refuges.This highlights the importance of the glacial cycles in southern South America as a driver of diversification.

10481 EVOLUTION OF SEXUAL DICHROMATISM IN THE "BLUE" CARDINALIDS (PASSERIFORMES: CARDINALINOS)

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Sexual dichromatism in birds is assumed to be the product of sexual selection on males and/or of natural selection on females. However, there are other factors rarely considered that could have affected the evolution of differences in plumage color between males and females. Recently a negative relationship between dichromatism and body size was reported for passeriforms: both males and females of larger species tend to be more colorful but less dichromatic. Additionally, since most of the genome is shared between males and females, the increase or reduction of elaboration in the plumage of one sex can lead to changes in the other sex. However, it has never been

explored if the positive correlation between plumage elaboration of males and females is affected by the mechanism responsible of plumage coloration (i.e. pigments such as carotenoids or melanins, or the feather nano-structure). Here we explore the relationship of sexual dichromatism with body size and color production mechanism among 13 species of the Cardinalidae family (the "blue" cardinalids). Contrary to previous results, sexual dichromatism was not related to male plumage elaboration, but correlated positively with body size. We also found an effect of the presence of carotenoids in the relationship between males and females color elaboration. These results add evidence on the relationship of body size and coloration, and show for the first time that color mechanism may influence the degree of sexual differentiation in plumage color.

10539 CHANGES OVER TIME AND SPACE IN A RAPIDLY MOVING CHICKADEE HYBRID ZONE: VARIATION IN GENOTYPES, HATCHING SUCCESS, AND NESTLING SEX RATIO

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Climate warming is causing rapid pole-ward movement of some avian hybrid zones. These systems provide powerful opportunities for investigating fitness consequences of hybridization. We studied variation in hatching success and nestling sex ratio associated with northward movement of the contact zone between Black-capped and Carolina chickadees (*Poecile atricapillus*, *P. carolinensis*) using long-term data (2000 – 2017) from Hawk Mountain, Pennsylvania, along with comparative information from three other regional sites. Based on eight species-diagnostic single nucleotide polymorphism (SNP) markers, the Hawk Mountain breeding population changed over the 18 years from pure Black-capped Chickadee to strongly mixed, as Carolina Chickadees moved northward. Mean hatching success declined from > 90% to < 60%. Pair-level analysis confirmed that very low hatching success in clutches produced by mixed pairs drove the overall decline in hatching success. Contrary to expectations from Haldane's Rule, within-brood nestling sex ratio did not vary with genetic compatibility of parents or with hatching success; however, sire genotype was associated with brood sex ratio, with hybrid fathers overproducing sons. Our additional data were consistent with Hawk Mountain results: at two sites that were outside the hybrid zone throughout the study, hatching success did not change; at a fourth site, population composition shifted from mixed to nearly pure Carolina Chickadee, and annual mean hatching success improved over time. Our study shows that interbreeding by chickadees confers substantial fitness costs in a pattern matching hybrid-zone movement, but our data do not yield clear evidence for Haldane's Rule.

10633 AN INTERINDIVIDUAL ANALYSIS OF THE RELATION BETWEEN BEHAVIORAL INNOVATION AND BEHAVIORAL FLEXIBILITY IN URBANS CARACARA CHIMANGOS, MILVAGO CHIMANGO

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Behavioral innovation is considered an important source of phenotypic plasticity. One type of plasticity, flexibility, provides individuals the ability to adjust their phenotype throughout life in response to changing environmental cues. Despite evidence that at the taxon level the occurrence of behavioral innovation is considered indicative of behavioral flexibility, there are only a few studies examining the relationship between these two traits at individual level. Here, the prediction that interindividual differences in behavioral innovation is a measure of behavioral flexibility variation was tested in wild-caught Caracara Chimangos, *Milvago chimango*, from urbanized environments. We analyzed the correlation between the reversal learning performance (measure of behavioral flexibility) and several cognitive and non-cognitive components of novel problem-solving ability (estimate of innovation propensity). The results showed a positive relationship between acquisition and novel problem-solving speed. Reversal learning speed, however, did not correlate with solving latency, but show a significate correlation with the number of doors opened (positive), persistence (negative) and number of opening technique changes (positive). These results show that the tendency to solve a novel problem is positively related with associative learning ability. However, reverting a previously acquired association would not be related to the speed of resolution per se, but to the degree to which such a novel problem is solved, and with the changes in the techniques used to do so.

HABITAT RELATIONSHIPS

10245 MIXED ASSOCIATIONS BETWEEN HEMLOCK DECLINE AND LOUISIANA WATERTHRUSH HABITAT SELECTION AND FITNESS IN TENNESSEE

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Eastern Hemlock (*Tsuga canadensis*) is declining throughout the eastern United States due to the invasive Hemlock Woolly Adelgid (*Adelges tsugae*). In the southern Appalachians, hemlock is concentrated in moist ravines and its decline threatens riparian ecosystems. Directly related to birds, the majority of research on this invasion has examined changes in avian community diversity and few studies have evaluated a single species' response to hemlock-decline induced habitat changes. The Louisiana Waterthrush (*Parkesia motacilla*; LOWA) is an obligate riparian species that could be

sensitive to hemlock condition in the southern Appalachians. LOWA are known to adjust behaviorally to other anthropogenic-based environmental changes such as habitat fragmentation and stream acidification, but how they respond to hemlock decline is currently unclear. Our preliminary analysis suggests that within-territory habitat selection was not related to hemlock condition and it was not associated with LOWA foraging area selection. However, nest site selection was related to hemlock decline via an interaction with another habitat characteristic (percent ground cover of live tree boles). Nest survival was lower in areas where mixed hardwood species dominated the understory, suggesting that hemlock decline could indirectly impact LOWA fitness dependent on riparian habitat succession subsequent to local hemlock loss. In total, our results indicate that the consequences of hemlock decline for this charismatic riparian species in Great Smoky Mountains National Park are likely complicated and dynamic. Adult LOWA may be able to adjust their foraging behavior following hemlock decline-induced habitat changes; however, hemlock decline could have negative consequences on reproduction.

10274 HABITAT USE OF ROAD BORDERS BY BIRDS IN THE FLOODING PAMPA AND ITS RELATION WITH ENVIRONMENTAL VARIABLES AND RESOURCE AVAILABILITY

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Given the increasing habitat fragmentation within the Pampean Region, road borders could complement resource availability for birds, although its use depends on the characteristics of these patches. Our objective was to determine which characteristics of borders influence its use. During breeding season of 2016 we randomly selected 87 road border fragments of the Flooding Pampa. In each fragment we performed bird and food (invertebrates and/or fruits) surveys and estimated vegetation cover at local scale and within a 400 m radius. We recorded 94 species using these borders. We analyzed the relation between the abundance of the 21 most frequent species and measured variables with Generalized Lineal Models. The most influencing variables were grassland, wetland and native woodland (mainly *Celtis ehrenbergiana*) extension within borders. Birds could use these environments with different aims, nesting among them. In general, insectivores which nest in wetlands correlated with wetland (for example *Pseudocolopterix flavirostris*) and those nesting in trees (granivores and/or insectivores, for example *Phacellodomus striaticollis*) with native woodland. Almost none of the species correlated with its main food resource, probably because birds use borders as nesting places and obtain food in and outside them. We highlight the importance of vegetation structure of borders for birds. Conserving the diversity of environments present in borders would thus favor the abundance and richness of the bird assemblage that uses them.

10351 VEGETATION STRUCTURE – NEST CONCEALMENT RELATIONSHIP AFFECTS THE NEST SURVIVAL IN THE WARBLING DORADITO

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Choice of the breeding site may strongly affect survival rate in birds. At nest-site scale, factors related to vegetation structure are commonly thought to be crucial factors that modulate the probability of nest predation. The Warbling Doradito (*Pseudocolopteryx flaviventris*) is an austral migrant that breeds in several types of marsh and grassland-like habitats. Our aim was to evaluate the breeding performance of *P. flaviventris* nesting in different habitats. We specifically considered the role of vegetation structure on the Daily Survival Rate (DSR) by comparing four physiognomically different plant communities: (1-*Grass*) grasslands of *Cortaderia selloana*; (2-*Marsh*) marshes of *Juncus acutus*; (3-*Wet-grass*) wetlands of *Zizaniopsis bonariensis*; and (4-*Wet-shrub*) wetlands of *Solanum glaucophyllum*. The vegetation structure at nest site and the degree of nest concealment differed among nesting habitats. DSR was higher in *Grass* (DSR=0.966, n=36) and *Marsh* (DSR=0.947, n=7) than *Wet-grass* (DSR=0.919, n=17) and *Wet-shrub* (DSR=0.878, n=14). We recorded brood-parasitism only in nests located in *Wet-grass* (12% of nest) and *Wet-shrub* habitats (36%). DSR was mainly explained by the Vegetation Obstruction Rate (vegetation density), indicating that nests with higher concealment had higher DSR values, which were recorded in *Grass* habitat. The results show that in spite of all these being native environments there are suboptimal habitats in terms of survival and fitness, indicating that, at the population level, this system would be behaving with source-sink dynamics.

10385 EVOLVING VIEWS OF FOOD-LIMITATION IN WADING BIRDS: DIFFERING IMPLICATIONS OF PREY AND FORAGING HABITAT

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Several wading bird populations are reportedly food-limited. However, this limitation is best viewed as dynamic because wading birds are adapting to different degrees to the rapid anthropogenic changes occurring to many wetlands. We quantified the influence of one anthropogenic change, the introduction of non-native aquatic fauna, on the prey selection of the Wood Stork (*Mycteria americana*), Tricolored Heron (*Egretta tricolor*), Snowy Egret (*Egretta thula*), and Little Blue Heron (*Egretta caerulea*), in the Florida Everglades, USA, 2012-2014. Tricolored Heron and Snowy Egret prey composition was statistically similar across years, with the majority of prey biomass coming from large native marsh fish. Little Blue Herons also consumed native marsh fish, but they differed from the other two herons in that they consumed more invertebrates and non-native

fish species. Wood Stork prey composition differed from the small heron diets, composed of sunfish and non-native fish species. Whereas small herons are restricted in foraging because of their specialization on marsh fishes, their short nesting cycles allows for the phenological flexibility to delay nesting within a dry season until foraging conditions are optimal. Conversely, Wood Storks with longer nesting cycles are more temporally constrained, but appear to have greater flexibility in prey species, foraging range, and foraging habitat. An increase in the proportion of non-native species in the diets of storks suggests that storks, more so than small herons, are exploiting and may be affected by the changing species composition of aquatic fauna in South Florida.

10601 HELMETED WOODPECKER ROOSTS IN DECAY CAVITIES IN LARGE LIVING TREES: A CLUE TO ITS ASSOCIATION WITH OLD-GROWTH FOREST

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The Helmeted Woodpecker (*Celeus galeatus*) is a rare, threatened species associated with old-growth Atlantic Forest in northeast Argentina, southern Brazil and eastern Paraguay. The ecological requirements of the species that drive its association with old forest are poorly understood. Between 2013 and 2016 we radio-tracked nine Helmeted Woodpecker individuals in two selectively logged forests and one old-growth forest. One finding is that for year-round overnight roosting, Helmeted Woodpeckers invariably use decay cavities in large living trees, whereas most other woodpecker species roost in excavated cavities. Moreover, after nesting and raising fledglings, each adult roosts with one juvenile in a large decay cavity for a period of up to 67 days. The tree species used for roost cavities in old-growth forest are desired timber species targeted in selective logging. In forests with logging Helmeted Woodpeckers are rarer and use different tree species for roosting. The year-round roosting of Helmeted Woodpeckers in decay cavities in old trees, and the sharing of such cavities with juveniles during the vulnerable post–fledging months, indicate one factor in the impact of selective logging on the Helmeted Woodpecker.

10695 WHITE-HEADED WOODPECKER (*Picoides albolarvatus*) HABITAT SELECTION AND NEST SURVIVAL: A MULTI-SCALE ANALYSIS

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We located and monitored nests of white-headed woodpeckers (*Picoides albolarvatus*) in the Sierra Nevada, California, and collected data on habitat at nest sites and random sites at three spatial scales. Our goal was to identify variables important to habitat selection and for nest survival, and to determine if habitat selected by white-headed woodpeckers was consistent with habitat that resulted in higher nest survival. Habitat selection models at the nest-site and 125-ha scales best predicted White-headed Woodpecker nest occurrence. Models for nest survival generally had poor predictive

power. White-headed Woodpeckers nested on south-facing slopes and at higher elevations compared to random plots. Nest survival increased with warmer maximum temperatures, at higher elevations, and on north-facing slopes. At the nest site scale, White-headed Woodpeckers nested in areas with open canopy, high basal area of snags, and in more decayed substrates while no variables were important for nest survival at this scale. At the 1-ha scale, White-headed Woodpeckers nested in areas with higher basal area of conifers and lower density of snags while no variables were important for nest survival. At the 125-ha scale, models for habitat selection and nest survival were in agreement. Nests were found in areas of higher canopy cover of conifers and edge density and were more successful under these conditions. Our results suggest that white-headed Woodpeckers select heterogeneous landscapes when viewed across multiple scales: they selected sites with low canopy cover at nest sites within a forest of moderate canopy cover.

LANDSCAPE ECOLOGY

10212 MODIFICATION OF HABITAT USE BY *Patagioenas picazuro* DUE TO FOOD RESOURCE MANAGEMENT AT BRASÍLIA AIRPORT, BRAZIL

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The presence of animals in aerodromes puts the airport safety at risk and causes potential costs to airlines. In 2016, 84 bird strikes were recorded in Brasília Airport, of which 8% happened with *Patagioenas picazuro* (Columbiformes, Columbidae). With the purpose of mapping this bird's spatial distribution and identifying attractive situations, 302 transects of 18 km each were conducted around the two airstrips from January/2016 to March/2017. We divided the area in quadrants of 22.500 m^2 and calculated the average local densities (number of sightings/number of transects). We inferred the patterns of spatial distribution from Kernel maps. The airstrip 1 was the most used by the birds, and they showed a preference to the lateral band of brachiaria grass, a resource widely consumed by those birds (confirmation from field observations and identification of stomach contents). Therefore, in December 2016, all brachiaria grass was replaced by a seedless species. The result of the management was a modification of habitat use by the picazuro pigeon, which started to use surrounding fragments of Cerrado more frequently. The density of the picazuro pigeon reduced drastically and interventions at the airstrip were no longer necessary. Therefore, we expect to see a notable reduction in the number of strikes in the next years, and thereby show that environment management aimed at reducing attractive situations can be an efficient long-term strategy.

10285 MONTANE AVIFAUNA OF PANTEPUI: SPECIES DISTRIBUTION MODELLING AND CASE STUDY ON SERRA DA MOCIDADE, BRAZIL

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The Pantepui is a biogeographic region formed by tabular mountains, known as tepuis, and other types of mountains. The region is of great scientific interest due to its endemic biota and notorious inaccessibility. After almost two centuries of ornithological studies, knowledge about the Pantepui avifauna is still far from complete. In this study, we constructed an extensive database of species occurrences and used the Maxent algorithm to model the distribution of montane species considered characteristic of Pantepui. Subsequently, we compared the results of suitability generated in the models with empirical records from an expedition to Serra da Mocidade, a previously unexplored mountain range, located in the state of Roraima, in northern Amazonian Brazil. We modeled the distribution of 94 Pantepui montane bird species, of which 41 were recorded in Serra da Mocidade and only two of them were not predicted with precision by the modelling. Of the other 53 Pantepui species not found on Mocidade, many were predicted to occur. Some of these may have been present but gone undetected; however, we believe that most of them either lack appropriate habitat on Mocidade, were predicted to occur incorrectly due to some lack of relevant variables in the model, or were unable to colonize or remain established on Mocidade due to its high degree of isolation. This study adds knowledge about the montane bird species of Pantepui, a very little studied region, and emphasizes the importance of studies in smaller or more isolated mountains of this biogeographic region.

10523 POTENTIAL DISTRIBUTION OF THE CROWNED EAGLE (*Buteogallus coronatus*) IN SOUTH AMERICA

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Predictive models of species distribution are a good source of quantitative information for making conservation decisions. Knowledge about the Crowned Eagle (*Buteogallus coronatus*), a South American species endangered by IUCN, is scarce and in many areas is limited to records in various environments. In this study we determined the potential distribution of the Crowned Eagle in South America through a bioclimatic niche model. We obtained 698 records of the species that were combined with 20 bioclimatic variables and a LandCover coverage variable in a maximum entropy model with the Maxent program. The area under the curve was 0.88 indicating that the model has good discriminative capacity. The seasonality of T ° and the average T ° of the rainiest quarter were the most important variables to explain the presence of the species while the cover

variable was not relevant. The area weighted by the habitat suitability given by the model and using the size of territory estimated by the minimum distance between occupied nests suggests that the South American population would not exceed 9132 reproductive pairs. The model indicates two large areas with greater probability of presence: Humid Chaco and Serrano, Monte and Espinal in Argentina and savannahs in central-eastern Brazil. Although these results should be taken with caution, the present model is a first step to objectively estimate the possible population size of the species as well as to identify potential areas of presence.

10540 CHARACTERIZATION OF COASTAL WATERBIRD ASSEMBLAGES OF NORTHERN GOLFO SAN JORGE, PATAGONIA, ARGENTINA

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The northern sector of the Golfo San Jorge has an important diversity of waterbirds and is included within the Parque Interjurisdiccional Marino Costero Patagonia Austral (PIMCPA). Waterbird assemblages that utilized the intertidal areas at PIMCPA were characterized by means of direct counts during fall and spring seasons in three wetlands representing the environmental heterogeneity of the area: Bahía Melo (45°01'S, 65°53'O), Punta Tafor (45º03'S, 66º 17'O) and Caleta Malaspina (45º10'S, 66º30'O). 253 counts were achieved during three consecutive years (2013-2015). A total of 42508 individuals corresponding to 36 species were registered. The species with higher frequency of occurrence and abundance were White-rumped Sandpiper (*Calidris fuscicollis*), Kelp Gull (*Larus dominicanus*), Crested Duck (*Lophonetta specularioides*), Magellanic Oystercatcher (*Haematopus leucopodus*), Two-banded Plover (*Charadrius falklandicus*) and Chubut Steamer Duck (*Tachyeres leucocephalus*). The assemblages composition varied between the studied seasons. During fall there was a higher abundance (29686 vs. 12822) and specific richness (33 vs. 29) than in spring. However, a higher specific diversity was registered during spring (1/D; 6.2 vs. 5.4). Waterbird specific richness at PIMCPA incremented southwards independently of the studied season. This study contributed with novel information about the spatial and temporal characterization of the waterbird assemblages that utilized these marine wetlands providing useful tools for the knowledge and conservation of the natural resources of this protected area.

10549 HABITAT USE BY LOGGERHEAD SHRIKES (*Lanius ludovicianus*) IN THE LOWER MISSISSIPPI ALLUVIAL VALLEY, USA

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Loggerhead Shrikes (*Lanius ludovicianus*) are widely distributed across North America, but populations have declined precipitously across the range over the past 50 years. Shrikes occur in open habitats such as grasslands and shrubland, and hypotheses for their range-wide decline include habitat loss and degradation and changing agricultural practices. Understanding the winter ecology and population demography of shrikes has been identified as research priorities for conservation and management. To address these research needs, we conducted repeated point counts at 348 sites in eastern Arkansas (USA) between November 2016 and March 2017. At each site, we measured vegetation within 100 and 250m and used GIS to quantify land cover and crop data within 100, 250, 500 and 1,000m to characterize habitat use in winter. Land cover data include the percentage of land that is forest, grassland, developed, wetland, or cultivated crops. Site occupancy in winter was 23%, and repeated surveys and relocations of marked birds indicate that detectability is low or that shrikes readily move across the landscape. Preliminary analyses show no relationship between shrike habitat use and our land cover variables. Behavioral observations suggest that shrikes might depend heavily on rights-of-way (narrow strips of grassy habitat between roads and agricultural fields), and we will test whether habitat features, such as the width and height of grasses and presence of perches, along rights-of-way relate to the presence of shrikes. Future work includes continued surveys, nest monitoring, and banding and marking of shrikes to characterize their winter habitat use and demography.

10641 AVIAN COMMUNITY DISASSEMBLY IN HIGH ELEVATION ANDEAN CLOUD FOREST FRAGMENTS

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Neotropical avian communities are predicted to be sensitive to habitat fragmentation, especially when embedded within impermeable agricultural matrices, such as pasture. However, no research has examined the disassembly of high elevation cloud forest communities in fragmented landscapes. Using point count, flock, and mist netting surveys we examine how avian communities disassemble across a network of 28 forest fragments in northern Peru, 1800-3000m, embedded within two matrix types predicted to have differential permeability to movement: pasture and mixed agricultural. Preliminary analyses suggest that community and flock richness is strongly related to patch size and weakly related to several measures of patch isolation. Interestingly, there is no difference in community or flock richness between the two matrix types. Future analyses will examine (1) guild and species-specific responses to fragmentation, (2) the role of community assembly processes, including interspecific competition and dispersal limitation, and (3) community disassembly along gradients of agricultural land use intensification.

MIGRATION & STOPOVER BIOLOGY

10286 ALTITUDINAL MIGRATION IN RESIDENT GREATER ANTILLEAN BIRDS

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Altitudinal migration, as a seasonal phenomenon, has become more documented in recent years in tropical resident avifauna. Despite these advances, little is known about to what extent this aspect of avian phenology is present in island ecosystems. Many islands have elevational gradients where, anecdotally, birds are present at some altitudes only on a seasonal basis. Given the unevenness of habitat disturbance on Caribbean islands, fully understanding life history cycles is imperative for implementing adequate conservation plans. In order to test the hypothesis that residential birds migrate seasonally along an altitudinal gradient, we examine species occupancy patterns using eBird data and USGS elevational maps for the islands of Cuba, Hispaniola, Jamaica, and Puerto Rico. We analyze species from spatial and taxonomic perspectives to understand whether species' elevational range shifts are influenced more by evolutionary history or island topography. Furthermore, we analyze patterns inherent within eBird data to determine to what extent elevational and temporal biases are present in the available observational data, and attempt to assess the extent to which eBird data can be used to model, monitor, and analyze Caribbean bird populations.

10433 POPULATION STATUS OF NEOTROPICAL MIGRATORY SHOREBIRDS IN ARGENTINA AND CHILE

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The current state of knowledge of Neotropical shorebird species in Argentina and Chile is scarce in comparison to the knowledge of Neartic shorebirds breeding in North America. Neotropical shorebirds breed in the southern hemisphere and connect their reproductive areas with foraging and resting sites using habitats with diverse ecological features and variable climatic conditions. Populations of some species could migrate totally or partially within the same country and/or across one or more countries. Our main aim is to provide relevant information on seven focal species (*Pluvianellus socialis, Oreopholus ruficollis, Charadrius modestus, Charadrius faklandicus, Chionis albus, Haematopus leucopodus, Haematopus ater*), whose life cycle develops in different environments across southern South America, but we will focus on those migratory populations present in Argentina and Chile. We will present up-to-date information on

distribution ranges, global population size and regional and/or local trends, major migratory flyways, main breeding and feeding areas, IUCN category, and data from monitoring efforts through banding and/or satellite telemetry. Likewise, we will show maps of species occurrence from data platforms such as e-Bird and Ecoregistros. We conclude that there is a need for increased research efforts in new topics such as phylogeography, and the improvement of knowledge on migratory routes and population trends. For some species, *Oreopholus ruficollis* and *Charadrius modestus*, it is relevant to enhance the scarce knowledge related to their reproductive, foraging and habitat use ecology. Lastly, conservation strategies and actions in conjunction with local stakeholders are key to protect populations at multiple sites utilized by this shorebird species.

10449 TRACKING BIRD MIGRATION: WHAT TECHNOLOGY IS OUT THERE AND WHAT CAN WE DO WITH IT

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Measuring movement and behavior can greatly improve the conservation and management of species and their habitats. For four decades VHF radio tracking has offered a much deeper insight into avifauna than binoculars and a notebook can offer. Since the turn of the century, new technologies have reduced in size and power consumption to the extent that they are becoming suitable for use on progressively smaller species. Remote telemetry via radio, cell phone or satellite removes or reduces the need to recapture animals. The cost and difficulty of fieldwork in remote areas is dramatically reduced, often only needed to deploy the technology. Tracking highly-migratory or dispersing species becomes a reality where it was difficult-to-impossible using beeper radio tracking. Improved location accuracy and reduced power consumption allow much finer spatial and temporal scale studies to be conducted. For small migratory species, the Motus Wildlife Tracking System provides an international collaborative research network that uses a coordinated array of automated logging radio-receivers to track the movement and behavior of small flying organisms. On the other hand, Geolocators and Store on Board GPS provide a solution for small migratory species that can be recaptured after a long term study. For bigger migratory species, GPS with remote download and PTT Satellite tags can provide a solution. However, the challenge of a wider range of options is the difficulty in selecting the most appropriate technology for a particular study. In this talk we look at the different technologies and discuss how they can be used for migratory birds no matter what their size is.

10550 MIGRATION AND MOLT OF *Phalaropus tricolor*: INTEGRATING INFORMATION FROM OBSERVATIONS AND OPEN ACCESS DATABASES

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We present a review of the migration and molt patterns of Wilson's phalarope (*Phalaropus tricolor*) for Central and South America. We use personal observations and information from two open access ornithological databases (eBird and Ecoregistros) between 2015 and 2017. From a total of 1832 records available, 207 records had images that allowed the classification of individuals into one of the following categories of plumage: basic, intermediate or alternate. The data obtained were grouped in both temporal and latitudinal ranges to show the migratory movements and the progression of molt. The regularity of annual molt pattern at continental level was confirmed, and new information about the pre-alternate molt of phalaropes is reported. Phalaropes arrive at their main non-breeding sites in September in basic plumage. In February begins the pre-alternate molt of body feathers. By the end of the month begins the migration towards breeding grounds that extends until April, when most of the individuals exhibit alternate plumage at the time of departure. Finally, we report the record of a significant number of individuals that remained during the austral winter in Argentina. Although birds did not migrate, they complete their annual molting cycle. This represents the first case of an important over-summering population reported for the species in its non-breeding grounds.

10576 UNRAVELING OVER-SUMMERING CAUSES THROUGHOUT A LONG DISTANCE MIGRANT SHOREBIRD: RED KNOT (*Calidris Canutus rufa*) AT SOUTHERN SOUTH AMERICA

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The over-summering phenomenon –by whichboreal-breeding birds fail to migrate north and remain far away from their breeding areas during boreal summer / austral winter– is particularly frequent in shorebirds. The most widely accepted hypothesis to explain it proposes that it involves immature birds that do not return to breeding areas until reaching sexual maturity. While a less explored hypothesis proposes that over-summering birds do not migrate to breeding areas because of an absent or delayed pre-migratory physiological conditioning (possibly due to sterility, senility or poor health status). We studied the causes of over-summering in the Red Knot (*Calidris canutus rufa*) a near threatened shorebird species. For this purpose we captured145 over-summerersduring 2012, 2013 and 2014 at Punta Rasa, Buenos Aires, Argentina, determine the percentage of adults and juveniles, and characterize their physical and physiological condition (through weight, moult, leukocyte profile and presence of blood parasites). Our results indicate thatPunta Rasa is used as an over-summering area by juvenile and adult Red Knots, and thus the hypothesis of sexual immaturity is not enough to explain the over-summering phenomenon. Otherwise, over-summerers are birds

with absent or delayed pre-migratory physiological conditioning. Most of them showed little or no pre-migratory fat accumulation. Almost all juveniles exhibited absent or delayed moulting of primary feathers, while adults showed delayed moulting of body plumage. This work shed light on the causes of over-summering andhighlights the importance of Punta Rasa both for the recruitment of juveniles and the recovery of adult Red Knots.

10635 VARIATION IN THE DIET OF THE RED KNOT DURING NORTHWARD MIGRATION AT PLAYA COLOMBO, PENINSULA VALDES, ARGENTINA

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The Red Knot (*Calidris canutus rufa*), uses Playa Colombo (42°38' S, 64°13' W) as a feeding and resting place during their northward migration. The diet of Red Knot was compared in that beach in 2007 and in 2014. The diet was reconstructed by analysis of feces (n = 38 in 2007 and n = 30 in 2014), collected after observing monospecific flocks feeding in a sector of the beach. In addition, we studied the trophic supply of the same beach sector from benthic invertebrate samples. The diversity of prey did not vary between years, but its densities. The clam *Darina solenoides* recorded low densities in 2007 (between 11 - 117 ind /m^2) and high in 2014 (between 552 and 1285 ind /m^2), the polychaete *Travisia olens* showed similar densities at two years (between 117-733 ind /m^2 in 2007 and between 43-637 ind /m^2 in 2014). The reconstruction of the diet indicated that *D. solenoids* was present in all feces during the two years, whereas *T. olens* was present in all feces in 2007, but only in 13.3% in 2014. On average, each feces had markedly fewer clams in 2007 (0.5±0.8 clams /feces) than in 2014 (8.23±4.76 clams /feces). The clams were always selected by the Red Knot, but depending on the availability of this prey, the amount ingested and the differential ingestion of alternative species varied such as *T. olens*, which is relevant in contexts of deficit of the main prey.

MORPHOLOGY

10406 ECOMORPHOLOGICAL CHARACTERIZATION OF THE QUADRATE AND THE MANDIBLE IN THE IMPACT BLOW IN WOODPECKERS (PICIDAE)

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Here we analyzed the quadrate articulations with the braincase and the caudal shape of the mandible in order to determine their involvement with the impact blow of woodpecker's drilling habits. The skulls of 29 specimens of picids belonging to the subfamilies Picinae and Picumninae were examined, and a specimen of *Colaptes*

campestris (Picinae) was dissected. It was found that the quadrate has a double articulation in its caudal portion with its inner part articulating with the basioccipital and exoccipital processes and the lateral part with the suprameatic process of the squamous. These processes are markedly developed in Picinae, the most specialized woodpeckers in the production of cavities, but not in Jynginae, who do not drill holes in the trees, but use existing holes. These features are not present in Picumninae, which are also able to drill, but have other characteristics that allow them to bore cavities in trees without their skull being damaged. In its articulation's facet with the medial condyle of the quadrate the mandible of the Picinae and Picumninae did not present a caudal limit as it happens in other birds, forming below this facet there is a transverse flat surface where fibers of the mandibular depressor muscle are inserted . These results suggest that both the processes and their articulations with the quadrate bone, as well as the shape of the mandible, may have an important role in the absorption of the impact on the woodpeckers.

10430 IN PRAISE OF HEAD EXTENSIONS; OR HOW THE CORMORANT GOT ITS NECK

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A long neck has obvious pros and cons but in the case of highly specialised diving seabirds there seems a real dichotomy, with cormorants having extreme necks while penguins and auks have minimized necks. We attached acceleration loggers to 10 Imperial Cormorants *Phalacrocorax atriceps* and six Magellanic Penguins *Spheniscus magellanicus* to examine the difference in movement between their respective heads and bodies. The penguins had head and body attitudes and movements that broadly concurred throughout all phases of their dives. In contrast, although the cormorants followed this pattern during descent and ascent dive phases, during the bottom (foraging) phase of the dive, the head angle differed widely from that of the body and its dynamism (measured using vectorial dynamic acceleration) was over 4 times greater. It is suggested that having the head on an extended neck allows these cormorants to half the energy expenditure that they would otherwise expend if their body moved in the way their heads did. This energy-saving solution is, however, only tenable in slow-swimming species since the loss of streamlining that it engenders would make it detrimental for fast-swimming taxa such as penguins.

10453 GEOGRAPHIC DISTRIBUTION AND MORPHOLOGICAL VARIATION IN *Pteroglossus beauharnaesii* (RAMPHASTIDAE) IN SOUTHERN AMAZONIA

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The Curl-crested Aracari (*Pteroglossus beauharnaesii*) is one of the most remarkable Neotropical species, possessing a colorful body plumage and distinctive curly, shiny black crown feathers. It is a southern Amazonian species, occurring from Peru east to central Brazilian Amazonia, and in spite of its wide distribution and remarkable appearace, few studies have dealt with its morphological variation. It presents a noticeable plumage variation across its distribution regarding the presence/absence of black spots on throat and cheeks. In order to conduct a taxonomic revision of the species, we analyzed 159 skin specimens housed in seven Brazilian and North American museums. We evaluated plumage coloration and took measurements of bill, wing, tail and tarsus. Also, we estimated the number of black spots in a 2x2cm square randomly positioned in the throat and cheeks. Principal Components Analysis of the morphometric measurements and the plumage coloration analyses showed no significant or consistent differences between different populations. Nonetheless, the plumage analysis showed a consistent, notable difference between populations separated by the Rio Madeira. These results demonstrate that specimens from west of that river show distinct black spots in throat and cheeks – which are more pronounced on specimens from the extreme western distribution – while the specimens east of the river are diagnosable by the complete lack of those spots, indicating the existence of two diagnosable taxa. A molecular study of these populations is in progress, including samples from the possible contact zone between populations in the upper Madeira River.

10617 MORPHOMETRIC SIMILARITIES BETWEEN PLUMAGE FORMS OF SICALIS FLAVEOLA BRAZILIENSIS (GMELIN, 1789)

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Sicalis flaveola brasiliensis, abundant in the central region of Brazil, has three forms of plumage, one less evident (cryptic) common in young, and a female and a male yellowish. It is not known whether all females acquire yellow plumage in adulthood. The male acquires the yellow plumage only after its first breeding season. Cryptic plumage could be related to different nutritional requirements (such as lower requirement of carotenoid substances) and ecological differences (eg. microhabitat exploitation) compared to the conspicuous one. This could reflect on different adaptations in the feathers responsible for the flight. We measured the length of different feathers (primary wing - P1, P5 and P10 and retreats - R2 and R5) of individuals with cryptic (n = 31) and yellow plumage (females and males together, n = 7) from the town in Fazenda Tabapuã dos Pirineus, Cocalzinho-GO. Principal component analyzes and covariance found little difference between the two groups ($F_{(1.37)} = 0.38$, $P = 0.54$, for P10), which does not support ecological differences between them based on the parameters evaluated. These results suggest that the first flight plumage acquired by young adults is similar in size to adults. Alternatively, in the uncertainty of the correct age assessment

of cryptic individuals, it is possible to speculate about the existence of pedomorphosis phenomenon, in which young plumage would be retained throughout adult life, as already observed in species of close phylogenetic groups *Tiaris obscurus* and *Sporophila spp*.

10668 USING MORPHOMETRIC TRAITS FOR SEXUAL DETERMINATION IN THREE SPECIES OF *Elaenia*

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Sexual identification is important for understanding several biological and evolutionary processes. For monomorphic species in plumage, this task is a challenge, especially during field expeditions. The application of Discriminant Function Analysis (DFA) using morphometric measures has been shown to be an important tool for bird sexing. In this work, we applied DFA using six morphometric measures (wing, tail, tarsus and bill lengths, bill height and width) for three species of *Elaenia* (Tyrannidae) without reported sexual dimorphism: *E. cristata* (EC), *E. chiriquensis* (ECH) and *E. flavogaster* (EF). The individuals were sampled in ornithological collections and field covering a latitudinal amplitude of 2,624 km (n_{EC} = 58, n_{ECH} = 95 and n_{EF} = 72; all samples were sexed using molecular techniques). Only morphometric measures that did not respond to longitudinal variation were analyzed. Our analysis was able to accurately predict the sex of 72% of EF individuals, 74% of ECH individuals and only 60% of EC individuals according to jackknife tests. The width, length and height of the bill and the length of the tarsus were the morphological variables that provided the best rates for sex discrimination of EF. For ECH, wing and tail lengths provided the best rate for sex identification. DFA analysis has proved to be a reasonably useful tool for sexing *E. chiriquensis* and *E. flavogaster*, species apparently monomorphic, with important implications for field studies.

MOVEMENTS & DISPERSAL

10335 BREEDING DISPERSAL OF SEDGE WREN (*Cistothorus platensis*) IN THE USPALLATA VALLEY, MENDOZA, ARGENTINA

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Breeding dispersal is the movement of an individual between breeding attempts. Southern and northern temperate passerines differ in demography, life-history traits and environmental conditions that are thought to affect breeding dispersal. However, most our knowledge on breeding dispersal is based on north temperate populations. For a better understanding of breeding dispersal behavior, detailed studies from southern populations are needed. During 2010-2016 we studied breeding dispersal of a color-

banded population of Sedge Wrens (*Cistothorus platensis platensis*) in the Uspallata Valley (Mendoza, Argentina). Most dispersal events occurred when individuals dispersed within clusters of neighboring territories. We did not find significant differences in male and female breeding dispersal both within (males: 21 %, n = 92; females: 22 %, n = 65) and between (males: 44 %, n = 42; females: 43 %, n = 18) breeding seasons. However, males dispersed shorter distances than females both within (males: 444 ± 565; females: 673 ± 857 m) and between (males: 321 ± 478 m; females: 404 ± 783 m) breeding seasons. As expected, within breeding season dispersal was less frequent than between breeding season dispersal. Contrary to previous published results in other species, males were not more philopatric than females. Future work should try to identify the variables that affect breeding dispersal in the study species.

10339 RADIO-TRACKING FLEDGLING CERULEAN WARBLERS (*Setophaga cerulea*) TO DETERMINE POST-FLEDGING DISPERSAL

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The Cerulean Warbler (*Setophaga cerulea*), a Neotropical migratory songbird, is listed as a 'Species of Special Concern' by the U.S. Fish and Wildlife Service and is state-endangered in Indiana. We have been monitoring Cerulean Warbler breeding populations in Yellowwood and Morgan-Monroe state forests (Indiana, USA) since 2007 as part of a 100-year project called the Hardwood Ecosystem Experiment. This long-term study aims at determining the effects of different forest management techniques on plant and animal communities. Based on previous research, many mature forest-dependent Neotropical migrant fledglings move from mature forest habitat into areas of thick vegetation such as clear-cuts. However, it is believed that fledgling Cerulean Warblers do not follow this pattern. We are interested in determining where fledgling Cerulean Warblers disperse to after leaving their nests, but before migrating to their wintering grounds. Here we present new information on fledgling movements through radio-telemetry studies and discuss upcoming research on Cerulean Warblers in Indiana. Information gathered from our research can potentially be used to suggest forest management prescriptions that provide Cerulean Warblers with all of their required habitat needs throughout the breeding season.

10348 MOVIMIENTOS POST-REPRODUCTIVOS DE LA GAVIOTA DE OLROG NIDIFICANDO EN BAHÍA SAN BLAS: PRIMERAS EVIDENCIAS DE MIGRACIÓN PARCIAL

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The Olrog´s gull (*Larus atlanticus*) is a threatened marine bird endemic of the south coast of South America. It breeds only in Argentina (95% in south of Buenos Aires province

and 5% in Chubut). The objective was to study the spatial migration patterns of breeders from Bahía San Blas (Buenos Aires) by means of geolocators (GLS). Ending October 2014, 32 GLS were deployed on 18 males and 14 females in Islote Arroyo Jabalí Oeste. The 70% of the GLS were recovered at the beginning of October 2015. A total of 8198 fixes were obtained from January to August 2015 (during the non-breeding season). Spatial density analysis (kernel) showed that during all the studied period core areas of the gulls included the colony, Bahía Blanca and marine areas to the south of the colony. However, 23 ringed Olrog´s gulls banded in Bahía San Blas were sighted during the non- breeding season between the 2009-2013 in coastal areas of Quequén, Mar del Plata and Mar Chiquita. These results are relevant for the knowledge of the seabirds' movement ecology and also highlighted the importance of enforced protection measures during the non- breeding period in breeding areas of the species such as Bahía San Blas and Bahía Blanca.

10365 DOCUMENTING THE TIMING AND SCALE OF THE MONK PARAKEET INTRODUCTION IN MEXICO

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The pet trade contributes to the movement of exotic species around the world, with great implications for diverse ecosystems. Colonizations by non-native species that perturb native habitats are major consequences of such global trade. The demand for parrots as pets has increased in recent years, resulting in mass importations of certain parrot species, such as the monk parakeet (*Myiopsitta monachus*). Monk parakeets are abundant in their native South American range, and are relatively affordable for many households. Observations of monk parakeets in Mexico have risen exponentially, culminating in an official declaration of monk parakeets as an invasive species by the Mexican government in 2016. However, previous efforts were not undertaken to determine how the global pet trade, international and national regulations facilitated the introduction of this non-native parrot species in Mexico. Here we present findings based on citizen science reports and the scientific literature, documenting that more than 500,000 monk parakeets were imported to Mexico from 2000-2015, with the majority of imports taking place from 2008 - 2014. 98% of these individuals originated from Uruguay. Observations of monk parakeets in Mexico rose following these importations. By 2015, reports show parakeets present in 97 cities across Mexico. Both the commencement and halting of monk parakeet importations to Mexico coincided with changes in international and national regulations, as well as public health concerns. More studies are necessary to understand how this non-native parrot is colonizing the geographic extent of Mexico.

10478 FULL LIFE-CYCLE RESEARCH REVEALS FOREST BIRDS REQUIRE MULTIPLE-AGED LANDSCAPES

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Habitat requirements of birds have, until recently, been based exclusively on breeding season behaviors. We present three examples of birds shifting their activities to forests of different ages and structures after breeding. Cerulean Warblers (*Setophaga cerulea*) breed exclusively in open, mature deciduous forests. Radio tracking of fledglings revealed they preferentially move to areas of younger forests with dense midstories. Conversely, the Golden-winged Warbler (*Vermivora chrysoptera*) inhabits early-successional openings in forest to nest, but in one of two populations parents led their young into late-successional forests shortly after they fledged. Mistnetting in young regenerating stands and mature forest understories suggested that these habitats shifts are the norm for breeding birds of late-successional forests. We suggest that a mosaic of multiple age classes be maintained in forests to fulfill avian habitat needs.

10638 USE OF FISHING DISCARDS BY BREEDING KELP GULLS IN NORTHERN GOLFO SAN JORGE

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The Kelp Gull (*Larus dominicanus*) is a generalist species that includes in its diet food derived from human activities. The Parque Interjurisdiccional Marino Costero Patagonia Austral in northern Golfo San Jorge, Chubut, constitutes one of its most relevant breeding areas, and trawl fisheries operate in its adjacent waters to which it associates to take advantage of fishing discards. The main discarded component is the Common Hake (*Merluccius hubbsi*), a demersal species that is not normally available to surface feeding seabirds. In order to assess the interaction between the Kelp Gull and fishing activities, we analyzed the spatial association with operating vessels and diet of breeding individuals from Isla Vernacci Este during the incubation stage of 2015. We tracked 11 breeders using global positioning system loggers, recording 56 foraging trips which showed a mean maximum distance from the colony of 26.4 ± 11.9 km. Ten of the instrumented individuals mainly made offshore foraging trips and only one made trips exclusively to intertidal zones. The spatial overlap with fishing operations was 76%. The analysis of stomach samples (n=29) showed that 96% comprised fish, being Common Hake (FO=50%) and Anchovy (*Engraulis anchoita*) (FO=42%) the two most frequent prey. Results confirm that Kelp Gulls breeding in the Marine Park take advantage of food provided by fisheries and suggest the need to coordinate management actions within and outside the protected area.

PARENTAL CARE

10364 NESTLING PROVISIONING DOES NOT INCREASE NEST PREDATION RISK IN A SOUTH TEMPERATE POPULATION OF SEDGE WRENS (*Cistothorus platensis platensis*)

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Nest predation is a selective force that can shape parental investment in birds. Under strong predation pressure, birds are predicted to reduce clutch size and parental activity near the nest. Understanding how nest predation is affected by parental activity can shed new light on our understanding of life-history strategies. We carried out fieldwork in a Sedge Wren (*Cistothorus platensis platensis*) population in the Uspallata Valley (Argentina) to evaluate if parental activity increases the risk of nest predation. During 2011-2015 we monitored 397 nesting attempts. We filmed nests when nestlings were 2-3, 7-8 and 11-12d old to record nestling provisioning rates (feeding trips/hour). We used Cox proportional hazard models to examine whether predation risk was enhanced with high nestling provisioning rates. Only 30.51% of the nests were successful, and 49.51% of all nest failures were caused solely by nest predation. Estimates of nest predation rates were higher during the nestling stage (58.68%) than during incubation (7.16%) and laying periods (3.96%). Nestling provisioning increased with nestling age, however parental activity did not increase nest predation risk. Furthermore, predation risk declined with nestling age. Future research should evaluate if nest predation risk is affected by nest detectability, nestling begging behavior and nest defense.

10398 FACULTATIVE ADJUSTMENT OF PATERNAL CARE IN THE FACE OF FEMALE INFIDELITY IN DUNNOCKS

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A much-debated issue is whether or not males should reduce parental care when they lose paternity (i.e. the certainty of paternity hypothesis). While there is general support for this relationship across species, within-population evidence is still contentious. Among the main reasons behind such problem is the confusion discerning between- from within-individual mechanisms. Here, we tested this hypothesis empirically by investigating the parental care of male dunnocks (*Prunella modularis*) in relation to paternity. We used a thorough dataset of observations in a wild population, genetic parentage, and a within-subject centering statistical approach to disentangle paternal care adjustment within-male and between males. We found support for the certainty of paternity hypothesis, as there was evidence for within-male adjustment in paternal care when socially monogamous males lost paternity to extra-pair sires. There was little evidence of a between-male effect overall. Our findings show that monogamous males

adjust paternal care when paired to the same female partner. We also show that – in monogamous broods – the proportion of provisioning visits made by males yields fitness benefits in terms of fledging success. Our results suggest that socially monogamous females that engage in extra-pair behavior may suffer fitness costs, as their partners' reduction in paternal care can negatively affect fledging success.

10470 SIMILAR PARENTAL CARE IN *Milvago chimango*: THE IMPORTANCE OF THE ENVIRONMENT AND CHICK AGE

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Parental care in raptors is particularly important since it can have strong implications for their ecology and reproductive success. Chimango caracara (*Milvago chimango*) is the most abundant and common raptor in Argentina, as it nests in a wide variety of environments, including urbanized areas. However, there are no studies describing parental care behavior of this raptor. We performed focal observations (109 h) in 24 nests of chimango in two environments (suburban and rural) of La Pampa province, during the 2016/2017 breeding season. Incubation time did not differ significantly between males and females, and it did not depend on lay size. Similarly, feeding rate (number of prey contributions per hour) was not affected by sex or by the number of chicks in nest. However, feeding rate increased significantly with the age of the chicks (presumably, in order to meet higher energetic requirements), and it was lower in the suburban environment than in the rural one. None of these variables (incubation time and feeding rate) explained the variation in the reproductive parameters of chimangos (reproductive success and productivity), a fact that evokes the importance of other external factors for the success of nests. These findings suggest a similar (and symmetrical) parental investment of both sexes in the reproductive stage. Concerning the degree of anthropic disturbance in the environment, it could be affecting the parental care behavior of those raptors that nest in urbanized areas.

10610 PARENTAL CARE OF *Elaenia albiceps* NESTLINGS IN THE ANDEAN-PATAGONIAN FOREST

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Most bird species provide biparental care, which is mainly observed in monogamous species with altricial nestlings. Biparental care is not always equally shared between sexes, and females provide more parental care than males. Our aim was study the parental care in *Elaenia albiceps*, which is a migrant species that reproduces in the Andean-Patagonian Forest during the austral summer. Field work took place in Esquel,

Argentina, in two breeding seasons (2015/2016 and 2016/2017). *E. albiceps* nests were filmed during 45-90 minutes when the nestlings were 2-4 days and 9-10 days old (they were close to becoming fledglings). The provisioning frequency of nestlings by females was higher than the one for males, and both sexes increased their provisioning frequencies with the age of nestlings. Those females that fed nestlings alone had the same provisioning frequency than the females assisted by males. We differentiated males that did not provide parental care, males that had scarce contribution to parental care and males that had provided as much parental care as females. Our results indicate that *E. albiceps* has a biparental care biased to females, and females can raise a brood without contribution of the male. The great variance in parental care observed among males suggests a monogamous mating system with a low paternity certainty, therefore further studies about the frequency of extra-pair fertilizations will allow us to assess this hypothesis.

10640 THREE'S A CROWD: UNUSUAL MATING SYSTEM IN THE BURROWING OWL

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Despite the well-documented negative impact of the development of urban centers on biodiversity, some native species have invaded these environments and developed stable populations. The Burrowing Owl (*Athene cunicularia*), in the city of Bahía Blanca (Buenos Aires, Argentina), has a stable population in which the presence of unusual reproductive units with more than two individuals has been detected. In this work, the factors that promote the occurrence of these reproductive units are investigated and the costs and benefits for their members are evaluated, discussing possible ecological and evolutionary connotations. Between 1% and 4% of the territories observed in the study population between 2009 and 2012 (n = 1210) opted for this strategy. Through kinship molecular analysis, it was determined that a reproductive pair shared the territory with a son of one or both members. These units tended to be formed in areas of higher quality and in territories more distant from conspecifics. However, neither the general aggregation of the territories nor the urbanization of the environment affect the formation of these breeding units, which rejects the hypotheses referring to urbanization as a promoter of these cooperative units. These units presented the same reproductive success as the couples and did not show significant differences in the defense of their territories, although productivity did increase. If not predated, the presence of non-reproductive individuals sharing the territory benefits the breeding pair by increasing the number of surviving chicks.

PHYLOGEOGRAPHY

10238 NEW TALES FOR THE AMAZONIAN BIOGEOGRAPHY: OVERLOOKED FLOOODPLAIN FOREST BIRDS SUPPORT CLIMATIC OSCILLATION IN PLEISTOCENE AS DRIVER FOR SPECIATION IN THE AMAZON

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The majority of the bird phylogeographic studies in the Amazonian region has focused on organisms of non flooded ombrophilous forests ("terra-firme"). However, this biome is an intricate mosaic of several distinct environments with endemic fauna and flora, such as floodplain forest habitats of "varzea" and "igapo". Organisms from these environments tend to respond differently from those of terra-firme even when affected by the same historical events. In this study we perform a comparative phylogenomic analysis of floodplain forest birds, testing diversification hypotheses regarding the potential effects of past changes in this environment. We selected three widely distributed species complexes of Antbirds comprising 12 subspecific taxa (Myrmoborus lugubris, Myrmotherula assimilis and Thamnophilus nigrocinereus/cryptoleucus) with similar geographic distributions. We sequenced ~2,300 Ultra Conserved Elements and applied coalescent and model-based methods to test alternative hypotheses concerning divergence time, population size change, and gene flow. Our findings support a similar pattern of diversification for these species complexes starting at Mid- and Late-Pleistocene and gene flow mainly between populations occurring at white water rivers. This supports the central portion of the Amazon Basin, in the confluence of Solimões and Negro rivers, as a suture zone for these taxa. These results indicate that historical processes affecting the level of Amazonian rivers related to climatic oscillations during the Pleistocene promoted cladogenetic events along the Amazon floodplains.

10273 PHYLOGEOGRAPHY OF *Phacellodomus rufifrons*, WITH IMPLICATIONS FOR SOUTH AMERICAN DRY FOREST BIOGEOGRAPHY

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The Seasonally Dry Tropical Forest (SDTF) is a unique biome that is characterized by relatively low annual rainfall with strong seasonal droughts. In South America, this biome occurs in disjunct patches that arc around the Amazon, from the coastal regions of Colombia and Venezuela to the Caatinga of northeastern Brazil. A model proposed to explain this unusual distribution pattern is known as the Pleistocene Arc Hypothesis, and suggests that the present-day extent of the SDTF, particularly in the Southern portion of the continent, is a remnant of a wider "arc" of dry forest habitat that existed during

cooler and drier periods of the Pleistocene. This study examines the phylogeography of the Rufous-fronted Thornbird (*Phacellodomus rufifrons)*, a common furnariid bird found throughout South American in non-contiguous regions of SDTF, to test whether its evolutionary and biogeography history is consistent with the Pleistocene Arc Hypothesis. Mitochondrial DNA analysis revealed very low levels of differentiation between populations along the proposed arc. Species distribution models projected to the mid-Holocene and Last Glacial Maximum suggested that there was previously greater connectivity between currently disjunct populations of *P. rufifrons*. These results are in accordance with the predictions of the Pleistocene Arc Hypothesis, and suggest that the current distribution and genetic structure of the species is due to climate-induced vicariance within the past 25,000 years. Additionally, the northern populations of this species were found to be genetically divergent from those in the south, lending credence to the idea that those populations may represent a distinct species.

10281 MOLECULAR SYSTEMATIC AND BIOGEOGRAPHY OF THE *Synallaxis rutilans* SPECIES COMPLEX (AVES: PASSERIFORMES: FURNARIIDAE)

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The Amazon has some of the highest levels of bird diversity of the world; however, phylogeographic studies show that this diversity is underestimated. The *Synallaxis rutilans* Temminck, 1823, species complex deserves attention for presenting a restricted distribution in the Amazon basin, and does not have a satisfying taxonomic resolution. The most recent taxonomic review for this species complex used morphological characters and recognized three taxons: *rutilans*, *amazonica* and *omissa*, and proposed the validation of *S. omissa* as a species, because of plumage differences and restrict geographic distribution to the Belém endemism area. For a better understanding of the evolution process in this complex we did phylogeographic and population analysis, sequencing two mitochondrial markers for 86 individuals, consisting of all taxons in this complex. The phylogenetic analysis recovered a well-supported topology by Bayesian inference with seven evolutionary lineages, whose distribution is delimited by the Amazon river's main tributaries. The diversification of these lineages started at about 1.5 Ma at the Pleistocene. The population structure analysis recovered six populations. The populations of Belem and Xingu endemism area were grouped in the same population. The haplotype network showed that the lineages of the north Amazon river do not share haplotypes with the lineages of the south, the lineages of the opposite sides of the Negro River also do not share haplotypes. The historical demographic reconstruction of this complex showed that there was no population expansion or retraction over time. The molecular results corroborate the underestimated diversity of this group according to the current taxonomy.

10439 PHYLOGEOGRAPHY AND MORPHOLOGICAL EVOLUTION IN A NEOTROPICAL DRY FOREST BIRD (*Phytotoma rutila*: COTINGIDAE)

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The Andean mountain range has a complex and dynamic landscape, which could have impacted on biological evolution and sparked allopatric and parapatric diversification events. Allopatric diversification occurs between isolated populations, and parapatric diversification could occur with gene flow across environmental gradients, such as those occurring in the slopes of the Andes. *Phytotoma rutila* (Cotingidae) is a good model to study diversification across the Andean slopes because occurs from lowland Chaco (subepecies *rutila*) to highland dry forests (subspecies *angustirostris*). We addressed the morphological and genetic variation of *P. rutila* to study its evolutionary history and to evaluate if the two subspecies represents evolutionary independent lineages. We studied two nuclear genetic markers (VLDL and G3PDH) and one mitochondrial marker (CB) of 25 specimens of Argentina and Bolivia, collected from 0 to 3500 m of altitude. We also measured six morphological traits from museum specimens. The phylogeographic analyses showed that there is a moderate genetic structure between lowlands of Argentina and highlands of Bolivia (Fst= 0.49, p= 0.0002). Regarding morphology, all traits were positively associated with elevation. Particularly, wing and beak length presented the strongest association with altitude. The morphological and genetic analyses taken together indicate divergence along the elevation axis of the Andes, suggesting local adaptation of populations along environmental gradients, probably linked with temperature regimes or partial pressure of oxygen. Our study also indicates that both subspecies do not represent independent lineages because they seem to be part of continuous morphological cline and because they are not reciprocally monophyletic.

10483 DIVERSIFICATION AND BIOGEOGRAPHIC LINKS BETWEEN THE ANDEAN AND ATLANTIC FORESTS: NICHE MODELS AND PHYLOGEOGRAPHY OF TWO PASSERINES

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The Andean central forests are separated from the Atlantic Forest by the Chaco and the Cerrado. Despite this isolation, both rainforests share closely related lineages, which suggest a past connection between them. However, little is known about the timing and

the distribution of these forest connections. In this study, we used two passerines (*Arremon flavirostris* and *Trichothraupis melanops*) as models to evaluate whether the Andean and the Atlantic forests act as a refugia system, as well as to test the history of the biogeographic connection between them. Also, we evaluated the molecular systematic of intraspecific lineages of studied species. We performed phylogeographic analyses based on mitochondrial and nuclear genes, and used Approximate Bayesian Computation (ABC), as well as performed niche similarity analyses and modelled the current and past distribution. The major phylogeographic disjunction within the two species occurred during the Mid-Pleistocene and between the Andes and the Atlantic regions. The phylogeographic and ABC analyses supported that the Cerrado was the main route of connection between these regions, but without giving evidence against a Chaco connection. Paleodistribution models indicated connections between these rainforests in different periods and through the Chaco and Cerrado. Our study suggests that the biodiversity of the Andean and of the Atlantic forests could have been impacted by cycles of connections through the Cerrado and Chaco. These recurrent connections between regions could have been important for the diversification of forest taxa by promoting events of dispersion and colonization between regions. We proposed to split *A. flavirostris* into two full species.

10508 COMPARATIVE PHYLOGEOGRAPHY OF THE AVIFAUNA OF THE PERNAMBUCO CENTER OF ENDEMISM USING MITOCHONDRIAL DNA

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The Pernambuco Center of Endemism (PCE) is the most deforested and fragmented Brazilian region, with many endangered and extinct bird taxa. Nevertheless, biogeographical relationships among the PCE, the southern Atlantic Forest and Amazonia have hardly been addressed in recent studies. Derived from the classic Refuge Hypothesis (RH), the stability-extinction model assumes that during the Last Glacial Maximum the PCE was environmentally more stable, generating diversity due to its isolation. The Riverine Barrier Hypothesis (RBH) suggests that the Rio São Francisco would be responsible for the PCE biodiversity. Many taxa endemic to the PCE have their sister taxon in Amazonia and not in the Atlantic Forest indicating that there has probably been connections between these regions. Moreover, there is a likely relationship between lineages' current elevational range and their origin. We sequenced the mitochondrial gene ND2 from 237 samples from seven PCE endemic taxa to 1) test whether patterns of populational divergence and demographic history are concordant with either the RH or the RBH, and to 2) assess whether there is a relationship between a lineages' origin and current elevation. We inferred phylogeographic trees, haplotype networks, and calculated various demographic parameters. The results showed that PCE populations are well structured, monophyletic, do not share haplotypes with other populations, and are closer to the Atlantic Forest than to Amazonia, with no obvious

association with elevation. The nucleotide diversity index of the PCE populations indicated possible demographic stability and isolation in the putative Pernambuco refuge.

10527 PRELIMINARY COMPARATIVE PHYLOGEOGRAPHIC ANALYSES OF CIRCUM-AMAZONIAN PASSERINE BIRDS

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In the Neotropics, some species are distributed across the forested lowlands south and east of Amazonia, the Andean foothills, the Venezuelan Coastal Range, and the Tepuis, conforming a distributional pattern known as the 'circum-Amazonian distribution' (CiAm). To date, there is no clear understanding of the processes giving rise to this distribution. Comprehensive studies aiming at unraveling the mechanisms behind the **CiAm** in a comparative framework have not been conducted yet. Here, we 1) describe demographic parameters of populations belonging to seven groups of passerine birds that exhibit '**CiAm**' and 2) identify common phylogeographic areas and demographic patterns among them. Preliminary results based on a single mitochondrial locus (ND2) suggest that *L. nematura*, *T. palliatus*/*tenuepunctatus*, and *P. rufum* exhibit higher levels of populational structure than the rest of the complexes. ***D***values and $\boldsymbol{\pi}$ (Tajima's D and nucleotide diversity) from the groups suggest a recent expansion or absence of demographic disturbance. Two main phylogeographic units were identified: a) the central-southern Atlantic Forests and the Uruguayan Savanna (*Thamnophilus caerulescens*, *T. torquatus*/*ruficapillus*, *Lochmias nematura*, *Philydor rufum*, and *Platyrinchus mystaceus*), and b) the northernmost Atlantic Forests and the Caatinga. The Andean foothills do not seem to conform a consistent phylogeographic unit across complexes, maybe due to insufficient sampling or an absence of common evolutionary process. Taxonomically, monophily was recovered for almost all taxa. Species limits within the *T. palliates* / *tenuepunctatus* and *T. torquatus* / *ruficapillus* complexes need to be revised. Genomic data will provide further insights into the mechanisms underlaying CiAm.

10624 PHYLOGENETIC ANALYSIS OF THE *Thraupis sayaca* – *T*. *episcopus* – *T*. *glaucocolpa* SPECIES COMPLEX

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The genus *Thraupis* includes highly abundant species, whose taxonomy and phylogenetic relationships remain unclear. *Thraupis sayaca, T. episcopus and T. glaucocolpa* have been a source of discussion and taxonomic instability. These taxa are constantly changed in their specific and subspecifc status. To clarify this, we used muscle tissue samples from 15 countries that adequately represent the geographic distribution

of the complex. Preliminary results, based on two mitochondrial markers (cyt-b and ND2) and one alosomal nuclear intron (MUSK) within maximum likelihood and Bayesian inference frameworks, show that T.s glaucocolpa is sister to the rest of species in the genus.*Thraupis sayaca* and *T. episcopus* are sister groups, replacing each other in the ecotone between Amazon and dryer areas as such as the Cerrado and the Caatinga. We identified hybrid individuals along this ecotone. Hybrids were known before only from Beni, Bolivia. *Thraupis episcopus* shows geographic genetic structure. The taxon from the pacific coast (Peru, Ecuador and Colombia) is the most divergent (*Thraupis episcopus quaesita*) and it is isolated to the East by the Andes and to the North by the Darién. The other samples form two groups: *T. episcopus cana* in Colombia and Central America, and the nominate group (formed by several subspecies including *T. e. episcopus*) on the east side of the Eastern Cordillera of Colombia. Apparently, the Andes and moist forested regions are the most important biogeographical barriers for this group.

10669 CONGRUENCE BETWEEN MOLECULAR AND MORPHOLOGICAL DATA: SPECIES LIMITS IN THE *Pionus maximiliani* (KUHL, 1820) SPECIES COMPLEX

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Pionus maximiliani, the Scaly-headed Parrot, is a widely distributed species in South America, ranging from northeastern Brazil to northern Argentina. It comprises four subspecies currently accepted: *Pionus maximiliani maximiliani* (Kuhl, 1820); *P. m. siy*, Souancé, 1856; *P. m. melanoblepharus*, Miranda-Ribeiro, 1920, and *P. m. lacerus* (Heine, 1884). Our purpose was assess species limits of *P. maximiliani* based on molecular and morphological characters. We overlayed plumage coloration and morphometric characters onto a multilocus dataset comprising two mitochondrial genes (ND2 and cytb) and two autosomal nuclear introns (TGFB2 and BF5). We inferred phylogenetic trees for each gene and concatenated dataset using Maximum Likelihood and Bayesian frameworks. We also evaluated geographic patterns through haplotype networks. Plumage data uncovered the existence of two distinct plumage patterns in which subspecies siy and lacerus exhibit the first one *melanoblepharus* and *maximiliani* shared the second one. Phylogenetic trees and haplotype networks indicate two well-supported clusters corresponding to the same grouping of the subspecies *maximiliani*+*melanoblepharus* and *siy*+*lacerus*. Hence, both plumage and molecular data support the existence of two well-supported lineages suggesting that they might deserve full species status according to the general lineage species concept. The two valid taxa would be *Pionus maximiliani* (Kuhl, 1820), which ranges the Atlantic Forest, from northeastern Brazil to northeastern Argentina, and *Pionus siy* Souancé, 1856, which is distributed in forested areas within Chaco, Pantanal and Yungas regions from Mato Grosso do Sul state in Brazil, to northwestern Argentina.

PHYSIOLOGY, HORMONES, & IMMUNOLOGY

10233 AVIAN HORMONAL RESPONSE (CORT) TO AIRPORT NOISE

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Airport noise is known to generate stress and health issues in humans living around airports, but few studies have examined how birds are affected by such noise. It is possible that aircraft noise has similar effects to road noise, which has been shown to reduce reproductive success and to create barriers to avian communication. To evaluate whether birds living near airport lanes present higher stress levels than birds in natural habitats, we analysed corticosterone (CORT) levels in feathers in three airports (Brasília, Viracopos and Salvador) and three control-silent areas in Brazil. Birds were captured during the breeding periods of 2015 and 2016, when we collected tail feathers and took body measurements. We measured CORT levels in feathers after a methanol-based extraction, followed by an ELISA immunoassay. We extracted hormones from 821 individuals from 19 species and used GLMs to evaluate each species´ response. Rufous-browed Peppershrike (*C. gujanensis*), Lesser Elaenia (*E. chiriquensis*) and Suiriri Flycatcher (*S. suiriri*) presented significant increase of CORT levels in the airport areas. Plain-crested Elaenia (*E. cristata*), Swallow-tailed Hummingbird (*E. macroura*) and Southern House Wren (*T. musculus*) presented significant decreases of CORT levels in the airport area. The remaining species showed no significant differences. We are investigating whether species´ song frequency, sensitivity to urbanization, body condition, immune condition, and others variables may explain the diversity of patterns found.

10254 DOES IT MATTER WHICH EGG YOU HATCH FROM? HORMONAL, ANTIOXIDANT AND FATTY ACID COMPOSITION IN GREAT TIT PARUS MAJOR EGGS

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Environmental variability affects natural populations by affecting individuals both directly and indirectly. In birds, the mother can indirectly influence the environment in which her offspring develops by differential deposition of substances into the egg yolk. This can give rise to long-lasting effects on the offspring phenotype. Here we ask *first*, is there a consistent female egg phenotype and, *second*, do yolk components vary within females across the laying sequence? We investigated the concentrations of five steroid hormones and three antioxidants, and the proportion of four groups of fatty acids in the eggs of a wild population of great tits (*Parus major*) located in Germany. Fresh eggs from 11 entire clutches were collected. We analyzed the variation in yolk components at the within- and between-clutch level across the laying sequence. Dihydrotestosterone, all three antioxidants (vitamin E, lutein, zeaxanthin) and the proportion of the n-6 polyunsaturated fatty acid decreased over the laying sequence. The other steroid

hormones (androstenedione, testosterone, corticosterone) and the proportion of the polyunsaturated fatty acid n-3 did not change, while the proportion of saturated and monounsaturated fatty acids increased over the laying sequence. Moreover, for 10 of the 11 yolk components, we found a significant repeatability at the between-clutch level higher than 0.3. These results indicate that the developmental environment for those offsprings coming from the first eggs is of better physiological composition and that mothers consistently differ in their deposition of yolk components. Future experiments will determine how these yolk components influence chick phenotypes.

10277 FACTORS AFFECTING NESTLING BODY CONDITION AND PRO-INFLAMATORY RESPONSE IN AMERICAN KESTRELS IN CENTRAL ARGENTINA

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Factors determining body condition (BC) and pro-inflamatory response (PIC) in birds are complex. Agriculture intensification, with landscape homogenization and high pesticide use, is expected to produce low quality habitats for wildlife compared to more traditional productive systems or natural habitats. Breeding phenology and productivity may reflect the adjustment of breeding to seasonal conditions, competition between nestlings or parent quality. In temperate areas, precipitations can affect birds' performance as they determine primary production and limit foraging possibilities. Here we evaluate the effect of land use, breeding parameters and precipitations in BC and PIC of American kestrel (*Falco sparverius*) fledglings in three areas in a gradient of land uses ranging from intensive agricultural lands to mixed productive systems and natural forests. We assessed BC of 968 nestlings in four seasons and measured PIC of 164 nestlings in a single season. Mixed generalized linear models were built with BC and PIC as response variables and land use, precipitations and breeding parameters as explanatory. BC of nestlings was lower in males and varied between seasons but not between areas. Larger clutch size and accumulated rain from August to October were associated with higher BC. However, brood size, cover of sunflower, cereals and stubble, and precipitations in November-December were negatively associated with BC. Although we worked in a gradient of agricultural intensification, no clear effect of it was found. The complex effects of land use, breeding parameters and precipitations that shape PIC and BC in American kestrels may be masking negative effects of agricultural intensification.

10313 IS TELOMERE LENGTH DEPENDENT OF GENDER, AGE OR STRESS STATUS IN THE ANDEAN CONDOR?

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Sexual dimorphism has long caught the attention of evolutionary ecologists. Recently, they have paid attention in the causes of differences in telomere length (TL) between sexes. In birds, few studies have been conducted in which differences between sexes have been observed in dimorphic species and which have shown opposite results. So, with the aim of increase our understanding on TL in dimorphic species, we quantify TL of males and females in a highly dimorphic species, the Andean Condor (*Vultur gryphus*). Secondly, we evaluated the factors, most likely influence TL, like age and oxidative stress status. We observed that TL is non-sex or age-biased in the Andean condor. None of the factors associated with stress status (CORT levels and/or oxidative stress) influenced TL. Additionally, our study did not find any relationship between oxidative stress and age, nor gender, excepting for the corticosterone that were significantly and negative correlated with age, showing that younger individuals are more susceptible to stress than adults. Otherwise, our study showed that at higher levels of antioxidant capacity, individuals tended to present lower levels of pro-oxidants. Finally, we suggest that corticosterone do not affect TL directly or indirectly via oxidative stress and that antioxidant total capacity may act as a protective mechanism in Andean condors regardless of age or gender. Although the results suggest a weak association between oxidative stress and TL, other factors or mechanisms could affect TL, especially telomerase activity.

10546 IMPORTANCE OF INNATE IMMUNE GENES DURING AN OUTBREAK OF WNV: EVIDENCE FROM A NATURAL EXPERIMENT

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Numerous studies have demonstrated that genetic diversity of the acquired immune system can play an important role in host defense of pathogens. The innate immune system, however, has received relatively little attention even though it serves as the first wave of immune response. Ideally, one would study immune genes and the diseases of birds in an experimental setting, but this can be logistically challenging and time consuming. Instead, we utilized a large-scale natural experiment that was conducted over several decades and is currently in cold storage at Field Museum of Natural History. We DNA sequenced 10 toll-like receptors (TLRs) of 50 American Crows collected before and after the arrival of West Nile Virus in the Midwestern United States to determine if positive natural selection had occurred, as changes in DNA sequences may alter their ability to recognize specific pathogens and thus their effectiveness. Surprisingly, we found essentially no genetic variation across all TLR loci in either time period, and thus no evidence of selection. We then took a phylogenetic approach to determine if the lack of genetic diversity in American Crow TLRs was characteristic of corvoids in general. TLR sequences from 65 species of corvoid like birds revealed that Corvus has substantially

lower genetic diversity than other corvoid like genera. This research highlights the importance of understanding the influences of evolution and phylogenic constraints on disease response by wild bird populations.

10567 EFFECTS OF SIMULATED TERRITORIAL INTRUSIONS ON FEMALE BEHAVIOR AND MATERNALLY-DERIVED HORMONES PRESENT IN THE EGGS OF RED-WINGED BLACKBIRD

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In the northern Great Plains of US high nesting densities of Red-winged Blackbird (*Agelaius phoeniceus*) have prompted land managers and wildlife agencies to develop population management plans. However, no empirical data are available to examine the effects of variation in nesting densities on the reproductive performance of Red-winged blackbirds. Maternally-derived hormones present in egg yolks offer a potential compensatory mechanism by which adult social interactions can affect offspring success. We conducted simulated territorial intrusions using caged conspecific females on nesting female Red-winged blackbirds to examine effects of increased density and associated social interactions on aggressive behavior, maternally-derived yolk hormones, and reproductive performance. Aggressive behavior was greatest in Treatment females (i.e., those which received simulated territorial intrusions using a caged conspecific) compared to Control (i.e., those which received presentations of empty cages) and No-cage Control females (i.e., those which received no presentations), but few differences in reproductive output resulted among the experimental groups. Maternally-derived testosterone and corticosterone concentrations measured in eggs did not vary among the experimental groups. However, rates of parasitism by Brown-headed cowbirds (*Molothrus ater*) were higher, and daily nest survival probability was lower for Treatment females compared to the Control and No-cage Control females. Our results suggest that the density-dependent factors influencing yolk testosterone and corticosterone concentrations interact synergistically rather than through a simple path of increased social interactions resulting in increased concentrations in eggs in the Red-winged Blackbird.

SOCIAL BEHAVIOR

10268 EXPERIMENTAL INFLUENCE OF A NON-VOCAL SIGNAL ON THE VIGILANCE OF THE SCALED DOVE (*Columbina squammata*)

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In social contexts, information exchange between individuals is an efficient mechanism to avoid predation and coordinate escape attempts. Different signs are recognized in

avian communication, such as chemical, visual and acoustic. Considering acoustic signals, the role of non-vocal communication in antipredatory contexts have been overlooked and needs to be better exploited. The scaled dove (*Columbina squammata*) is a cryptic bird that gathers in flocks and produces a strong mechanical sound during takeoff flights. Previous study demonstrated that the emission of the non-vocal sound was related to the presence of a potential threat and that it influences the response of the other group members. In this context, we tried to experimentally evaluate the effect of the non-vocal signal on the vigilance of the *C. squammata.* The experimental manipulation was based on the emission of three different playbacks (treatments): (1) *C. squammata* takeoff flight sound (non-vocal signal), (2) vocalization of *C. squammata* and (3) vocalization of the sympatric species *Troglodytes aedon musculus*. After each treatment, the vigilance rate of the focal individual was recorded during five minutes. Results demonstrated that the non-vocal signal significantly enhanced the vigilance rate of the focal animal when compared to the other treatments. Considering the observed results, it is possible to infer that the non-vocal signal of *C. squammata* must have an important role on the communication, being used to transmit valuable information about predation risk.

10269 SINGING IN UNISON: DUETS AND CHORUSES IN BLUE MANAKINS (*Chiroxiphia caudata*)

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Acoustic signals are widespread in several animals and evolved as an important communication channel. Here, we studied sounds produced by blue manakins (*Chiroxiphia caudata*) and described its acoustic repertoire. We tested if our description based on visual inspection of spectrograms can be discriminated by five acoustic parameters of frequency (kHz) and time. We also described for the first time a synchronized vocal behavior in this species produced prior to the cooperative dance of males in lek areas. We classified and quantified the synchronization type and rate of this sound production. We recorded vocalizations and behavioral data at Mananciais da Serra Protected Area (Piraquara-PR), Brazil, and performed a linear discriminant analysis after extracting their acoustic parameters. We described ten vocalizations associated with eight behaviors and synchronized sounds, i.e. “duets” and “choruses”. Differently from other congeners, we found a large variation in this behavior. Synchronizations were antiphonal, overlapped or both and males also varied on the quantity of vocalizations emitted per bouts, ranging from two to 13 notes of three types in a sequence (3.3±1.84, n=141). Our study provided evidence that, within all Pipridae species, choruses are exclusive of blue manakins since two or more males can perform this behavior together. Although it is not clear how males choose their partners to perform together due to variation on the identity of males attending display courts, the

high variation found in duets/choruses suggests that synchronization is an important factor in female attraction.

10291 SOCIAL NETWORKS, SOCIAL CLASSES AND SOCIAL STRATEGIES IN FLORIDA SCRUB-JAY (*Aphelocoma coerulescens*)

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Social status affects and is affected by social behavior. The objectives of this study were to (1) describe differences in social behavior based on social class and (2) examine the consequences of social behavior in one year on the next year's social class. We conducted this study on a population of Florida Scrub-Jays (*Aphelocoma coerulescens*) at Archbold Biological Station. These corvids are despotic cooperatively breeding birds, where the social pair monopolizes all reproductive effort. From February - April in 2015-2017 we surveyed jays at points stratified across all territories using playback of territorial calls. The identities of all birds present at survey points were recorded. Additionally, we recorded opportunistic observations of aggregations. From these data we constructed adjacency matrices for each year. We used R package igraph to create a social network and calculate metrics to describe individuals' social behaviors in each year. Helpers scored higher than breeders in all measures of centrality, indicating that they have the most social connections, connect groups that would not otherwise be connected, and tend to interact with other well connected individuals. Birds that were helpers in 2015 and first bred in 2016 had higher centrality measures than those that did not become breeders in 2016. However from 2016 to 2017 the pattern was opposite; helpers in 2016 that became breeders in 2017 had lower centrality measures than those that did not become breeders. These results indicate that helpers with different social networking strategies differ in their probability of breeding the next year. However, these strategies have different payoffs in different years, likely due to yearly differences in demography. By combining individual and population level demographic details we better understand the benefits of various social strategies.

10292 EVIDENCE FOR A LINK BETWEEN PLUMAGE COLOR AND SOCIAL NETWORK

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In cooperative breeding species, competition for breeding space is high, and ornamentation is an important signal. In Florida Scrub-Jays (*Aphelocoma coerulescens*), juvenile plumage predicts dominance and condition but not adult reproductive fitness, likely because feather color varies across molts. Interestingly, adult color does not predict reproductive fitness, but change in color across molts in females predicts breeding space acquisition. We propose that sex-specific differences in modes of territory acquisition may drive differences in social network and plumage. We collected social network and plumage data for two annual cohorts of jays to examine the

correlation between social network and ornamentation. We measured juvenile and adult plumage color for two annual cohorts of jays, and calculated relative change in color within individuals. Social networks were estimated with a combination of systematic and incidental aggregation sampling from February through April 2015-2016. We used the 'igraph' package in R to estimate social network. No significant differences in social network existed between males and females; however, females appear to have slightly larger networks and greater betweenness. More ornamented females that increased ornamentation across molts had larger networks and associated with larger cliques. More ornamented males also had larger networks, but we found no connection between color change and social network. These results suggest a link between feather color and social network, more strongly expressed in females. Because color is linked with condition and dominance in jays, more ornamented individuals are higher quality, able to foray more widely, interact with more individuals, and acquire breeding space.

10293 SOCIAL FORAGING BEHAVIOR OF THE OLROG'S GULL (*Larus atlanticus*)

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Different studies have analyzed the trophic behaviour of the Olrog´s Gull (*Larus atlanticus*). However, the sex and foraging group size effects have not been evaluated yet. During 2016 (non-breeding season) 171 focal samplings of marked individuals (n=20) were performed at the Mar Chiquita Reserve (37°46' S, 57°27' W). A total of 426 prey were registered (more than 80% of the items were identified as the burrowing crab *Neohelice granulata*). The crab's size consumed differed from a uniform distribution (χ^2_3=62.23, P<0.05); smallest prey were the most ingested (42% small, 20% medium, 22% large, and 14% very large). The effects of sex, age and group size were tested on the crab's size consumed. None of the tested variables affected the proportion of "small" and "medium" consumed prey. Males individuals consumed more "large" prey than females and subadults more than juvenils (GLMM; t=2.98, P<0.05; t=1.82, P=0.08; respectively). Consumption of "very large" prey decreased with the increasing group size (t=-1.73, P=0.08). In relation with the evaluated trophic parameters: foraging effort (capture attempts by minutes) increased with the increasing group size (GLMM; t=2.31; P<0.05). This parameter, as well as the capture rate (prey captured by minutes) were affected by the identity of the individual (χ_1^2=6.23, P<0.05; χ_1^2= 9.86, P<0.05; respectively). This study provides novel information on the trophic ecology of a threatened species.

10304 DIVERGENCE BETWEEN NORHT TEMPERATE AND SOUTH TEMPERATE WRENS IN SOCIAL MATING SYSTEM

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Due to their broad distribution across the Americas, the House Wren (*Troglodytes aedon*) and the Sedge Wren (*Cistothorus platensis*) are ideal species to study geographic variation in mating systems. North and south temperate populations differ in environmental variables and life-history traits that may affect social mating systems. We compared social polygyny rates of north temperate and south temperate wrens using original and published data. We carried out field work on Sedge Wrens in Mendoza (Argentina), and on House Wrens breeding in tree cavities in Buenos Aires (Argentina) and in nest-boxes in Buenos Aires, Mendoza and New York (USA). We incorporated published data into the analyses from Sedge Wrens breeding in Iowa and Minnesota (USA) and of House Wrens breeding in tree cavities in Alberta (Canada) and Wyoming (USA). Social polygyny was more frequent in northern than in southern House Wrens breeding both in tree cavities (8.65% vs. 0.00%) and in nest-boxes (22.99% vs. 2.16%). Similarly, social polygyny rate was higher in northern than in southern Sedge Wrens (16.67% vs. 3.08%). While in the north social polygyny seem to be the consequence of attracting a secondary female to the territory (n=35), in the south was the consequence of usurpation of the territory of a neighbouring female (n=7). Differences between hemispheres in social polygyny rates and in how polygyny is achieved suggest that different selective forces may be operating in northern and southern populations. Future work in additional study sites is essential to stablish the generality of our results.

SONG & VOCALIZATION

10231 DUETTING, EXTRA-PAIR PATERNITY AND REPRODUCTIVE SUCCESS IN THE RUFOUS HORNERO

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Although intensively studied, we still have little consensus about the direct fitness consequences of vocal duetting. Some studies suggest that duetting functions in acoustic mate guarding to prevent cuckoldry, whereas other studies argue that duetting is a cooperative behavior to defend common territories. Thus, duetting parameters presumably could reflect territory quality and a pair's reproductive success. We investigated extra-pair paternity and the relation among song traits, territory quality and reproductive success in the rufous hornero (*Furnarius rufus*), a Neotropical, socially monogamous bird. We found a lower than average rate of extra-pair paternity (3.33% of 120 offspring and 6.52% of 46 broods), and 100% apparent nest success. Female song (rate, output and latency to answer partner-initiated song) was positively correlated with territory size and quality, as reflected in amount and proportion of territory foraging patches. Duet duration, but not rate, was positively correlated with territory

size. Our results suggest that female song and the pair duet are used in the defense of food resources within territories, or enable the acquisition of high quality and large territories. However, neither features of female song, male song, or duets, nor territory features correlated with reproductive success (number of social fledglings and post-fledging survival) in this species, suggesting that song or territory might affect fitness in other ways, such as in juvenile development or adult survival.

10397 VOCAL DISTINCTIVENESS BETWEEN TWO POPULATIONS OF GIANT ANTSHRIKE (*Batara cinerea*)

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Variation in the mating signals emitted by birds may have a significant impact on species evolution. If vocal divergence is related to isolation between populations, the species may be undergoing to a process of speciation. Vocal variation in Suboscine birds like Giant Antshrike may be associated with selective adaptation, since it cannot be attributed to learning deviation in this group. Environmental conditions may be determinant on the selection of vocal features because sound transmission is enhanced under certain conditions of temperature, humidity and vegetal cover. Therefore, we examined vocalizations of Giant Antshike and searched for possible acoustic variations between two disjunct populations (Andean and Atlantic), correlating the differences to environmental structure. We measured temporal and spectral features form 80 individuals. Univariate and multivariate analysis displayed differences between both populations. Andean individuals produce vocalizations with more syllables, higher trill rate and pace, and higher values of frequencies, but with short syllable length. Environment exerts significant effects on acoustic structure, since it is related to temperature variation, precipitation, latitude and elevation, but not to vegetal cover. Since the vegetal structure of environment do not have influence on the pattern of variation, we argue that vocal distinctiveness between populations arise from habitat divergence, which influences morphology of individuals. Therefore, vocal variation seems to be a by-product of morphological adaptation to different conditions of habitat.

10408 SONG PLASTICITY BETWEEN SUCCESSIVE BREEDING SEASONS IN THE SAFFRON FINCH (*Sicalis flaveola pelzelni*)

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Song development comprises at least one sensitive phase of vocal learning, memorization and rehearsal with overproduction of song components followed by attrition of some of them. We studied the vocalizations of the Saffron Finch *Sicalis flaveola pelzelni,* a Thraupidae that presents delayed plumage maturation. We

performed a longitudinal analysis to compare the songs of immature plumaged second year males (SY) with the songs performed by those same individuals as adult plumaged after-second-year males (ASY) on the following year. We sought to evaluate if there are structural, temporal or frequency-related changes associated to their age and coloration. We analyzed 2079 songs from eight males (SY = 135 ± 23, ASY = 117 ± 15, mean ± SE songs/individual), to evaluate the following variables: song duration, song minimum and maximum frequency, peak frequency, song interval, mean syllable duration, syllables per song, syllables per second, syllable types per song and syllable repertoire. SY males had larger interval between songs and larger mean syllable duration than ASY males (paired t-test = 2.62 y 2.63 respectively, df = 7, $p < 0.05$); syllable repertoire change was variable among these males between successive years. Even though males repeated syllables from their first year into their second, they also included new syllables and omitted others. Further longitudinal analyses in ASY males may unveil if the song plasticity found continues to occur after plumage maturation, while a comparison of syllable repertoire between neighbors may determine if these changes are related to song sharing between territorial males.

10495 ACOUSTIC NICHE OCCUPIED BY BIRDS ASSOCIATED TO CERRADO AND GALLERY FOREST IN THE BRASILIA REGION, FEDERAL DISTRICT

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The communication between birds is a fundamental aspect of interacting individuals, either during reproduction or defense of resources and territories. The acoustic niche theory advocates that each species have been selected to have an optimal vocalization, which enhances the transmission of sound communication. Thus, we expect that different species occupy different acoustic spaces so as to avoid interference from other species during the communicative process. In this study, we evaluated two aspects of the acoustic niche theory: (1) if bird communities associated to cerrados and gallery woods in Brasília-DF are in fact structured in distinct acoustic spaces and (2) if that structure repeats itself between the environments. We used digital automatic recorders (SongMeter 2 – Wildlife Acoustics) to register birds species in 15 points of cerrado and 15 points of gallery forest. We extracted six measures (low frequency, high frequency, peak frequency, frequency variation, song length and average entropy) using the program Raven PRO. We compared the structure of 102 sonotypes through a PCA between environments and within each environment. Our results show that cerrado's and gallery forest's communities are different in acoustic structure and it is possible to characterize the acoustic space (determined by the scores of the two first components) of each species. The cerrado exhibits a clearer distinction than the wood gallery though. Our results corroborate the hypothesis that songs vary according to environment structure.

10514 SINGING PERFORMANCE PATTERNS DURING THE BREEDING SEASON IN A SOUTH TEMPERATE POPULATION OF SEDGE WRENS (*Cistothorus platensis platensis*)

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The relationship between seasonal song performance, breeding activity and social context can provide valuable information on the function of bird song. The dual function theory suggests that male song functions both to attract mates and to repel rivals, and the effects of these two functions may be manifested in different aspects of singing behavior. We compared song performance during the breeding cycle in a population of Sedge Wren (*Cistothorus platensis platensis*) in Argentina. During 2016 we recorded 25 males and compared singing performance between different breeding stages (nest building, egg laying, incubation and nestlings) and mating status (bachelor vs. mated males building a nest). We calculated total versatility (song type x transition versatility), mean song length (seg) and song rate (songs/25min); and used Linear and Generalized Linear Models to assess differences by breeding stage and mating status. Versatility and song length did not differ significantly between breeding stages nor between bachelor and mated males. Song rate also did not differ between breeding stages; however, bachelor males sang at significantly higher rates than mated males. Our results suggest that males sing differently during interactions with males versus females: versatility and song length, which did not differ by breeding stage or mating status, may therefore be important in territory maintenance; while song rate, which varied between bachelor and mated males, may thus be important in mate attraction. Future research should include experimental tests to further evaluate the role of social context in song performance.

SURVEY TECHNIQUES, METHODS, & TECHNOLOGICAL ADVANCES

10240 USE OF RAPID SURVEYS FOR STUDENT TRAINING AND THE INVENTORY OF POORLY-KNOWN SITES IN NORTHEASTERN BRAZIL

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Rapid surveys are largely known as an important tool in scientific research, mainly in poorly studied areas. Here we present the use of rapid ornithological survey in a mosaic of Atlantic Forest in Sergipe and subsequently propose the importance of such approach in training students/new researchers. For the rapid survey, we use complementary methods: capturing-marking birds (12 mist net; 12 m x 2.5 m); and MacKinnon's Lists, at eight different points in the mosaic. The students were alternated between methods, in

order to perform both. With 3,240 hours/net and 60 lists, 118 species were identified, 13 exclusively from mist nets and 51 by MacKinnon's Lists. The most representative families were Thraupidae (n=18) and Tyrannidae (n=11), while the most abundant species were *Manacus manacus* (Linnaeus, 1766) (n=72) and *Dacnis cayana* (Linnaeus 1766) (n=44). Omnivores were the most abundant guild (n=301), followed by insectivores (n=236), frugivores (n=146), granivores (n=94), nectarivores (n=68), carnivores (n=24), scavengers (n=9) and piscivores (n=1). The richness represents 42.75% of the species recorded in the Atlantic Forest of Sergipe, which indicates the great potential of the mosaic for conservation. We highlight the presence of *Pyriglena atra* (Swainson, 1825), *Crypturellus noctivagus* (Wied, 1820), *Pseudastur polionotus* (Kaup, 1847) and *Herpsilochmus pectoralis* Sclater, 1857, considered as Endangered by the IUCN. The students performed a broad-scale review concerning bird diversity, applied in the development of a manuscript, describing the community of the forest mosaic. This experience shows the potential of disciplines in the development of new researchers, followed by scientific production.

10259 DEVELOPING AGEING GUIDES TO EXAMINE DEMOGRAPHY OF HIGH-ELEVATION ANDEAN BIRDS

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As part of an ongoing project studying high-elevation birds in the Andes of northern Peru, we are developing species-specific guides to age birds using molt limits and skulling. Understanding age structure is an important tool for demography, contributing to a better understanding of population dynamics and conservation of tropical birds. We are summarizing data and photos from >3,000 birds captured in mist-nets to create one-page photographic guides for the field. Each guide includes information on molt, skull ossification, breeding characteristics, and morphology. We suggest that developing one-page printable summaries which can be easily modified and translated, shared digitally, and printed for the field provides a useful approach to build portable compendiums that are region and habitat specific given the incredible diversity of tropical birds. Ageing criteria that we are developing will be used to help understand how anthropogenic changes such as climate and fragmentation may affect populations in unique, and potentially threatened, tropical montane systems.

10280 ASSIGNMENT OF THE ORIGIN OF CONFISCATED YELLOW CARDINALS (*Gubernatrix cristata*) THROUGH GENETIC ANALYSIS

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The Yellow Cardinal (*Gubernatrix cristata*) is an endemic passeriform from South America, and is the only representative of the monotypic genus *Gubernatrix,* that is

included within the Thraupidae family. It is currently in danger of extinction, in part due to the trapping of wild birds that are illegally sold in the black market. A previous study analyzed the genetic structure of the remaining wild populations, and found evidence of the existence of three management units for the species in Argentina. The objective of this study is to determine the origin of seized specimens with the use of two molecular markers, mtDNA and microsatellites, in order to guide the reintroduction of these animals to their respective management units. Most of the confiscated cardinals were assigned to one of the three management units. All except one of the seized specimens were found to be from the western side of the species' distribution. This type of study serves as a tool to guide the release of confiscated animals, and also to delimit areas of the country where greater controls are required to prevent illegal wildlife trafficking.

10434 SOCIAL NETWORK AND THE ILLEGAL TRADE OF WILDBIRS, THE CASE OF FACEBOOK IN ARGENTINA

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Globally, social networks grew linearly in recent years. These online technologies, because of their simplicity and accessibility, allow people to connect with each other, sharing information, content, ideas or products. Facebook is the most popular with more than 1650 million users. Internet commerce is growing in different areas, social networks are an example of that. This trade can hide illegal activities such as wildlife traffic. We searched for "wild birds buy/sell groups" in Facebook. We found 128 groups of bird trade in Argentina, with 96,785 users. Buenos Aires was the province with the largest number of members. Only in 5 provinces we didn't detect birds trading groups (Chubut, Formosa, Misiones, Santa Cruz and Tierra del Fuego). This could reflect more severe control policies there. A deeper analysis of the second largest group located in La Pampa province we found buy/sell offers of 63 bird species. Seventeen percent were exotic species whose trade could be legal, the rest were native birds protected by various provincial and national laws, and whose trade is illegal. Almost 60% are species native from the province, whose capture could be local; the rest comes from other provinces or countries. We detected sell/buy offers of five kinds of traps for birds and some cases of fledgling extractions from nests. This work highlights the widespread use of Facebook for illegal trade of wildlife in Argentina. A strong intervention by national and local wildlife authorities to control illegal trade in social networks should be necessary.

10486 THREE-DIMENSIONAL TEMPERATURE FIELDS OF THE NORTH PATAGONIAN SEA RECORDED BY MAGELLANIC PENGUINS AS BIOLOGICAL SAMPLING PLATFORMS

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Temperature is a primary determinant of biogeographic patterns and ecosystem processes. Standard techniques to study the ocean temperature *in situ* are, however, particularly limited by their time and spatial coverage, problems which might be partially mitigated by using marine top predators as biological platforms for oceanographic sampling. We used small archival tags deployed on 33 Magellanic penguins (*Spheniscus magellanicus*), and obtained 21,070 geo-localized profiles of water temperature, during late spring of 2008, 2011, 2012 and 2013; in a region of the North Patagonian Sea with limited oceanographic records *in situ*. We compared our *in situ* data of sea surface temperature (SST) with those available from satellite remote sensing; to describe the three-dimensional temperature fields around the area of influence of two important tidal frontal systems; and to study the inter-annual variation in the three-dimensional temperature fields. There was a strong positive relationship between satellite- and animal-derived SST data although there was an overestimation by remote-sensing by a maximum difference of +2 °C. Little inter-annual variability in the 3-dimensional temperature fields was found, with the exception of 2012 (and to a lesser extent in 2013) where the SST was significantly higher. This allowed us to describe and better understand the dynamics of the water masses, which, so far, have been mainly studied by remote sensors and numerical models. Our results highlight again the potential of using marine top predators as biological platforms to collect oceanographic data, which will enhance and accelerate studies on the Southwest Atlantic Ocean.

10685 MAPPING OF *Spizaetus ornatus* (ACCIPITRIDAE) ALLIED TO CITIZEN SCIENCE AT THE SERRA DE MARACAJU REGION, MATO GROSSO DO SUL, BRAZIL

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The presence and effective use of a place by birds of prey require qualified habitats and this can contribute to understanding the structure of biological communities and to drive efforts for the conservation and protection of these areas. *Spizaetus ornatus* (Ornate Hawk-Eagle) is considered to be Near Threatened species by IUCN and ICMBio, referred to, however, as Endangered in several Brazilian states. This work aims to map the occurrence of the species in a plateau region - the eastern border of the Pantanal -, and involve the community in processes of citizen science. The mapping of *S. ornatus* in the Serra de Maracaju has been carried out since 2014, through field searches and indication of resident people. In due course, citizen science actions are carried out with the local communities: dialogues, project presentation and their results, field

practices with bird observation, constituting strategies for sensitization and social engagement for conservation and protection of the species and regional biodiversity. So far, evidence of occurrence has been found in three sites, all of them in semi-deciduous dry forest: active nest in RPPN Vale do Bugio (Corguinho/MS), two points in Taboco (Corguinho/MS), and a potential point in Piraputanga (Aquidauana/MS), this last as resulting from reports of residents. This information may provide information on the population distribution of *S. ornatus* and its conservation status in Mato Grosso do Sul. In the activities of citizen science has participated more than 100 people including local community, students and tourists. Besides the contribution of citizens in the search for the species, they have become agents of protection of the regional biodiversity.

POSTER SESSIONS

BEHAVIOR

10278 PLUMAGE ORNAMENTATION AS A POTENTIAL DRIVER OF BEHAVIORAL DIFFERENCES IN A DICHROMATIC PASSERINE

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In sexually dimorphic species, energetically demanding traits can serve as an honest sexual signal, benefiting males with increased ornamentation. Although possibly a survival handicap, ornamentation may improve fitness by increasing reproductive opportunities. Conversely, conspicuous colorations may improve fitness if, by openly conveying that the individual is a difficult food source, they improve survival. It follows that exaggerated ornamentation may create selective pressures that affect the two phenotypes differently. Therefore, it can be predicted individuals of polymorphic species may show intra-species behavioral differences (predator avoidance, niche partitioning, grouping) to match their phenotypes. In this study we examined whether the ornamentation of male red-backed fairywrens (*Malurus melanocephalus*) was related to an increase in certain behaviors. We conducted focal observations (n=276) on bright (n=8) and cryptic males (n=55) during the nonbreeding season to compare basal behavioral differences. We found that bright plumage was related to increases in the time spent preening (12.1 ± 2.7 s), allo-preening (5.7 ± 1.6 s), courtship displays (8.1 ± 1.6 s), flying (2.5 ± 0.8 s), and sitting (11.1 ± 5.1 s). Of these five statistically significant results, three seem to be more biologically significant when extrapolated to a daily time allocation. Bright males spent 58, 53, and 39 minutes more than dull males per day preening, sitting, or displaying, respectively, but only 27 and 12 minutes/day moreallo-preening and flying. Preening and displaying have a direct connection to mate attraction, supporting the idea that exaggerated ornamentation positively alters sexual behaviors rather than vigilance or anti-predatory behavior.

10288 EXPLORATION OF PERSONALITY TYPES IN THE OLROG'S GULL (*Larus atlanticus*)

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The term "personality" refers to behavioral, emotional and physiological differences between individuals of the same species or population in a set of correlated characteristics. This work explores the personality types of a threatened Larid, the Olrog´s Gull. Each captured individual (n=29) was characterized in terms of sex, age, aggressiveness, struggle, tonic immobility and respiratory rate. We applied multivariate analysis (PCA) and them general linear models to analyze the effect of sex and age on the main component 1 (CP1) and 2 (CP2). The variables that weighed most on CP1 were

tonic immobility and respiratory rate (explained variance: 43%) and on CP2 aggressiveness and the struggle index (explained variance: 27%). Our results do not indicate a significant effect of sex or age on CP1. The CP2 was affected by the age of the individuals ($t_{JU\ vs.\ A} = -2.66$, $P < 0.05$; $t_{SA\ vs.\ A} = -1.89$, $P = 0.06$; $t_{JU\ vs.\ SA} = 0.37$, $P > 0.05$). When testing the age nested in sex it was observed that the differences in CP2 are mainly in adult females, which presented higher values of CP2 than the rest of the age classes, indicating more aggressiveness and struggle than the rest of the individuals. This study discusses the importance of the determination of behavioral syndromes in a species threatened and impacted by anthropogenic activities.

10490 SPATIAL ORGANIZATION OF SWALLOW-TAILED MANAKIN MALES *Chiroxiphia caudata*

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The males of *Chiroxiphia caudata* organize themselves in polygynous leks, in which the adult males are territorial and maintain dominance over the males of lower hierarchy. Males use court perches to display to females, who visit these locations. The objective of the present work is to verify the size and shape of the home range and territory and overlap of the living areas of *C. caudata* males. The study was carried out in two areas of deciduous forest in Santa Maria, RS. The observations of the leks males occurred in the reproductive period, from October to February. The observed animals did not exhibit statistically different sizes of home range in the area A as in the area B. Being that the total area used by the males, area A was 9.61 ha and in the area B was 5,15 ha. The overlap was highest among the highest hierarchy levels. It was observed that the areas of life were partially limited by deforested areas. Higher-order individuals presented a more circular home range, as these individuals can not move away from the court perches, since they frequently participate in court displays. The overlapping home range of males of this species have a similar pattern of other members of the Pipridae family, who generally have extreme fidelity to the territories and some individuals remain for years in the same place. It can be concluded that the complexity of social interactions and the use of space go beyond a previous hierarchical establishment.

10563 NEOPHOBIA AND EXPLORATIVE BEHAVIOR IN *Milvago chimango*: A COMPARATIVE ANALYSIS ACROSS A GRADIENT OF URBANIZATION

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Here, we analyzed the variability of neophobia and exploratory behavior of *Milvago chimango* in function of the level of environmental urbanization, as well as the relationship between these two behaviors. In addition, we analyzed the behavioral types present in these birds according to their environment of origin. During non-breeding period, we capture urban (n=13), suburban (n=10) and rural (n=10) birds. These individuals were then housed at individual outdoor aviaries. Two consecutive tests were given to each bird: In the neophobia test we compared the time until feeding in presence or absence of a novel object next to the food. The exploration test consisted in the exposure of each bird to 6 different objects. The latency to approach, contact and the total time spent exploring the objects were recorded. The rural birds showed the highest levels of neophobia. Exploration latency was lower in urban than rural birds, and intermediate in suburban individuals. The highest values of exploration time were found in both urban and rural birds. Neophobia level correlated negatively with exploration time. The differential expression of neophobia and exploration allowed the characterization of birds in three behavioral types according to their environment: suburban as less neophobic, as well as fast and superficial explorers; rural as more neophobic, as well as slow and exhaustive explorers; and urban birds as less neophobic, as well as, fast and exhaustive explorers. The presence of these behavioral types would be related to the structural complexity, resource predictability and predation pressure of each environment.

10573 ACTIVITY PATTERNS OF KINGFISHER IN BRAZILIAN PAMPA

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Birds in general are more active at daytime, especially in the first hours after sunrise and before sunset. However, the amount of time devoted to specific activities depends on different variables such as body size, food availability, habitat and environmental characteristics. Birds of Alcedinidae are known as essentially piscivorous, although they also feed on insects and crustaceans. Three species occur in southern Brazil: *Chloroceryle amazona, Chloroceryle americana* and *Megaceryle torquata*. In this study we present preliminary information about activity patterns of two species of kingfisher from Brazilian Pampa. Data was collected through direct observations of bird behavior using binoculars (10x42) in two sites: a stretch of river and a stretch of stream. Each site was monitored for two periods of 12 hours, totalizing 48 hours of monitoring, with equal effort from sunrise to sunset. The green kingfisher (*C. americana*) showed a peak of activity between 12:30 and 2:30 PM, seeming less active at the rest of the day. The amazon kingfisher (*C. amazona*) showed two activity peaks: one of them in the morning between 9:30 and 10:30 AM, and another one in the afternoon, between 2:30 and 5:30 PM. So the green kingfisher presents its peak of activity in a distinct period compared to amazon kingfisher. This characteristic could reflect a temporal segregation

of niche, once both species can be found in same environment and potentially compete for the similar food resources.

BIOGEOGRAPHY AND PHYLOGEOGRAPHY

10205 MOLECULAR ANALYZES OF THE TOCANTINS-ARAGUAIA INTERFLUVE'S BIRDS IN THE PHYLOGEOGRAPHIC CONTEXT OF THE AMAZON

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The phylogeography has greatly helped in the definition of interspecific limits and times of divergence of taxa in Amazonia, promoting a systematic and taxonomic revision of different groups of organisms, especially birds. However, phylogeographic surveys did not focus on understanding the role of Tocantins-Araguaia Interfluve (TAI) in Amazonian birds' diversification processes. Hence, we present an unpublished phylogeographic analysis, through the molecular mitochondrial marker ND2 (1045 bp), demonstrating the relationship of TAI with Amazonian interfluvials, in particular the Xingu (CEX) and Belém (CEB) Endemism Centers. Bayesian analyzes and haplotype networks were performed through the set of almost 450 samples from 24 taxa distributed in 17 species for all Amazonian interfluvials. Phylogenetic trees and haplotype networks indicated four distinct phylogeographic patterns: i) No population structure within CEX, ITA and CEB, like *Mymotherula axilaris* and *Dendrocincla fuliginosa,* ii) ITA as a contact zone with strong indicative of hybridization events or even introgression between allopatric populations to CEX and CEB, like the complexes *Pyrrhura anerythra / coerulescens, Campylopterus largipennis, Dendrocolaptes medius / retentus*; iii) the Tocantins River as a phylogeographic barrier isolating CEB populations from ITA/CEX, as for example *Formicarius colma, Granatellus pelzelni and Schiffornis turdina;* and iv) independent populations between CEX and CEB structured parapatricly within the ITA, like *Willisornis vidua*. The contact zone condition combined with the presence of phylogeographic breaks and occurrence of population substructures within the ITA demonstrated biogeographic characteristics that define ITA as an not yet known area of biogeographic suture in the Eastern Amazon.

10307 MULTILOCUS PHYLOGEOGRAPHY OF TWO ATLANTIC FOREST SPECIES OF *Pyriglena* (AVES: THAMNOPHILIDAE)

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Phylogeography and population genetics are useful to understand diversification processes and to hypothesize historical events associated with the distribution of the

genetic variation and of lineages. In the present study, we describe the multilocus phylogeography of *Pyriglena atra* and *P. leucoptera*, two hybridizing parapatric sister species endemic to the Atlantic Forest. We sequenced seven markers with different types of inheritance (one mitochondrial - mtDNA, three Z-chromosome linked, and three autosomal). It is expected that mtDNA exhibits a more pronounced population structure than nuclear DNA due to its lower effective population size and faster rate of evolution. Also, it is expected that autosomal genes present higher levels of introgression than the Z-linked and mtDNA genes. We recovered four non-reciprocally monophyletic lineages: one of *P. atra* and three of *P. leucoptera*. The two species share nuclear and mitochondrial haplotypes but the lineages showed varying levels of admixture, with *P. atra* most similar to the *P. leucoptera* lineage that occurs closer. One of our Z-linked markers presented higher differentiation between the two species than all the other markers, possibly due to lower introgression. In addition, the distribution of the lineages throughout the Atlantic Forest was roughly congruent with some large rivers. Even though these rivers do not seem to be primary barriers, it is possible that ecological factors or other variables associated with them could have influenced the allele frequencies of each lineage.

10517 THE RELATIONSHIP BETWEEN GEOGRAPHICAL PATTERNS OF TAXONOMIC AND PHYLOGENETIC DIVERSITY IN CAATINGA BIRDS

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Analyzing diversity in geographic space is an effective tool for conservation strategies. Several papers investigate the relationship between taxonomic and phylogenetic diversity, where most suggest congruence. But few works are done in Neotropical environments or do not investigate different scales. Thus, we aimed to investigate the relationship between taxonomic and phylogenetic diversity patterns in the alpha and beta components of Caatinga birds. We used some criteria on the distributions collected from Bird Life International, selecting 405 species where we projected in the scales 1ºx1º, 0.5ºx0.5º and 0.25ºx0.25º. We structured phylogenetic communities using trees from BirdTree, Ericson and Hackett topological sources. For alpha diversity we quantify the number of species in each cell and for beta diversity we use the Sørensen index which uses the sum of Simpsom dissimilarity (turnover) and nestdness. To identify patterns of phylogenetic diversity, we used metrics that correspond to phylogenetic diversity (PD), mean pairwise distance (MPD) and mean nearest taxon distance (MNTD), always eliminating the effect of richness. From this, we use Pearson's correlations to answer if the taxonomic patterns of diversity correspond to the phylogenetic ones. Although there are differences when scales and different topological sources in the alpha component are correlated PD with MPD and PD with MNTD in addition to MPD

richness except in Ericson 1°. Finally the taxonomic beta diversity is correlated with beta PD and alpha PD correlated with beta MPD. Our findings indicates that the number of species is correlated with the number of phylogenetic differences.

10590 PHYLOGEOGRAPHY OF *Phaethornis philippii* (AVES: TROCHILIDAE)

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The use of the phylogeographic approach has revealed a significant dataset with respect to the diversification of the avifauna in the Amazon region. However, some taxonomic groups such as hummingbirds (Trochilidae) remain poorly studied. Here, we uncover the phylogeography of *Phaethornis philippii*, a monotypic hummingbird species that inhabits the understory forest types in southwestern Amazonia. We sequenced 54 tissue samples for scattered localities across the species' distribution. Were sampled five genes, two mitochondrial (cytochrome b - CITB and NADH dehydrogenase subunit2 - ND2) and three nuclear (beta-fibrinogen gene, intron 5 - BF5, glyceraldehyde-3-phospho-dehydrogenase - intron 11 G3PDH, and Transforming Growth Factor Beta 2 - TGFB2), totaling 3233 base pairs. A Bayesian Inference recovered a fully resolved tree with overall high statistical support whereby six lineages delimited by Amazonian rivers exist. Population genetics analyzes also support a high degree of phylogeographic structure in *P. philippii*. Studies on the avifauna that inhabits "terra firme" forests usually present the same pattern of strong genetic structuration delimited by major Amazonian rivers. Therefore, our results showed an unexpected high degree of genetic structure for a monotypic and morphologically conserved species such as *P. philippii*, highlighting the need of a thorough taxonomic review focusing on this species.

10591 PHYLOGEOGRAPHY OF THE *Willisornis poecilinotus / vidua* SPECIES COMPLEX (AVES: THAMNOPHILIDAE)

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The historical factors that contributed to the high biodiversity in the Amazon region are quite controversial studies have shown that the largest Amazonian rivers represented barriers, promoting isolation and diversification among closely related lineages. However, in the headwaters regions of some Amazonian rivers, there are direct contact zones between avian lineages, which maintain gene flow, even when separated from each other across opposite river banks. Hybrid zones were detected among several pairs of taxa of birds near to the headwaters of the Tapajós River, including two species of the genus *Willisornis*, showing that the "barrier effect" exerted by the river may be relative. A critical step towards characterizing hybrid zones is the investigation of the phylogenetic relationships among the taxa involved. This study aimed to estimate the phylogenetic relationships within the *Willisornis poecilonotus / vidua* complex to

elucidate the history of the hybrid zone in the Tapajós River and evaluate the existence of additional contact zones in the group. So far, no phylogeographic hypothesis is available for the complex, with previous taxonomic studies based only on vocal and morphological characters. We sequenced 27 samples of all taxa grouped in the complex, except *W. p. lepidonotus*, for two mitochondrial (ND2 and CytB) and three nuclear (G3PDH, BF5 and MUSK) genes. We estimated a phylogeny using the Bayesian Inference criterion, which recovered 9 reciprocally monophyletic lineages separated by large Amazonian rivers. The results obtained contrast with currently recognized species limits in *Willisornis*, whereby *W. poecilinotus* was recovered as paraphyletic with respect to *W. vidua*.

10690 EVOLUTIONARY HISTORY OF THE *Melanopareia torquata* COMPLEX (AVES: MELANOPAREIIDAE) IN OPEN AND DRY ENVIRONMENTS OF SOUTH AMERICA

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The Cerrado, the largest Neotropical savanna in South America, is rarely the subject of biogeographic studies. We proposed to re-evaluate the taxonomy of the *Melanopareia torquata* complex (*M. t. torquata*, *M. t. rufescens* and *M. bitorquata*) to use it as a model for understanding the patterns of Neotropical savanna diversification. We used sequences from 80 specimens from 35 localities for the ND2 gene, with subsets for Cyt b, ODC and G3PDH genes. Phylogenetic reconstructions indicated the genus *Melanopareia* composed by sister relationship between *M. elegans* and *M. marononica*, and between *M. maximiliani* and *M. bitorquata* plus *M. torquata*, with sister relationship also within these last clades. We found three main clades in the *M. torquata* complex, with the *M. bitorquata* species strongly supported as the clade sister of *M. t. torquata* and *M. t. rufescens*, with low Bayesian support. Molecular dates indicated divergence between *M. maximiliani* and *M. torquata* complex in the Middle Miocene (~ 9.86 Mya) and diversification of the current lineages (three main clades) in the Plioceono-Pleistocene transition (~ 2.5 Mya). Analyses with Network 4.6 and Geneland found high genetic diversity and strong geographic structuring in each of the three taxa. Our results show that the diversification of the Melanopareiidae provides a scenario for understanding the evolution of the dry and open environments of South America, with temporal and spatial patterns apparently influenced by independent events such as the Andean uplift and the marine introgressions of the Miocene influencing genus speciation; and the arid diagonal formation and quaternary climatic oscillations influencing the diversification within the *M. torquata* complex.

BREEDING BIOLOGY

10220 BREEDING BIOLOGY OF THE *Arundinicola leucocephala* (TYRANNIDAE) IN THE STATE OF ESPÍRITO SANTO, BRAZIL

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The White-headed Marsh Tyrant, *Arundinicola leucocephala*, is a tyrannid bird with a wide distribution in South America. It inhabits humid and wet areas. It is the only species of the genus and presents sexual dimorphism. Available information on the reproductive biology of this species is punctual and has a theoretical-evolutionary relevance as for its conservation. The purpose of this research is to describe its reproductive biology. The study of reproductive biology is being carried out in the town of Jaguaré-ES, Brazil (18°54'23"S/48°04'31"O). Nests (n=16) from 14 couples were found by active search and monitored at intervals of 2-4 days. The breeding season lasted from September 17, 2016, (first nest found) until April 23, 2017 (last nestling left the nest). The species presented a closed, oval shape nest with a lateral aperture, made by the female using vegetal fibers, feathers, mosses and cobwebs. The nests had a mean size of 134.15mm in height, 87.46mm in width, 97.57mm in length and an aperture of 47.19 x 43.34mm. The eggs were uniformly white with an average size of 19.22 x 13.77mm length x width. Incubation was performed by the female with a duration of 14 to 16 days (n=12) and the nestling period ranged from 14 to 16 days (n=15). The care of the nestlings was carried out by the pair. The fledglings resemble the female and remain in the territory of the parents between 30 and 90 days. The observed reproductive pattern resembles that presented by other species of Tyrannidae family.

10227 CONTRIBUTIONS TO THE REPRODUCTION OF WEDGE-TAILED HILLSTAR (*Oreotrochilus adela*) IN ARGENTINA

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The Wedge-Tailed Hillstar (*Oreotrochilus adela*) is endemic to the Central High Andes of Bolivia and Argentina. In Argentina it is distributed in Yavi (Dept. Yavi) where it is common of observe, Yavi Chico and El Angosto (Dept. Santa Catalina), province of Jujuy; where it inhabits ravines with groves of Prosopis ferox and cultivated areas surrounding villages between 2500 and 4000 masl. The nest of this hummingbird was described in Argentina based on two nests of Yavi in October and November 2003. We study the avifauna of Yavi, 3440 masl, between 2011 and 2014, where we recorded nesting of the species. The nests (n=5), in the shape of a rounded (n=3) or elongated (n=2) cup, were found in hollows of rocky walls sheltered from the wind, cold and direct sunlight, directly supported on the rocks. Were light brown in color, externally constructed with leaves, stems and dry inflorescences of shrubs and grasses, cobwebs, lichens, mosses, insect parts (ants, lobsters, spiders) and internally with downs (*Chloephaga melanoptera,*

Cinclodes sp., Sicalis olivascens), horse hair, sheep wool, cotton thread and pili ofOreocereus celsianus. On January 12 of 2012 we detected, by means of black feces in soil and walls, a nest with a feathered squab; in 2013 the nest was reused, in 2014 another nest was built exactly on the same site. Females expel males and other females from the reproductive area. In Yavi *O*. *adela* it turns out to be a territorial species and faithful to the breeding site, where it builds and reuses its nests.

10234 BROAD-SCALE VARIATION IN SEXUAL DICHROMATISM IN SONGBIRDS IS NOT EXPLAINED BY SEX DIFFERENCES IN EXPOSURE TO PREDATORS DURING INCUBATION

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The evolution of sexual dichromatism provoked one of the greatest disagreements between Charles Darwin and Alfred Russel Wallace. According to Darwin the main driving force is sexual selection, whereby choosy females prefer showy males, leading to the evolution of conspicuous male plumage. On the other hand, Wallace suggested that dichromatism may arise because nest predation favors more cryptic females. To test the role of natural selection in the evolution of dichromatism we combined quantitative data on differences in parental share in nest attentiveness (representing the strength of natural selection on males vs. females) with spectrophotometric measurements of dichromatism in 412 species of songbirds from 69 families. We expected to find stronger dichromatism in open-nesting species with more divergent parental roles and in body parts exposed during incubation. Dichromatism was not related to the differences in parental share during incubation, but it was most pronounced in lekking species, migrants, and small species. Our results thus suggest that Wallace's hypothesis is not able to explain broad-scale variation in the dichromatism of songbirds, but point to a role for sexual selection, mutual mate choice, and migration strategy in shaping the extraordinary variation in dichromatism exhibited by songbirds.

10247 AGGRESSIVE AND BOLD WHITE-RUMPED SWALLOWS PROVISION LESS FOR THEIR OFFSPRING

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Personalities are consistent behavioral differences between individuals. The path leading from personalities to fitness may involve other animal traits, and so, it is important to discover which traits exist that correlate to personalities. Here we will investigate if common personality traits (aggressiveness, boldness and exploration) influence territory quality and parental provisioning behavior of white-rumped swallows (*Tachycineta leucorrhoa*) breeding in nest-boxes in southern Brazil. Behavioral assays were performed by exposing breeding pairs up to four times throughout the nest cycle to a human, a conspecific lure and a novel nest-box. Territory quality was measured based on frequency of nest-box occupation, while parental provisioning was measured

with the aid of passive-integrated transponders installed at nest-boxes during the nestling period. We show that aggressiveness and boldness can be considered a personality, but exploration of nest-boxes cannot, because it is not a consistent behavior nor does it vary between individuals. No relationship between personalities and territory quality was found, while more aggressive and bolder individuals provision their nestlings at lower rates. So, some individuals invest more in nest defense against conspecifics and predators, while others invest more in food provisioning for offspring. It remains to be seen how these trade-offs in investment translate into nest survival and quality of offspring.

10300 RESPONSE TO NEST PREDATION RISK IN A COOPERATIVE BREEDER, THE GREYISH BAYWING (*Agelaioides badius*)

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Cooperative breeding is a reproductive system in which one or more adults (helpers) assist others in caring for young. Helpers typically participate in nest provisioning and defense, but individual contribution to parental care may vary broadly within and among cooperative groups. We studied group and individual responses to nest predation risk using a model presentation experiment in a banded-population of a facultative cooperative breeder, the Greyish Baywing (*Agelaioides badius*). We presented taxidermic mounts of a nest predator (*Milvago chimango*) and control species (*Mimus saturninus, Paroaria coronarta and Colaptes melanochloros*) to 13 Baywing nests at the nestling stage. Models were presented sequentially in random order for three minutes, with a 20-min resting interval between presentations. Presentations were filmed and observed from a hide to record the latency to first approach and individual behaviors towards each model. Baywings responded faster and more aggressively to predator than control models. Helper presence had no effect on the latency to approach predator models. Mobbing frequency was higher in the presence of helpers than for breeding pairs alone, but per capita rate of attacks was similar for breeding pairs and trios, suggesting an additive effect of helpers on nest defense. Breeding females mobbed predator models more frequently than males, but individual contribution to mobbing varied broadly both within and among groups. These results suggest that helpers did not improve predator detection but enhance defensive response. Further research on the genetic relationships within cooperative groups will help to explain individual contribution to nest defense.

10319 ¿DOES ECOTOURISM HAVE AN IMPACT ON REPRODUCTIVE SUCCESS AND GROWTH OF MAGELLANIC PENGUINS?

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Patagonia is a famous and popular ecotouristic destination worldwide and a main attraction is the Magellanicpenguin *Spheniscus magellanicus*. The number of tourist visits has been increasing rapidly over the last decades. Recently we have documented physiological alterations in penguins exposed to tourism in the Natural Protected Area Punta Tombo (Chubut), the main reproductive colony of the species. The aim of this study was to determine if touristic activity also has an impact on fitness indicators such as reproductive success or chick growth. To do this, during the breeding season 2016-2017 we selected nests at two different sites (one visited by tourists and the other control, not visited) in Punta Tombo. To determine reproductive success, we selected 60 nests per site and recorded the number of eggs laid, eggs hatched, and chicks alive until the fifth week of age, not finding significant differences between sites. To determine growth, we selected 20 nests per site and at two developmental stages (week one and four) we weighed chicks and measured their bill length and height, wing length and leg length. Only bill height showed significant differences between sites, being slightly bigger in the visited site, while the other variables only showed differences between ages. This study, together with the evaluation of immunological parameters and stress indicators, will contribute to the adaptation of tourist practices for minimizing the impact on the species.

10333 NEST SITE SELECTION OF SECONDARY CAVITY-NESTERS IN QUEBRACHO COLORADO FOREST OF THE HUMID CHACO: A PREVIEW

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Secondary cavity-nesting birds select nest sites according to characteristics of cavities, nest trees and habitats. We examined the factors that influence nest site selection of secondary cavity-nesters in mature *Schinopsis balansae* forest of the humid Chaco. Using a case-control design, we contrasted different *a priori* hypotheses about protection against predators, body size and cavity durability. In 2016, we monitored 53 nest cavities used by 16 species in Chaco National Park, searched for an unused cavity for each nest cavity, and took 17 measurements at the scale of cavity, nest tree and habitat. Nests were located primarily in *Schinopsis balansae* (74%), at a height of 5.2 ± 2.4 m (mean ± SD) above ground, with entrance diameters of 6.3 ± 2.7 cm and depth of 40.9 ± 23.4 cm. Unused cavities were similar to nest cavities; they did not differ in the characteristics measured (*t*-tests; $p > 0.1$). We compared seven *a priori* generalized linear models but none explained nest site selection better than a null model. We

interpret that: mature forests of *Schinopsis balansae* have abundant suitable cavities for nesting, and/or secondary cavity-nesters show high segregation in their nesting niches, so that there is no general pattern in nest site selection. During 2017-2019, we will increase sample size, identify cavities that are used/avoided in multiple years, and investigate how species traits (aggressiveness, migration and foraging site) influence nest site selection.

10401 THE NEST AND NESTLINGS OF *Myiobius atricaudus snethlagei* (PASSERIFORMES: ONYCHORHYNCHIDAE)

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The Black-tailed Flycatcher, *Myobius atricaudus*, is a Neotropical insectivorous bird with seven recognized subspecies. Information on the breeding of this species is scarce and restricted only for *M. a. atricaudus* and *M. a. ridgwayi*. This contribution focuses in one nest of *M. a. snethlagei*, a subspecies from northeastern Brazil. The nest was observed on 15 February 2017 in the northeastern slope of Araripe Plateau, Ceará State, Brazil. It contained two nestlings devoid of down, with swallow flanges and mouth bright yellow. The nest was a long and closed pensile structure, attached from the tip to a slender branch and suspended 89 cm over a small stream inside the forest. Nest dimensions were: outside height 41 cm, outside diameter 52.5 mm, inside height 62.9 mm, inside diameter 44.6 mm, and circular chamber entrance 43.6 x 31mm. It was mainly composed of long rootlets, strips of dried leaves, tendrils and some fine sticks. The nest was found during the rainy season, but it does not correspond to the breeding season of birds in other localities of northeastern Brazil, where rains occur in other periods. Despite several similarities among the nests of *M. a. atricaudus* and *M. a. snethlagei*, entire leaves and spider web were not observed among the materials used to build the nest of *M. a. snethlagei*, and this might be a useful feature to differentiate the nests of these subspecies. Furthermore, the nest description is consistent with the pattern of architecture known for the members of Family Onychorhynchidae.

10420 PATTERNS OF MOLTING AND BREEDING IN A REVEGETATION AREA IN THE ATLANTIC FOREST OF SOUTHEASTERN BRAZIL

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Molting and breeding cycles usually have little overlap due to the high energetic costs involved, being synchronized and temporally well defined in tropical avian communities. However, in areas that are degraded and/or under restoration, environmental stresses could locally change these patterns. This study aims to analyze patterns of molting and breeding of the bird community in a revegetation area in the Atlantic Forest of

southeastern Brazil, evaluating its temporal overlap. We recorded three environmental variables (temperature, rainfall and photoperiod) to analyze their relation to the described events. We carried out field sampling from May 2016 to April 2017 using mist nets, and we had 85 captures from 36 species. The breeding time started in July, peaking in November, and was not affected by any of the tested environmental variables. The molting period was concentrated between August and April, and peaked in January, being influenced by temperature and photoperiod. The overlap between these events was 11 % (n=9), but only one individual had an incubation patch on its maximum stage, which confirms the tendency to avoid the overlap of these cycles in our study area.

10424 BREEDING BIOLOGY OF THE BLUE-CROWNED PARAKEET IN THE CAATINGA DRY-FOREST OF NORTHEAST BRAZIL

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The Blue-crowned Parakeet (*Thectocercus acuticaudatus haemorrhous*) occurs throughout the interior of the semi-arid Northeast Brazil and is not classified as an endangered sub-species. Little is known about its breeding biology, especially when nesting in rock cavities. The present work describes breeding aspects of a Blue-crowned Parakeet population from the Caatinga dry-forest of Canudos, Bahia state. The study was conducted using direct observation and rappel techinics to access the natural cavities used as nests in the cliffs found in Estação Biológica de Canudos between 2011 and 2017. Eight active cavities were measured and eighteen reproductive events monitored. Cavities used as nest had an internal design of gallery with single or multiple tunnels; we observed clutches with 3 (n=4) or 4 (n=6) white short-oval eggs. We measured width (26.27±1.04, range 23.90 – 27.54 cm), length (32.70±1.03, range 30.51 – 34.30 cm) and weight (11.8 ± 0.43, range 11.2 - 12.3) of 13 eggs. Four nests were used during up to six consecutive years. Typical breeding season lasted from January to April, but depending on the irregular rain precipitation in the region, reproduction started earlier in December or as later as in April. Cavities used as nest by parakeets were also used for reproduction by Lear´s Macaws (*Anodorhynchus leari*), Blue-fronted Parrot (*Amazona aestiva*) and Barn Owl (*Tyto furcata*). Our study presents the first data on Blue-crowned Parakeet‘s breeding biology in Brazil and the novel information of rock cavity being used as reproductive site.

10426 INFLUENCE OF BIRDS’ REPRODUCTIVE PERIOD ON BODY CONDITION OF *Antilophia galeata* (PASSERIFORMES: PIPRIDAE)

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A bird's reproductive period is indicated by the presence of brood patches, and is a period of higher energy demand. The accumulation of body fat to provide the energy required in this period can be achieved by the bird's diet. The Relative Body Mass Index (BMI) is a tool capable of assessing the body's condition by estimating the nutritional reserves, which is based on the biomass and on a measurement of the bird's body length. In this regard, the present study aimed to compare BMI values between individuals with and without brood patches. Ninety individuals of *Antilophia galeata* were captured from June 2013 to December 2015 in a semidecidual seasonal forest fragment in the Triângulo Mineiro, Minas Gerais, Brazil. In order to confirm the presence/absence of brood patches a modified scale of Wild Birds Banding Manual has been applied. The BMI was calculated by a Simple Linear Regression between the logarithmic values in the base ten of the biomass and the length of the right tarsus. There was no significant difference in the BMI values among individuals with and without brood patches (t = -0.578; df = 88; Prob = 0.565). This result can be related to the fact that *Antilophia galeta* is a non-migratory species and also that the studied area does not offer a constant supply of food resources. Therefore, it is concluded that the reproductive period did not affect the body condition of individuals of *A*. *galeata*.

10452 FROM THE NEST TOWARDS THE CHICK PRODUCED: CHALLENGES OF A SALT MARSH NEOTROPICAL PASSERINE

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Long-term monitoring is scarce in Neotropics, although necessary to understand the effects involving climate changes. *Formicivora acutirostris* is a rare member of its family that inhabits wetlands and the only to inhabit daily tidal wetlands (salt marshes). The objective of this study is to relate the results of 11 years of monitoring reproductive aspects of the species with limitations imposed by the tides. The study was carried out between 2006 and 2017 with monthly campaigns, monitoring of 12 to 37 territories per year, and banded all individuals. To estimate the reproductive phenology, we considered the laying of the first egg, to productivity, we counted the nestlings that have attained independence, and the reproductive success is the number of nests in which at least one chick was produced. The reproductive phenology (n=322 nests) extends from August (n=1) to February (n=5), with peaks in October (n=77) and December (n=93). The annual productivity obtained was between none to 29 chicks produced and the average reproductive success was 31.2%. The most frequent causes of nest failure were predation (38.4%) and flooding (27.0%). Causes related to climate change (flooding, wind, and heat) overcome predation (43.3%). The percentage of nests lost by flooding is higher in months with highest tides (October and November). Most chicks out of the nest reaches independence (72%). Many drown in the first day out of the nest. The

projected increase in sea level by climate changes may increase reproductive failure of the species.

10466 FIRST CASE OF OVERLAPPING BROODS FOR THE RED-TAILED COMET (*Sappho sparganurus*)

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In Argentina the Red-tailed Comet (*Sappho sparganurus*) is present throughout the year in the NW mountains and the Andean region, although it descends to lowlands during the non-breeding season. Breeding occurs above 800 m elevation, from September to February and incubation period is 19 to 20 days, with chicks remaining in the nest for 28 to 32 days. On 19 September 2013 in Mendiolaza City, Córdoba, Argentina (31° 15' S, 64° 17' W) a female started to build a nest under the eaves of a house, attached to a creeper. On 4 and 6 October it laid two eggs and the chicks hatched on 22 and 25 October, and remained in the nest for 30 days. On 17 November, seven days before chicks from the first nest fledged, I observed this same female carrying material to build second a second nest. On 28 and 30 November, the female laid two eggs which were incubated for 18 and 19 days and the chicks remained in the nest for 29 to 30 days. Because the first nest required 16 days to be built, it is estimated that November 12 was the beginning of the construction of the second nest. Consequently, I presumed that the overlap between the two broods was 17 days. My observations are the first instance of rapid double brooding for a Hummingbird species in the Southern Hemisphere and also expands the altitudinal breeding limit for the Red-tailed Comet 260 m below the current known limit.

10468 USE AND SELECTION OF BREEDING SITE AND TERRITORY BY SOUTHERN CARACARA (*Caracara plancus*) IN PAMPEAN AGROECOSYSTEMS

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Birds of prey usually have large home ranges and thus, nesting or foraging habitat selection occurs at multiple spatial scales. Our objective is to provide information on the use and selection of nesting site and nesting habitat by Southern Caracara (*Caracara plancus*) in an agricultural area of northeaster La Pampa Province. At nesting site level we recorded two variables, substratum tree species and height, in 23 occupied nests and 28 control points. For nesting habitat analysis we defined buffer areas in a 500m radius around the nest tree in 44 occupied nests and 34 control points. In each buffer we measured the surface covered by different land uses. Variables were grouped into five categories. The GLM results showed that at nesting site scale, the Caracaras chose higher trees ($p < 0.05$) than those randomly selected, although they did not choose any particular tree species. At nesting habitat scale Native Forest cover had a negative

influence (p=0.05) on territory occupation. In other geographic areas Caracaras also select relatively open sites for breeding. This selection would be related with a reduction in the risk of predation of adults and nestlings in the nest. The absence of clear selection of other variables in nesting territories could be due to the homogeneity of agricultural landscapes. Alternatively, it could be that the selection process occurs on a larger scale than the one evaluated.

10471 CARDINAL ORIENTATION OF CAVITIES EXCAVATED BY BIRDS IN THE NEOTROPICS: RELATIONSHIP WITH MACRO-ENVIRONMENTAL ATTRIBUTES

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The microclimate of avian nest and roost sites affects reproduction and survival; therefore, environmental placement of these structures is of adaptive significance. It has been hypothesized that, to optimize thermal properties, at higher latitudes avian excavators should orient their cavities more toward the equator. In support of this, a meta-analysis of cavity entrance orientation of Northern Hemisphere woodpeckers showed that with increasing latitude cavities were oriented more toward the south. We tested this hypothesis, with the inverse prediction (dominance of north orientations as latitude increases), for cavities excavated in the Southern Hemisphere, with data from nine Neotropical ecorregions, including tropical to subpolar sites (~16-55° S, ~48-72° W). We recorded orientations for nests and/or roosts (n=1511) excavated in trees, poles, and terrestrial termite mounds by 25 species varying in size, from *Picumnus* to *Campephilus*. Based on several generalized linear models, we found that macro environmental variables (such as altitude, latitude, or ecorregion) failed to predict orientation. Cavities were randomly oriented in Cerrado, Chaco, Atlantic Forest and Pampas ecorregions. However, they were non-random in Yungas and Monte (facing west-southwest), Espinal (north), Valdivian (east) and Magellanic (north-northeast) ecorregions. These results do not support the prediction that at higher latitude birds orient their cavities more toward the equator, and cast doubt on latitude as a global driver of cavity orientation. Other macro-environmental variables (such as reduced

continentality in the southern Neotropics) might cancel out the effects of latitude. Further, local variables may explain the patterns occurring at each ecorregion.

10535 AVIAN NEST SITE SELECTION AND REPRODUCTIVE SUCCESS

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Populations of cavity-nesting nesting songbirds have been declining throughout the globe. Cavity-nesting birds (those that require a tree hole or artificial nest box to reproduce) can benefit from conservation management efforts that establish potential nesting sites, buffering such populations from local decline. Many questions, however, are unanswered in regards to best management practices to bolster cavity-nesting species. We hypothesized that bird species differ in their nest site selection for boxes composed of either cedar wood or a Schwegler™ mix of concrete, sawdust, and clay. In December 2015, one of each type of box was erected in pairs across the Missouri Western State University campus. From March through July in 2016 and 2017 boxes were fitted with iButton temperature loggers and monitored every 3-4 days for breeding activity. Temperatures in Schwegler™ mix boxes were significantly higher with greater daily fluctuations. Black-capped Chickadees (*Poecile atricapillus*) and Eastern Bluebirds (*Sialia sialis*) significantly preferred Schwegler™ mix nest boxes, with no attempts made in wood boxes. This was despite the fact that wood boxes were cooler during the warm months of May-July. House Wrens (*Troglodytes aedon*) nested later in the season, and although there was no difference in the composition of boxes selected, significantly more House Wren young fledged from concrete boxes. These results are scientifically significant because knowledge of nest box preferences and temperature differences that may affect nesting success allows managers to target specific species of interest and support re-introductions of species of conservation concern.

10553 EX SITU BREEDING EXPERIENCE WITH SOLITARY TINAMOU (*Tinamus solitarius*) IN GUIRA OGA

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The Solitary Tinamou (*Tinamus solitarius*) is one of the largest members of the tinamidae family, and is also an Atlantic forest endemism that is locally considered Vulnerable. A moderately rapid and on-going population decline is suspected, owing to rates of habitat loss and hunting pressure, leading to population fragmentation. If so, it is relevant to gather knowledge of captive breeding techniques, as a part of a comprehensive strategy for his conservation. On account of that and under UICN guidelines an ex situ reproduction and conservation project is being carried out in Guira Oga Wildlife Rehabilitation Center. The present work synthesizes the captive breeding experience through artificial incubation with this tinamou. The outcome has been positive. Until now n=64 individuals have hatched, demonstrating the validity of the captive breeding

techniques employed, which along with other methods can aid Solitary Tinamou conservation.

10557 REPRODUCTIVE BIOLOGY OF MAROON-BELLIED PARAKEET (*Pyrrhura frontalis*) IN SUBTROPICAL BRAZIL

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About a fifth of all 72 species of Psittacidae in Brazil are endangered (16 species). Of those, six are in the genus *Pyrrhura* (of 18 species, 33% of the genus). The lack of information about breeding is a problem common to all species of parrots, especially those that are endangered. Closely related species should have similar ecologies and so the study of a common species can provide important information about the rest. The Maroon-bellied Parakeet, *Pyrrhura frontalis*, common in southern Brazil, is our model species to examine breeding patterns. During the breeding season of 2016, we collected data from 10 active nests in nest boxes in a rural area near the city of Curitiba, Paraná, Brazil. Median clutch size was 5, and clutches varied 2 - 8 eggs per nest. Forty of 52 eggs hatched (77%), and 37 survived to fledge (93%). Nests were initiated in October, November and December, yet laying date did not influence growth rates, all young left the nest at similar weights (80.70 ± 4.87 g). In one late nest, nestlings were parasitized by flies (two died), when growth ceased, but recovered when fly larvae were removed. Fledging weight was also independent of clutch size, which suggests that food was not limiting. We demonstrate not only that nest-boxes can be an important tool for conservation and for studying breeding behavior, but that data from this study can be used to better understand other, and endangered, species of *Pyrrhura*.

10559 CAPTIVE BREEDING OF COLLARED FOREST-FALCON (*Micrastur semitorquatus*) IN GÜIRÁ-OGA, MISIONES

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The Collared Forest-falcon (*Micrastur semitorquatus*) is distributed from Mexico to northern Argentina, where it is vulnerable according to the latest conservation status assessment. Güira Oga, a Wildlife Rehabilitation Centre located in Misiones, has been working on the breeding, rehabilitation, and release of this species since 2001. In this context, the objective of the present work is to describe one of these experiences. Three rescued and rehabilitated birds - two males and one female - were placed in a breeding chamber inside a flight cage with nest boxes. After a month, the birds began to copulate. Four months after copulation, the female laid three eggs that hatched within a month. The three adults were in charge of feeding the chicks until they were a month and a half of age, when they started feeding themselves. The chicks were then transferred to a freedom growth chamber in, where they used branches as perches and were fed by their

parents and the Centre's staff. For a week, they remained on the branches, returning to their nest in the afternoon; after the second week, they only returned to their nest looking for food. During this period, they were taught to hunt using quails and live mice. Four months after their birth, the falcons were returning to their nest less frequently. To date, eight specimens have been released and all of them have survived. This work shows that parental breeding, and release by the Hacking technique can be useful as a conservation strategy for this species.

10570 HOME RANGE AND REPRODUCTIVE BIOLOGY OF *Bubo virginianus* AT BRAZILIAN PAMPA

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Bubo virginianus is widely distributed in the Americas. Although relatively common, several aspects of the natural history of this owl remain unknown, especially in the Neotropical region. The aim of this study is to contribute to better understand the ecology of this species in the Pampa Biome. The study was conducted between 2015 and 2017 in Brazilian Pampa, Rio Grande do Sul, Brazil. A pair of great horned owls and their offspring was monitored along two reproductive seasons (monthly based observations). The location of each individual was taken with a GPS and used to calculate the home range estimates, which were performed using the software Biotas. The nestling period lasted for three months in both reproductive seasons. The post-fledging dependency period lasted for six months. In both reproductive periods clutch size was two eggs. In 2015 two youngs were successful raised. In 2016 just one egg hatched and this young was successful raised. Considering 95% of locations (excluding outliers points), home range of the pair of great horned owl was estimated as 0.35 km² considering MCP method, or 0.41 km² considering Kernel estimates. The monitored individuals spent the night in the border of the territory, using the central area of territory for resting during daytime. The breeding season seems to be associated to austral winter with hatching in late winter. The offspring seem to stay with the parents until beginning a new reproductive season, dispersing late in autumn.

10607 REPRODUCTIVE BIOLOGY OF THE IBERÁ SEEDEATER (*Sporophila iberaensis*)

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The Iberá Seedeater (*Sporophila iberaensis,* Di Giacomo & Kopuchian 2015) is a recently described species for science that inhabits northeastern Argentina, southern Paraguay, eastern Bolivia and central Brazil. It is categorized as “Endangered” by the IUCN. The aim of this study was to investigate the reproductive biology of *S. iberaensis* for the first time. Between November 2016 and January 2017, we monitored 19 nests located in the

flooded area around marshes. The plants supporting nests were *Paspalum durifolium* (Poaceae) and *Cladium jamaicense* (Cyperaceae). The clutch size was 1.9 ± 0.52 (SD) eggs (n=12), the mean number of nestlings per nest was 1.8 ± 0.38 (SD, n=13), and 37% of the nests produced fledglings. The daily survival rate was 0.943 ± 0.021 (SE, n=14), and the estimated probability of survival for the whole reproductive cycle was 26% (23 days). Nest failure was due to nest destruction by storms (55%), predation (36%) and abandonment (9%). Only the female built the nest and incubated; however the male participated in nestling provisioning. Differences in reproductive parameters between *S. iberaensis* and other seedeater species (*S. hypoxantha*) breeding in the same locality will be discussed.

10621 NESTING BEHAVIOR OF *Todirostrum poliocephalum* (WIED, 1831) (RHYNCHOCYCLIDAE) IN SOUTHEASTERN BRAZIL

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The Yellow-lored Tody-flycatcher *Todirostrum poliocephalum* is a passerine bird endemic to the Brazilian Atlantic Forest with a poorly characterized natural history. This study aimed to describe its nesting behavior over one annual reproductive period. Data were collected from nineteen nests in forest fragments and disturbed areas in the state of Minas Gerais, Brazil, with eleven nests systematically monitored at two to five day intervals. Nests were dome-shaped, suspended from the upper part, externally made of fine plant fibers and dry grasses, bound with spider webs. Tree bark, mosses and lichens are used as nest-adornment, and nests are internally lined with kapok and feathers. On average, nests were at 3.5 m above the ground and were built over a 16 day period by both adults, as has been reported for other species of the genus. Clutch sizes ranged from two to three eggs, with a mean of 2.9 eggs. Eggs roughly measured 16.6 × 12.1 mm and weighed 1.2 g. The incubation period was approximately 17 days and nestling period was approximately 15 days. Apparent reproductive success occurred in 36.4% of observed nests, while predation was the main cause of nests loss (36.4 %). According to the Mayfield method of calculation, overall reproductive success was 28.7% and daily survival rate for eggs and nestlings was 0.955 and 0.984, respectively. The present study contributes to the understanding of basic and not previously described reproductive aspects of the species, and discusses the influence of latitude on the reproductive patterns of the genus.

10625 CAMERA TRAPS REGISTERING THE BEHAVIOR OF Red-bellied macaw (*Orthopsittaca Manilatus*) INSIDE THE NEST

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The use of camera traps is a non-invasive method of study, since it does not require physical capture, having only images and videos recorded, without causing stress to birds. Monitoring and records taken with camera traps are important tools for biology and conservation studies. The Macaws in the City project monitors the reproduction of Blue-and-yellow Macaws (*Ara ararauna*) in the urban area of Campo Grande, Mato Grosso do Sul, as well as other species that reproduce in cavities left by macaws (e.g., Red-bellied Macaw, *Orthopsittaca manilatus*). During the 2017 breeding season, a camera trap was installed inside the nest that housed a nine-day-old *O. manilatus* female. The trap was installed for 27 days, totaling 5:45 h of observation time. It recorded the development of the chick until fledgling, as well as the behavior of the adults, where it was observed that the male slept inside the nest with the female and the chick. The male assists the female carefully and both took turns feeding the offspring. The photos and videos were analyzed and organized into a database. With the information collected using camera traps, it was possible to know the habits of this species to better contribute with its conservation.

10636 AGE-SPECIFIC VARIATION IN REPRODUCTION OF THE THREATENED STRANGE-TAILED TYRANT (*Alectrurus risora*) IN FORMOSA, ARGENTINA

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The knowledge on variation in reproductive performance in relation to age is important for making more accurate population viability models of threatened species. The aim of this study was to evaluate the longevity and reproductive parameters variation in relation to the age of the Strange-tailed Tyrant, a threatened bird that inhabits subtropical grasslands (25-29° S). The study was conducted over 13 years (2004-2016) in Reserva El Bagual, Formosa, Argentina. A total of 79 females were marked with metallic numbered bands and colored bands during their stage of nestlings, or in the case of adults, when they were captured with mist-nets in their breeding territories. All the reproductive attempts of these marked females were monitored year after year (N = 292). Most females began to reproduce in their second year of life; the minimum age of reproduction was one year and the maximum nine years. The number of breeding attempts increased with the age of the females (from 1 to 2.5 nests per year). The clutch size remained stable throughout the life of females (2.5 to 2.9 eggs per nest), however the number of fledglings produced reached a maximum at the age of 2 and 3 years (1.5 and 1.1 fledglings per nest) and then decreased to an average of 0.5 for the rest of life. These results indicate that in this population of Strange-tailed Tyrant there is a variation of the reproductive parameters in function of age that should be considered for conservation management.

10649 FIRST RESULTS ON PARENTAL CARE OF THE BLACK-AND-CHESTNUT EAGLE IN THE YUNGAS AREA OF JUJUY

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Raptors play a key role as apex predators in the regulation of ecosystems. However, little is known about the reproductive biology of some of them, as it is the case of the black-and-chestnut eagle (*Spizaetus isidori*). We used a camera trap to perform a study on parental care of a pair that nests in the Yungas area of mountain forest (Jujuy). During pre-incubation period, the female spent more time preparing the nest than the male. Incubation was mainly performed by the female, whereas male was only responsible for hunting and covering the egg when the female was out of the nest. The female performed incubations every night. After hatching, the male kept bringing prey items to the nest, whereas the female mainly focused on two tasks: covering and feeding. The female decreased the time spent covering the chick as it grew, possibly suggesting that the female adjusts her covering behavior according to the ability of chicks to thermoregulate; in fact, the female covered the chick less time when the temperature was higher. On the other hand, the female spent more time feeding the chick as it grew up, possibly in order to meet higher energetic requirements. Further, we observed numerous contributions of green branches in the nest, as well as defense postures and vocalizations by the female. A more complete knowledge of umbrella species such as the black-and-chestnut eagle could help in the conservation of its ecosystem, due to the interest in it by laypeople.

10672 REPRODUCTIVE BIOLOGY OF THE BLUE-WINGED MACAW (*Primolius maracana*) IN THE REGION OF CURAÇÁ, BAHIA, BRAZIL

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The aim of this study was to evaluate the breeding characteristics of Blue-winged Macaw (*Primolius maracana*) in the region of Curaçá, Bahia. The nests were made in cavities of caraibeira (*Tabebuia aurea*, 90%) and mulungu (*Erythrina velutina*, 10%), along temporary streams. The trees presented the average of height 24.4 ± 4.7 m, nest height 8.2 ± 2.4 m, diameter of breast heigh 89.2 ± 22.1 m, nest entrance on average of 13.1 x 9.7 cm and depth of 53.1 ± 25.9 m. Only one couple were observed nesting in each tree. We recorded competition and predation, especially during the incubation period. The oviposition began in mid-November and the peak of egg laying was in December (57.9%). Egg hatching began in December and the majority (44.44%) was made in January. There were cases of egg laying isolated in March, with hatching failure. The

chicks fledged mainly in mid-February and March. From 25 clutches monitored, 15 were accessed by vertical ascending techniques, containing 48 eggs, ranging from one to six eggs per clutches, the majority (40%) of three eggs. Nine nests had 22 chicks. They fledged around 50 days-old and remain returning to the cavity at various times of the day, for more than 90 days after fledge. The females' fecundity rate was 3.2 eggs produced per female, the productivity rate was one chick per nest and the breeding rate was 1.9 chicks per breeding pair.

10676 MONITORING OF THE REPRODUCTIVE SUCCESS OF *Spizaetus ornatus* (ACCIPITRIDAE) AT THE SERRA DE MARACAJU REGION, MATO GROSSO DO SUL, BRAZIL

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The Ornate Hawk-Eagle (*Spizaetus ornatus*) is a bird of prey associated with forest habitats, with requirements for the extension and quality of environments for its survival and population stability. Although widely distributed in Brazil, their populations have declined as a result of the loss and fragmentation of habitats. It is considered to be Near Threatened at the global and national level, but several Brazilian states classify it as Endangered. This work has been developed since 2014 to monitor the reproductive success of *S. ornatus* in the Serra de Maracaju region, the eastern border of the Brazilian Pantanal, Mato Grosso do Sul. We provide information on nest activity from incubating period until successfully fledged of the juvenile, at the RPPN Vale do Bugio, a municipality of Corguinho/MS. We have registered the most relevant events: adult behaviors during egg incubation, parental care, feeding behavior, diet, and interaction with other birds. The nest is located in a semi-deciduous dry forest, on an emergent tree (*Hymenaea courbaril*), about 20 m high, occupying a valley area between sandstone outcrops, near a stream. Vertebrates of small and medium size were the items consumed, with greater importance for reptiles and birds. The male was responsible for bringing food to the nestling and the female remained most of the time in the nest, in protection of the nestling and also to the territory. We confirmed the reproduction of Ornate Hawk-Eagle in two consecutive years, 2014 and 2015, with a reproductive interval in 2016, being the first case of reproduction in consecutive years documented in Brazil.

10689 LACK OF REMOTE MONITORING OF NESTS MAY EXPLAIN WHY FEW NEOTROPICAL NEST PREDATORS ARE MAMMALS

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Knowing the identities of nest predators is critical to fully understand nest predation patterns. In 2014, we conducted a review of nest predation events reported in the Nearctic. Another, more comprehensive review was conducted in 2016 for Neotropical

nest predators. A total of 158 and 254 species were identified in each region respectively. The proportion of reptile and arthropod species was similar among the two regions, but relatively less birds (47 v. 56%) and more mammals (34 v. 22%) were identified in the Nearctic. One explanation for this difference lies in the more frequent use of nest remote monitoring techniques in the Nearctic zone, which may mitigate the bias towards diurnal predators that is caused by data gathered by direct observation. In the Nearctic, 30% of all the sources (*N* = 88) identified nest predators using remote cameras. Together, these studies alone identified 50% of all the mammalian predators. In the Neotropics, only 33 studies (8% of the total) used remote cameras, and they alone identified 20% of all the mammals. Many mammals have nocturnal habits and predators that act at night will very unlikely be witnessed in the act of predation. Thus, apart from its efficiency and reliability, an additional reason for the use of remote monitoring in the Neotropical zone is to specifically compensate for the lack of information on nocturnal nest predators.

BROOD PARASITISM

10261 LOWER BEGGING EFFICIENCY CAN CONSTRAIN HOST USE IN THE SPECIALIST SCREAMING COWBIRD

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A generalist strategy of use of hosts by avian brood parasites requires that parasitic chicks be able to survive in a broad range of hosts. Coevolution with any particular host may constrain host use if increased specialization results in a lower efficiency of parasitic chicks to successfully exploit other host species. To test this idea we compared the begging efficiency of the specialist screaming cowbird (*Molothrus rufoaxillaris*) and the generalist shiny cowbird (*M. bonariensis*) in an alternative host, the chalk-browed mockingbird (*Mimus saturninus*). We manipulated mockingbird nests during breeding seasons 2010- 2011 y 2011-2012 to create two-chick broods as follows: one mockingbird and one screaming cowbird, one mockingbird and one shiny cowbird and two mockingbirds. Experimental broods were filmed on days 4 (n = 12, 17 and 24 for each treatment, respectively) and 8 (n = 6, 13 and 19) post-hatching to record the feeding frequency and begging intensity and duration of all chicks. Overall nest provisioning rates (feeding/h) did not differ among treatments at any age. The proportion of feedings received by cowbird and host chicks did not deviate from the random expectation of 0.5. However, screaming cowbird chicks had to strive harder to obtain food as they begged for significantly longer periods than shiny cowbird and mockingbird chicks. Furthermore, screaming cowbird-broods, but not shiny cowbird-broods, were more likely to be depredated than unparasitized ones. Our findings suggest that the lower

begging efficiency of screaming cowbird chicks, which results in increased predation costs, can constrain colonization of new host species.

10343 MULTIPLE LAYING FEMALES IN NESTS OF THE CATTLE EGRET (*Bubulcus ibis*): BEHAVIORAL AND GENETIC EVIDENCE

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Behavioral and genetic data were used to detect multiple females laying eggs in nests of the Cattle Egret (*Bubulcus ibis*). We used firstly a classic method of behavioral observations to select suspected nests in which the probability of detecting multiple laying females is greater than nests in general. Molecular genetics was then applied using seven microsatellite loci to compare genotypes of maternal DNA collected from eggs of the same clutch. We monitored 85 nests and collected swabs from eggshell from all clutches. A group of 18 nests with eggs that were laid in an interval of less than one day or more than four days was selected since they have eggs suspected origin from multiple laying females. After molecular sexing, 7.3% of the DNA swab samples were discarded due to contamination by DNA of a male origin, leading to the elimination of three clutches. Of the remaining 15 nests, DNA was extracted from all eggs (n = 43) and genotyped at seven microsatellite loci. Genotypes from maternal DNA found in eggs from same clutch were compared and genotypes with non-matching alleles at a minimum of two loci within the same clutch were classified as being the result of different laying females. Among 16 eggs classified by behavioral criterion as placed by a different female 14 eggs were confirmed by the genetic approach. Evidence of multiple females laying eggs in a same nest was discussed supposing the occurrence of conspecific brood parasitism or polygyny, previously reported for the Cattle Egret.

10564 SCREAMING COWBIRDS CAN RELOCATE A FOOD SOURCE, LEARNT BY USING COLOR AND POSITIONAL CUES, USING ONLY POSITIONAL CUES

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Screaming cowbirds (*Molothrus rufoaxillaris)* are socially monogamous obligate brood parasites that search and locate host nests during daytime and return to these nests one or several days later to lay eggs in the pre-dawn twilight. Visual cues, and especially chromatic information, are thus extremely different between daytime prospecting and twilight laying nest visits, posing the question of what stimulus dimension predominates in the birds relocalization memory. We trained six females and four males Screaming Cowbird to locate a food source using color and positional cues and evaluated their performance relocating the food when the color cue was no longer informative. Training and testing were conducted in an experimental arena with 36 holes, each one covered by a sliding brown disk. During the acquisition, the well with food was always in the same

location, which was indicated by a red disk. After birds learned this location, the color and positional cues were dissociated (the food remained in the same location, but the position of the red disk varied randomly among holes). There were no sexual differences in the acquisition and the dissociation. Most females and males followed initially the color information but they made fewer errors to find the food location than expected by chance, which indicates that they remembered the positional cue. Our results show that females and males Screaming Cowbird can relocate a food source that was learnt using color and positional cues using only positional cues.

10574 THE BEGGING OF THE PARASITIC SHINY COWBIRD (*Molothrus bonariensis*) CHICK INCREASES THE PREDATION OF NESTS OF THE HOST CHALK-BROWED MOCKINGBIRD (*Mimus saturninus*)

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Obligate avian brood parasites chicks may increase the predation risks of the nest in which they are by making it more detectable through their intense begging or by increasing the visit rate of the adult host to the nest. We studied the effect of the presence of the Shiny Cowbird (*Molothrus bonariensis*) chick on the predation rate of Chalk-browed Mockingbird (*Mimus saturninus*) nests. This study was carried out at Reserve El Destino (Magdalena-Buenos Aires). In the first experiment (seasons 2011-12 and 2012-13), the clutches were manipulated to beconformed by twomockingbirdand one cowbird chicks or by two mockingbird chicks. Predation rate was higher in the parasitized nests and correlated with a higher proportion of time of total begging produced in those nests. The intensity of begging of cowbird chicks was higher thanintensity of begging of mockingbird chicks, although there was no difference in the rate of feeding visits of the adults to the nest. In a second experiment (seasons 2015-16 and 2016-17), clutches made up of three mockingbird chicks and clutches with two mockingbird and one cowbird chicks were compared. Predation rate was higher in parasitized nests, although the proportion of time of total begging and the feeding rate of adults to the nest was similar between treatments. However, the begging intensity of the shiny cowbird chick was greater than the begging of host chicks. In conclusion, the begging intensity of the parasite chicks increases the predation of the Chalk-browed Mockingbirds nests.

COMMUNITY ECOLOGY

10206 HUMMINGBIRDS' INTERACTIONS AND THEIR FLORAL RESOURCES IN AN ANTHROPIZED ENVIRONMENT AT THE SOUTH OF BRAZIL

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Although hummingbirds are common inside cities, little is known about their feeding habits, which allows their existence in those modified environments. During one year I recorded which species of hummingbirds occur in urban gardens in the city of Getúlio Vargas, their behaviors and which plants are used by them. Eight species of hummingbirds could be found, being the species *Eupetomena macroura* and *Amazilia versicolor* occurrences at the North region of the State of Rio Grande do Sul. A total of 51 agonistic interactions were registered, being *Leucochloris albicollis* and*Chlorostilbon lucidus* the most aggressive and also the ones that visited the higher number of plants. It is also possible to suggest an altitudinal migration of *C. lucidus* at the State during the cold months. Twenty-two plant families were visited by those birds, with Bignoniaceae, Fabaceae and Malvaceae the most visited ones. The main flowering season of the observed plants was of September to December. Out of the 31 visited plants, 19 are considered exotics (61.3%) and 12 natives (38.7%); eight are classified as ornithophilous (25.8%) and 23 entomophilous (74.2%), which indicates an adaptation of these birds to the food availability inside cities. *Handroanthus chrysotrichus* had the shortest flowering period; however, it attracted a high number of hummingbirds; *Callistemon viminalis* was in bloom during the entire year and also attracted a high number of hummingbirds. All the visited plants have colors varied between white, yellow and red tones, and those with tubular corolla were the most visited (51,6%).

10214 HUMAN INDUCED ENERGY CHANGES AFFECT THE ABUNDANCES OF A GUILD OF RAPTORS IN PATAGONIA, ARGENTINA

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The Energetic Equivalence Rule (EER) states that the relationship between abundances of organisms (*N*) and their masses (*M*), is based on the available energy in the systems and the species metabolic needs, remaining constant with a value around α_{EER}=-0.75, ($N \leftrightarrow M^{(-0.75)}$). Humans have altered energy fluxes worldwide through their activities. Particularly, in northwestern Patagonia, small towns and cities emplaced as islands in a pristine environment, provide new resources of energy through rubbish dumps, but also with the introduction of livestock and exotic species. The European hare (*Lepus europaeus*) is one of the most invasive ones in the area reaching high abundances and serving as a new food-item for many top predators. We evaluate the effect of these human made changes in energy fluxes on the abundances of a raptor guild. We conducted 4000 Km of road transect, counting raptors and livestock during the day and hares during the night, to estimate each species density in the field. On average, we found that the raptor guild followed the EER although with a smaller coefficient than theoretically proposed (α_{TOT}=-0.56±0.062), indicating that Patagonia has higher abundances of bigger raptor species. Forest environments with human settlements tend to favor smaller species (α_{FOR}=-0.96±0.23) while steppe areas with high abundances of hares and livestock favor bigger species (α_{STE}=-0.52±0.14). Our results highlight that these human effects can alter top predator communities even when these are relatively

new. This should be considered as it impacts in the ecology and conservation of several species and their environment.

10236 ASSESSING NESTEDNESS FOR INSULAR BIRD ASSEMBLAGES: CONTRASTING ISLAND AREA AND ISOLATION FOR MULTIPLE DIMENSIONS OF BIODIVERSITY

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The Theory of Island Biogeography has focused on the effects of island area and isolation as determinants of the taxonomic diversity found in these ecosystems. However, species are not independent from each other in their evolutionary and ecological relatedness. Thus, it is essential to use an approach that simultaneously considers the multiple dimensions of biodiversity to understand the patterns of diversity in insular assemblages. We tested the effects of island area and isolation from the mainland in taxonomic, phylogenetic and functional nestedness among nine insular bird assemblages in southern Brazil. We used a framework designed for dealing with nested structures of communities, in which species-poor sites are expected to be subsets of the richest ones. We compiled literature data on bird species composition for each island, and assessed the phylogenetic and functional nestedness through a phylogenetic tree and a dendrogram of species similarities, respectively. We found that, for these three components of biodiversity, island area is the main driver of nestedness among assemblages, indicating that smaller islands are not only inhabited by subsets of species, but they also present a subset of evolutionary lineages and functional diversities. Results on the influence of isolation on community structure were all non-significant. Island area is thought to be a proxy for habitat diversity, thus it is likely that a subset of diversity at smaller islands arises as consequence of their low diversity of habitats, which in turn should reflect a lower number of bird species and low phylogenetic and functional diversities.

10396 GEOGRAPHIC DISTANCE AND TEMPERATURE EXPLAIN PASSERIFORMES BETA DIVERSITY IN AMAZON

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Beta diversity can be measured as the change in species composition over space and it can be decomposed into the turnover (species replacement) and nestedness (species loss) components. The patterns in beta diversity can be explained by stochastic (neutral) and deterministic (niche) processes. In this study, we partitioned the beta diversity of Amazonian Passeriformes into the turnover and nestedness components and verified the association of these components with climatic differences, geographical distance, and the presence of major rivers. We divided Amazonia into 549 grid cells (1º of latitude and longitude) and obtained presence-absence data for each cell from previously

published studies (BirdLife). Climatic data (mean annual temperature and precipitation) were obtained from remote sensing. Beta diversity was measured by the Jaccard dissimilarity index between pairs of cells. The association between environmental variables and the components of beta diversity was evaluated using multiple regression analysis of matrices. Changes in species similarity between sites (beta diversity) is more strongly associated with species turnover (bSIM =0.99) than nestedness (bSNE=0.01). The turnover in species composition is strongly associated with geographic distance (R^2: 0.48), mean annual temperature (R^2: 0.31), and the presence of the Amazon river. Our results suggest that rivers and temperature determine the distribution of birds in the Amazonian forest. In areas with no clear barriers for bird dispersal, the environment is strongly associated with changes in species composition. Regional characteristics may be determining the beta diversity of birds in Amazonia, coupled with the ecological characteristics of individual species.

10416 BIRD COMMUNITY OF SMALL URBAN REMNANTS OF THE ATLANTIC FOREST, NORTHEASTERN BRAZIL

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Human activities greatly decrease the availability of natural areas. Many of these areas become isolated, evidencing the process of forest fragmentation. In Brazil, the Atlantic Forest is one of the biomes that suffered most from the process of human occupation. Between 2015 and 2017, we studied fragments of Atlantic Forest in an urban area of the municipality of João Pessoa, Paraíba State, northeastern Brazil. We obtained data of richness, diversity and species composition of 10 small urban remnants of Atlantic Forest. The size of remnants varied between 1.6 and 8.6 ha. Data were obtained by the method of Mackinnon lists. The samplings were performed in the early hours of the morning, and also at the end of the afternoon, through direct observation and detection of bird sounds. We obtained 210 lists were obtained, totaling 2100 records, of 49 species. Seven of the 49 species represented 72% of the detections. The most common species were *Tangara palmarum*, *Coereba flaveola*, *Turdus leucomelas*, *Todirostrum cinereum*, *Pitangus sulphuratus*, *Tangara cayana* and *Vireo chivi*. The number of species among the forest fragments were relatively similar (21 to 31 species). *Leptodon forbesi,* a critically endangered species, was detected in the area. More data is needed to determine the importance of our area for this species. Probably the proximity of our fragments to two other larger areas, including a conservation unit with more than 500 ha, may explain the presence of this species in this area.

10417 FUNCTIONAL DIVERSITY OF BIRDS IN RIPARIAN FORESTS OF PIEDMONT FOREST IN ARGENTINA

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Functional diversity is defined as the value, range, distribution and relative abundance of functional characters (= traits) of the organism that constitute an ecosystem. These are the characteristics measured at individual level and that influence in growth, breeding and survival, and/or in the effects to the organisms on the ecosystem. The organisms can be described in terms of their functional relationships with respect to different habitat characteristics. Birds are interesting to assess the functional answers to modified environments, being affected by loss of natural environments, or favored by the presence of non - native matrix. The goal of this work is to know the functional diversity of birds in riparian forest in the piedmont forest of Northwestern Argentina, identifying structural variables of riparian forests that influence in the structure and function of the functional groups of birds. We selected six functional traits in 194 species of birds recorded in riparian forests, and six structural variables of these forests. The data were treated using RLQ Analysis, allowing functional traits to be incorporated to analyze species – environmental relationships, and therefore the study of relationships between the attributes of species and environmental conditions. Structural variables showed clear separation of sites allowing a distinction between "disturbed"/"non – disturbed" sites. Certain traits such as body size and guilds are ecological characteristics that make birds more and less prone to remain in specific sites.

10427 HABITAT AND DIETARY SPECIALIZED BIRDS ARE THE MAIN SEED DISPERSERS IN FOREST UNDERSTORY

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Each species in a plant-bird seed dispersal network plays different roles in network structure, the bird species being more topologically important, but not necessarily the most resistant to habitat disturbance. As a result, we aim to identify the extinction proneness traits that most effect the centrality metrics and determine the complementary specialization in the networks. We utilized four plant-bird networks from understory forest fragments in the Brazilian Cerrado, and for each species we applied three metrics: normalized degree, closeness centrality and betweenness centrality. Using a PCA analyses we unified all indices as the first principal component (PC1) and measure the extinction proneness traits (frugivory level, forest dependence and disturbance sensibility) with a GLM to best explain the variance in PC1. We also measure the complementary specialization in seed dispersal services on the four networks. The model containing frugivory level and forest dependence clearly explains the variance in PC1 (AICcw= 0.938). Three networks presented high specialization and low redundancy. In the understory of forest fragments in Cerrado, obligate frugivores and forest dependent species are the main seed dispersers, but ecologically specialized species tend to be more vulnerable to alterations in the environment. The seed dispersal services in these habitats are also very dependent on dispersal agent diversity,

presenting a low redundancy, as the seed dispersal is dependent on species with low ecologically equivalent pairs.

10475 HOW ARE ORGANIZED THE PLANT-FRUGIVOROUS BIRD INTERACTION NETWORKS IN A SAVANNA-FOREST MOSAIC IN THE CERRADO?

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In the tropical regions, savanna and forest formations that occur adjacently in the landscapes may differ in relation as structure of the assemblages. Here, we recorded interactions of frugivory by birds in savannas and forests formations in the Brazilian Cerrado to answer the following questions: (i) How is organized the frugivorous bird-plant network? (ii) Is the structure of the interaction networks different in savannas and forest formations? We conducted the study in a mosaic of savannas and forests in the Serra Azul State Park (15º52'S, 51º16'W) in Mato Grosso State, Brazil. We recorded the frugivory events through linear transects (248 hours of observation) and focal method (36 hours) in 2009-2012. We organized the data as a qualitative matrix to calculate the connectance and the nestedness. We recorded 180 interactions involving 54 species of birds and 41 species of plants, and the connectivity was 8.13%. The bird-plant network was nested (NODF = 21.39; $p < 0.001$). However, when we considered each independently, we found the network structure to be different in savannas (NODF = 19.84, $p = 0.13$) and forests (NODF = 26.69, $p < 0,001$). This difference can be due to the greater availability of resources and vertical stratification in forest formations, allowing alternative routes of interactions. For us, this is an indicative of the importance of forests in the maintenance of interactions in heterogeneous environments such the Cerrado and of more specialized associations in savanna formations, suggesting that this type of environment is more fragile to the loss of interactions.

10505 HOME RANGE OF ONE ATLANTIC FLOREST MIXED-SPECIES BIRD FLOCKS

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Studies on Atlantic forest mixed-species bird flocks have been focused on flock composition and in the role performed by the participants, such that their spatial ecology is still unknown. Assuming the flock home range is the extension traveled by the nuclear specie *Habia rubica* when it is associated with others species, a flock located in Blumenau, in the state of Santa Catarina, is currently being monitored. After the tagging with colored plastic leg rings, the flock's participants were followed from March to May 2017, totaling 16 sampling hours. The geo localizer was obtained via handheld GPS by

regular 30 seconds intervals. Until now, 43 species have participated of the flock, and its home range has covered 15.73 hectares (Kernel Density Estimator, isoplets 90%), being above the average found for tropical forests. This information, along with the concomitant presence of 5 individuals of *Philydor atricapillus* (Wied, 1821) during all sampling periods, and to the existence of one single group of Habia rubica in the remnant, suggests that local factors are acting in the association. Among these factors are the size, the relative isolation, and the well-conserved state of the vegetation of the remnant, which could be acting as antagonistic forces in local avian community structure and, in consequence, of the flock. It is expected that this study continuity allows for a comparative evaluation of area requirements between these species.

10572 RICHNESS AND CONSERVATION STATUS OF BIRDS IN AN ATLANTIC FOREST FRAGMENT IN THE PERNAMBUCO ENDEMISM CENTER, RIO GRANDE DO NORTE, BRAZIL

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The Atlantic Forest is among the largest biodiversity hotspots in the world. Despite being one of the best studied tropical forests, some regions such as the Pernambuco Endemism Center, in the northeast of Brazil, still lack bird inventories. Between 2016-2017 we surveyed the birds of RPPN Mata Estrela, Baía Formosa, Rio Grande do Norte aiming to assess the conservation status of the community. We used standard point counts methods, non-systematic surveys and scientific publications to update the number of species known for the study area. Finally, we estimated the species richness for the study area using the non-parametric estimator Jackknife 1. From total, 40% of species were found only in our surveys, 25% in published data and the remaining 35% in both. The most of species (36%) occurred both in semideciduos forest and sandy coastal forest (restinga), followed by species found solely in the forest (30%), resting (22%), associated with water bodies (6%) and surrounding matrix (6%). We obtained a expected richness of more than 90 species when considering only point counts data (71 ssp) without stabilization of the cumulative curve, despite the high number of samples (400 samples). Our results suggest that the RPPN has considerable species richness, including endemics (11 ssp.) and threatened (11 ssp.) such as *Conopophaga cearae*, *Penelope superciliaris*, *Momotus momota marcgraviana* and *Herpsilochmus pectoralis*, justifying the importance of this area for bird conservation in the region.

10645 AVAILABILITY OF TREE CAVITIES AND ABUNDANCE OF CAVITY NESTING BIRDS: RECOMMENDATIONS FOR SUSTAINABLE FOREST MANAGEMENT IN NORTHWESTERN ARGENTINA

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Forestry management changes forest structure and composition and it has been suggested that cavity nesting birds are particularly sensitive to these changes. The aim

of this study is to determine if cavity nesting birds using cavities present in the forest (secondary cavity-nesters) change their abundance and to understand the relationship between this group of species and cavity availabilityin piedmont Yungas forest being logged in northwestern Argentina. During two breeding seasons we conducted 30 point counts of 10 minutes length and 50 meter fixed-radius across three reference sites and three sites with forestry management in order to determine bird abundance. Additionally, we selected 10 to 20 circular plots to evaluate density of trees with cavities. We found higher abundance of secondary users in sites without forestry management compared to those being logged (6,41 ± 4,16 vs. 3,36 ± 2,73; U Mann-Whitney = 22771 - p= <0,0001). Cavity density was also higher in sites without forestry management (14,88 ± 7,50 vs. 6,20 ± 4,05; U Mann-Whitney = 1147,50 - p= <0,0001). Secondary user abundance was positively correlated with cavity density (R^2= 0,78 – p= 0,003). The relationship between secondary users and cavity density suggests the need for maintaining these cavities available in sites with forestry management.

10675 BIRDS AND CAVITIES: KEY INTERACTIONS TO MANAGE LOGGED FORESTS

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Comparing interaction networks between cavity-nesting birds and trees, in undisturbed sites (US) and logged sites (LS), is useful for management guidelines of the latter. We present results of an ongoing monitoring of three US's and four LS's in piedmont forests of Salta and Jujuy. We recorded 229 interactions among 14 tree species and 20 bird species (five excavators, and 15 non- excavators) at UD's, and 50 interactions between eight tree species and 14 bird species (four excavators and 10 non-excavators) at LS's. Non-excavators mostly used decay-formed cavities; woodpecker-excavated cavities were more often used at LS's (25% of non-excavator interactions, n=24) than at US's (10%, n=68). Key tree species based on Importance and Strength indices were *Calycophyllum multiflorum*, *Anadenanthera colubrina* and "snags" (dead trees) at US's, and snags, *A. colubrina* and *Astronium urundeuva*at LS's. Simulated extinction of key tree species disappeared 32% of bird species at US's, and 46% at LS's. There were three interaction modules at US's; a fourth module of non-excavating birds with decay-formed cavities in snags was added at LS's. Other parameters were similar in SSD vs. SAF: connectance 0.15 vs. 0.16; interaction dominance 0.135 vs. 0.140; and interaction evenness 0.957 vs. 0.962. The exposed differences suggest a shortage of decay-formed cavities in living trees at LS's, possibly due to the high extraction of *C. multiflorum*.

CONSERVATION

10239 CURRENT THREATS FACED BY NEOTROPICAL PARROT POPULATIONS

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Psittaciformes (parrots, cockatoos) are among the most endangered birds, with 31% of Neotropical species under threat. The drivers of this situation appear to be manifold and mainly of anthropogenic origin. However, this assessment is based on the last extensive consultation about the conservation situation of parrots carried out in the 1990s. Given the rapid development of anthropogenic threats, updated data are needed to strategize conservation actions. Using a population approach, we addressed this need through a

wide-ranging consultation involving biologists, wildlife managers, government agencies and non-governmental conservation organizations. We gathered up-to-date information on threats affecting 192 populations of 96 Neotropical parrot species across 21 countries. Moreover, we investigated associations among current threats and population trends. Many populations were affected by multiple threats. Agriculture, capture for the pet trade, and logging each affected >55% of the populations, suggesting a higher degree of risk than previously thought. In contrast to previous studies at the species level, our study showed that the threat most closely associated with decreasing population trends is now capture for the domestic pet trade. Other threats associated with decreasing populations include small-holder farming, rural population pressure, nest destruction by poachers, agro-industry grazing, small-holder grazing, and capture for the international pet trade. Conservation actions have been implemented on <20% of populations. Our results highlight the importance of a population level approach in revealing the extent of threats to wild populations. It is critical to increase the scope of conservation actions to reduce the capture of wild parrots for pets.

10336 THE BIRD COMMUNITY OF BAÑADOS DE FIGUEROA, AN IMPORTANT AICA OF SANTIAGO DEL ESTERO, ARGENTINA

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In the vast plain formed along the Salado River, north of Argentina, there are the Bañados de Figueroa, a complex system of forests, grasslands, crops, natural and artificial wetlands. At present, this complex system has been modified by the influence of man, by modifying the natural limits of Bañado, with works of hydraulic engineering, which have altered the regime of the river and of the wetland as a whole. The aims of this work are to describe the diversity, the trophic assemblages and the variation of the bird community, in three artificial reservoirs that are part of the Bañado. Transects of long and fixed width were performed, from spring 2008 to winter 2012, with a total of 106 samples. We identified 154 species, with a total abundance of 164.051 individuals, of which 38.31% of species are migratory. The species were grouped into five assemblages according to feeding strategies and diets used by birds. The best represented assemblages were the ones that looked for the food moving between the vegetation (64 species) and those that look for the food walking in beaches and / or shallow waters (43 species); in addition, the omnivorous (53 species) and insectivorous-invertivorous species (49 species) were dominant. It is necessary to maintain the different wetlands of this system, which is considered an important area for bird conservation (AICA), to implement guidelines to regulate the hydrological regime to conserve the biological potential of the area.

10344 FREE-RANGING DOMESTIC DOGS: A THREAT FOR WILD BIRDS? ATTACKS ON PENGUINS IN A PROTECTED AREA

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Seabird colonies can be affected by the presence of free-ranging dogs in the natural environment. Extreme negative situations can occur when dogs engage in surplus killing, a common behavior exhibited by carnivore predators in which they kill more prey than they can immediately eat. During October and November 2016, at least 400 adults of Magellanic penguins (*Spheniscus magellanicus*) were killed at Isla Quiroga (Ría Deseado Provincial Nature Reserve, Santa Cruz, Argentina) by attacks of at least four free-ranging domestic dogs, which managed to reach the island by swimming from the continent (<60m) during days with extraordinarily low tides. The cost to this colony of this threatened penguin species, before the enforcement authority managed to catch the dogs (during a crossing), was a reduction of 14% of its breeding population. This is the first record of such magnitude of adult penguins predation by dogs on the Argentine coast. During recent years, the increase in the number of free-ranging domestic dogs in Puerto Deseado (the town adjacent to the Nature Reserve), due to a lack of dog owners' responsibility and of an effective legislation which controls dogs, could explain a greater presence of free-ranging dogs in this Reserve, which, along with a very poor patrolling and management of the protected area, has caused this serious conflict with the wildlife.

10442 PROPOSAL FOR THE MONTE LOAYZA (IBA) IN SANTA CRUZ, ARGENTINA

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The IBA Monte Loayza coincides with the Monte Loayza Conservation Unit (MLCU), which is the junction of the Monte Loayza Provincial Park and the Cañadón del Duraznillo Natural Reserve. With 87,136 Ha of open water and 10,000 Ha of coasts and shrubby steppes, MLCU protects the largest reproductive colony of Sea Lion (*Otaria flasvecens*) in the Atlantic Ocean and the most diverse settlement of coastal-marine birds of the San Jorge Gulf. According to internationally agreed criteria the site holds eight globally threatened species (A1); one typical species from the "Southern Patagonia" (EBA 062; A2); 16 endemic birds of the "Patagonia" biome (A3); and two endemic species of Argentina (C2). We have accounted for 1900 nests of Imperial Cormorant (*Phalacrocorax atriceps*), 120 nests of Magellanic Cormorant (*Phalacrocorax magellanicus*), 58 nests of Red-legged Cormorant (*Phalacrocorax gaimardi*), more than 2300 nests of South American Tern (*Sterna hirundinacea*), as well as colonies of Gray Gull (*Leucophaeus scoresbii*) and Sandwich Tern (*Thalasseus sandvicensis*). The coast is visited by the

Magellanic Rockhopper Penguin (*Eudyptes chrysochrome*), and the breeding of marine mammals attracts the Southern Giant-Petrel (*Macronectes giganteus*). The steppe is the habitat of Darwin's Rhea (*Rhea pennata*), Patagonian Tinamou (*Tinamotis ingoufi*), and Band-tailed Earthcreeper (*Ochetorhynchus phoenicurus*). The area has high tourist and educational potential and its recognition as an IBA will increase the interest of the local community in the area and the conservation of its nature.

10443 PROPOSAL FOR THE IMPORTANT BIRD AREA TRES CERROS, LOMA ALTA AND RÍO MIRIÑAY, IN CORRIENTES, ARGENTINA

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There are more than 10.000 Important Bird Area (IBA) worldwide (274 in Argentina), and new ones are permanently proposed. The recognition of grassland IBAs as ornithological important territories is the first action to encourage the management, conservation and protection of this highly endangered biome. We propose the Tres Cerros, Loma Alta and Miriñay River IBA in the grasslands of center Corrientes province (29 ° 05'S-57 ° 01'O). It comprises 88.000 ha of fields, forests, malezales and rocky outcrops. It is a strategic area for the connectivity between Ibera Wetlands and the Miriñay, Aguapey and Uruguay Rivers. According to internationally agreed criteria the site holds nine globally threatened species (A1); two typical species from the "Mesopotamian Grasslands of Argentina" (EBA 077; A2) and 13 endemic birds of the "Pampas" biome (A3): *Xolmis dominicanus*, *Alectrurus risora* and seedeaters (*Sporophila* spp.) inhabit and nest in grasslands, *Gubernatrix cristata* occupies wooded savannahs and *Buteogallus coronatus* frequents grasslands and exotic forest edges. An important proportion of the proposed IBA is a forested landscape together with a grassland conservancy policy. However, the increase of forestry and agricultural activities, the drainage of malezales or the implantation of pastures would affect the grassland threatened birds. The proposed IBA is in owned privately but two private natural reserves were established. We recommend as a conservation strategy for the grassland birds to promote the creation of more private reserves and the environmental territorial ordering and to design a biological corridor between Ibera Wetlands and Uruguay River.

10445 THREATENED GRASSLAND BIRD POPULATIONS IN THE WESTERN IBERÁ WETLANDS, CORRIENTES, ARGENTINA

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Grasslands environments in Argentina are highly transformed and poorly represented in protected areas. Particularly, northeastern grasslands contain 23 threatened bird species, which highlights the need to assess the status of their local populations. The objective of this study was to provide updated information on richness, abundance and

density of threatened grassland bird species in the western Iberá wetlands (Corrientes, Argentina), at the Empresas Verdes Argentina S.A. property (28 ° 12'S, 57 ° 33'W). We recorded global and national threatened species with 136 point counts (10 minutes, 200m radius) in grasslands (predominance of grasses) and wetlands (predominance of marsh and acuatic plants) during the breeding season. Richness of threatened birds species was obtained from field work and bibliographical review, while mean richness, mean abundance and density were calculated based on systematized records. We recorded 249 individuals and a total richness of 18 threatened species including Endangered (e.g. *Sporophila iberaensis*), Vulnerable (e.g. *Anthus nattereri*) and Near Threatened species (e.g. *Eleothreptus anomalus*). Significant differences were found between pastures and wetlands in density (0.322 ind./ha vs.0.234 ind./ha, p0.0162) mean richness (1.43 ± 1.22 vs. 0.6 ± 0.54, p0.0002) and mean abundance (2.02 ± 1.98 vs. 1.47 ± 3.03,p 0.0162). *Cairina moschata*, *Jabiru mycteria* and *Amblyramphus holoseriseus* are more abundant in wetlands, and *Alectrurus risora*, *Xolmis dominicanus*, *Sporophila* spp (*pileata*, *cinnammomea*, *hypochroma*, *hypoxantha*, *iberaensis*) in grasslands. These results reinforce the conservation commitment in the western Iberá wetlands.

10474 A HABITAT MODEL TO AID THE CONSERVATION OF RED-COCKADED WOODPECKERS IN THE SWAMPS OF NORTH CAROLINA

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Current management plans for endangered Red-cockaded Woodpeckers (*Picoides borealis*; RCW) focus on habitat selection of RCWs in open, fire-maintained, mature pine forests that they inhabit across much of their range in the southeastern United States. Thus, existing habitat management guidelines do not consider RCWs living in disparate habitat in northeastern North Carolina characterized by swamp forests with a dense mid-story. Here, little is known about habitat selection or distribution of RCWs. Given that RCWs in the area constitute a unique ecological component of RCW diversity, a better understanding of the habitat requirements and distribution of this population is needed for conservation purposes. In this study, we used logistic regression to model habitat selection of RCWs in northeastern North Carolina. We modeled habitat selection at three spatial scales that reflected potential home range sizes and considered five land cover types; low-, medium-, and high-density pine woodland, open land, and pine plantation. We also considered the number of RCW clusters within the dispersal distance of adult and juvenile females (3 km and 6 km, respectively) from each site. Our results suggest that sites used by RCWs had a lower proportion of pine plantation and a higher number of clusters within 3 km compared to unused sites, but that density of pine did not influence habitat selection. By integrating our model into a Geographic Information System, we demonstrate that our model can be used to predict the distribution of RCWs remotely, and thus identify sites for targeted management.

10493 A MONITORING PROTOCOL FOR THE ENIGMATIC AUSTRAL RAIL *Rallus antarcticus*

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Austral Rail (*Rallus antarcticus*), globally vulnerable, inhabits wetlands in Argentinean and Chilean Patagonia. It was rediscovered in 1998 and the state of its populations is poorly known, so it is necessary to generate monitoring protocols. The aim was to know the effect of broadcast two voices (duet and song) in two moments of the day (dawn and dusk) and the season (reproductive and post-reproductive) to the probability of detection and latency (time before first response), we conducted playback assays in Santa Cruz province, Argentina, between December 2015 and April 2016. We built Occupancy Models corrected by imperfect detection, n=30 detection histories, and Generalized Linear Models, n=55 survey points. There was no influence of time of day and season in both parameters. Song had a bigger probability of detection and latency (0.91 and 105 sec) than duet (0.62 and 44 sec) but statistically significant in the last case ($p=0.59$ and $p<0.001$, respectively). The lack of effect of time of day and season in both parameters represents a logistic advantage because is not necessary to restrict surveys to a specific moment. Instead of the longtime of responses, the song was more effective to detect individuals. Recording new voices and broadcasting it in more stages of it reproductive cycle will contribute to standardize this protocol to monitor mid-term changes in rail populations.

10534 ROLE OF THE CENTRO DE ATENCIÓN DE FAUNA AUTÓCTONA JUJEÑA (JUJUY WILDLIFE CARE CENTER) IN THE CONSERVATION OF BIRDS IN THE PROVINCE OF JUJUY, ARGENTINA

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The Jujuy National Wildlife Service Center (CAFAJu), dependent on the Ministry of Environment of the Province of Jujuy, aims to rescue and rehabilitate wild fauna, which enter the center by seizures of national and provincial public forces, rescues Made by the technicians of center and voluntary deliveries. Up to now, 87 individuals have been worked with birds, of which 14 were volunteered by the population, 73 were rescued by CAFAJu personnel and confiscated by the public security force. Of all the birds that entered 30 were rehabilitated and reconstituted in their place of origin, 9 species remain in the center to continue the rehabilitation. The Bioandina Foundation in the Andean Condor Conservation (*Vultur grhyphus*) was referred to 7 specimens with symptoms of intoxication, of which 6 were poisoned with pesticides and lead in blood and one specimen was in the evaluation of their physical and sanitary conditions. The recovery, rehabilitation and release of six Jujuy condors were achieved. Before the liberations, talks are held in schools and in the community, which aims to make the whole population aware of the role of the Andean Condor in our environment. We work in

environmental education with students of different levels of education and the inclusion through internships of young people with different disabilities. It is articulated with the Department of Zoonoses of the Province, SENASA, Hospitals, municipalities and other care centers for the diversion of birds.

10566 UPDATE OF THE BIRDS ADMITTED IN THE BUENOS AIRES CITY WILDLIFE RESCUE CENTER (WRC) 2015-2017

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Wildlife rescue centers (WRCs) aim to provide a rapid and effective response to the conflict between wildlife and human activities, which is the main reason why animals enter these places. On the other hand, society demands response to these conflicts at all costs, the collapse of scarce resources have CMR. During the last 10 years the causes of entry and the destinations of wild birds treated in rescue centers have been analyzed, especially in the City of Buenos Aires WRC. The purpose of the research is to quantify and assess the admission and destination of the birds that entered between June 2015 and April 2017 of the City of Buenos Aires WRC. Five hundred and eighty two birds were admitted, 70% were taken by citizens, 17% came from other institutions and 13% were taken by wildlife department authorities. Of these, 40% were released, 15% were sent to other institutions, 38% died, 4% are still in rehabilitation, 3% escaped and 1% went to education. In comparison with previous periods, the number of birds being taken in continues to increase. However, the success of the releases is decreasing. This shows that the CMR is working beyond its operational capacity. It is necessary to increase its infrastructure and resources, as it is necessary to create more rescue centers and generate an efficient regulatory network. This is the only way respond positively to the conflict between wildlife and humans.

10569 USE OF PREDATOR EXCLOSURES TO PROTECT *Xanthopsar flavus* NESTS IN ARGENTINA

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The Saffron-cowled Blackbird *Xanthopsar flavus* is a passerine endemic to the temperate grasslands of southern South America and categorized as vulnerable to extinction by IUCN. Four small and disjoint populations are left in the southwest of Brazil and Uruguay; southeast of Paraguay and northeast of Argentina. In Argentina the species has been classified as critically endangered due to the great decrease in its populations experienced in the last decade, shifting its numbers from 1500 to only 600.

Regular reproductive sites are unknown in Argentina and the territory lacks protection. In 2015 a project was developed to protect the colonies and increase the reproductive success of both populations from Entre Rios and Corrientes located in endangered IBA (AR177 IBA and AR143 respectively). Due to the nests' low survival rate in the colonies, we designed a simple protection to protect them from medium sized predators. During 2015 and 2016 reproductive season we installed these mesh enclosures to 29 nests on chick stage and monitored by camera traps to record the activity of parents and possible predators. In Corrientes, the success of protected nests was 50% and 82% in each year respectively. In Entre Ríos, the protections were only placed during 2016 with a 50% success. 26 nests were left unprotected with null success in both seasons for Corrientes and 13% and 53% for Entre Ríos. In this study, we describe the simple and cheap device used to increase the reproductive success of Saffron-cowled Blackbird's colonies prone to high predation risk.

10577 UNDERSTORY BIRDS AS INDICATORS OF FOREST CONDITION IN LOGGING SITES IN THE SOUTHERN YUNGAS

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Determining the presence or abundance of a small group of indicator species may be a more efficient alternative than sampling a community as a whole. This approach has been useful for long-term environmental monitoring schemes where species identified as indicators provide evidence of the impacts of environmental changes. Understory birds are a group sensitive to logging because they respond to changes in forest composition and structure. Our objective was to identify understory birds species that can be used as indicators of forest condition in piedmont forest of northwestern Argentina under logging. In sites under logging we conducted 202 counting points of 10 minutes duration and 50 m fixed-radius and 172 reference sites. At each site we identified bird species by visual and acoustic detection during the reproductive seasons 2015/16 and 2016/2017. To determine indicator species we applied the indicator species analysis and the dominance value analysis. We registered 2574 individuals of 37 understory birds species. Common or dominant indicator bird species in logging sites included: *Thamnophilus caerulescens*, *Poecilotriccus plumbeiceps*, *Synallaxis scutata*, *Leptotila megalura* and *Cripturellus tataupa*, whereas in reference sites: *Sittasomus griseicapillus*, *Lepidocolaptes angustirostris*, *Cyanocorax chrysops*, *Casiornis rufus*, *Veniliornis frontalis*, and *Thraupis sayaca*. There is a reduced group of understory birds species that may be used as indicators for the implementation of monitoring programs for changes in forest condition.

10602 DISTRIBUTION OF HUMMINGBIRD SPECIES IN AN AREA UNDERGOING REGENERATION OF A DRY TROPICAL FOREST

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Factors such as the richness and abundance of hummingbirds can be influenced by the structure and composition of the vegetation, changing their dynamics and distribution in the environment. So, it is expected that in the more advanced regeneration stage, the environment will offer more resources, allowing an increase in the number of individuals and species on the area. So, the objective of this work is to evaluate the changes in the abundance of individuals and the richness of hummingbird species over five years in a regenerated pasture area. The study was carried out in the Parque Estadual da Mata Seca, in Manga-MG (14º45'21" S, 43º55'56" W), whose predominant vegetation is Dry Tropical Forest. The specimens were captured using mist networks between October 2008 and January 2014. To analyze the variation in abundance and species richness between the years, generalized linear models were constructed in the R software. In all models, the distribution of Errors was Poisson, relations were significant when $p < 0.05$. The analyses showed that the abundance of hummingbirds increased over the years, however, there was no significant difference in the richness. The increase in abundance may be related to the increase of the floral resources, in response to the greater structural complexity of the vegetation over the years. However, the years of regeneration weren't enough for more species to settle in the area. Further studies will be necessary to verify the potential pollinator of these hummingbirds on the area and their importance to the natural regeneration of degraded areas.

10611 CONSERVATION OF PRIORITY AREAS OF *Polylepis* FORESTS IN THE DEPARTMENT OF COCHABAMBA, BOLIVIA

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Polylepis forests in high-Andean areas and considered threatened ecosystems in South America are found in a fragmented scenario maintained by fire and renewal of pastures for cattle and sometimes modified by reforestation practices. Ecological studies are important to help maintain and conserve these forests, thus the present study sought to determine the most relevant guideline in the prioritization of areas for conservation through diversity, abundance and endemism of plants and birds. Survey sites were selected, where each one was characterized during the course of a year employing diverse techniques of standardized evaluation for the groups considered as indicators of the conservation state. For the evaluation of the state of conservation criteria we used: Total loss and fragmentation of each forest, suitability of birds, threatened species and levels of endemism. The results show that two of the studied sites present values between 10 and 20% of loss, value that indicates that they are at the mínimum level,

but with high priority of conservation. Fragmentation of these forests is low, with fragments connected, higher than 50%. With respect to suitability, these forests have a medium conservation state, with regular presence (25 to 50%) of characteristic Community birds and/or endemics. The actual threats and the conservation state of *Polylepis* forests are very high, since it is an endemic or country exclusive.

10619 RED-BROWED PARROT PROJET (*Amazona rhodocorytha*): CONSERVATION AT MINAS GERAIS AND RIO DE JANEIRO STATES, BRAZIL

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Amazona rhodocorytha is an endemic species of Atlantic Forest. It is also global and national threatened due to habitat loss and trapping for the illegal trade. Occurs in the states of Alagoas, Bahia, Espírito Santo, Rio de Janeiro (RJ), Minas Gerais (MG) and historically, Sergipe. Very little data on its natural history was available until 2015, which instigated the establishment of the "Red-Browed Parrot Project". The Project is centered in gathering data on this species' biology to strengthen conservation actions and influence public policies to protect areas and fight parrots illegal trade, according to recommendation of the National Plan of Action for the Endagered Parrots ICMBio/MMA - Brazilian National Ministry of Environment - proposals. Primarily, the Project focused on species field surveys in Atlantic Forest regions in RJ and MG, studying main forest patches. Until now, 28 municipalities were surveyed in MG (74 sample sites and 85 questionnaires) and Red-Browed Parrot was recorded in 17 (60%) municipalities. In RJ, 45 municipalities were surveyed (123 sample sites and 187 questionnaires) and the focus species were recorded at 15 (33%). All 264 questionnaires reported important data: more than 25 food resources used by Red-Browed Parrot; low density of pairs or small flocks; and September to November as RJ breeding season. The need for continuity of these actions throughout the species' range is needed in order to improve understanding on Red-Browed Parrot current conservation status scenario and consequently strengthen priority conservation strategies, according to local realities.

10662 THE POTENTIAL DISTRIBUTION AND DEFINITION OF IMPORTANT AREAS FOR CONSERVATION OF 14 THREATENED CAATINGA BIRDS

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Predictive modeling of potential distribution has been considered an important tool in conservation strategy planning. Knowing the potential distribution of threatened species may contribute to the assessment of conservation status, searching for new

occurrence records, and protecting species. The objective of this work is to determine the potential distribution of 14 threatened taxa of birds from Caatinga, and to determine important areas for conservation. Geographic coordinates were obtained from the GBIF, CEMAVE / ICMBio, ISI Web of Knowledge and Google Scholar databases. The potential distribution models were developed using Maxent environmental variables obtained from Worldclim. The results were plotted using QGIS, and the areas without vegetation were excluded from the models using the Global Forest Change mapping. *Penelope jacucaca, Crypturellus noctivagus zabelê* and *Xiphocolaptes falcirostris* presented areas with environmental suitability and remnant forest in the Northeast states. *Formicivora grantsaui*, *Rhopornis ardesiacus, Phylloscartes beckeri, Scytalopus diamantinensis* and *Augastes lumachella* had more than 90% of their potential distribution in the Bahia state. Whereas *Phylloscartes roquettei* and *Formicivora iheringi* was restricted to Minas Gerais and Bahia. *Sclerurus scansor cearenses* and *Hemitriccus mirandae* had small distribution areas in the states of Alagoas, Pernambuco, Paraíba, Rio Grande do Norte and Ceará. The models were congruent with the species distribution presented in the literature, but there was a reduction of over 60% in the distribution when areas without remnant forests were removed. From these data the important areas have been selected.

10670 ANALYSIS OF THE HISTORICAL AND PRESENT DISTRIBUTION OF THE YELLOW CARDINAL (*Gubernatrix cristata*) IN ARGENTINA

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The Yellow Cardinal (*Gubernatrix cristata*) is found in Brazil, Uruguay and Argentina in thorn forest habitats and savannas. Historically the major part of the distribution of the Yellow Cardinal was in Argentina in the Espinal ecoregion and its transition zones with the Monte and Chaco ecoregions. In recent decades its populations have declined precipitously because of habitat loss resulting from expansion of the agricultural frontier and the intensive pressure of capturing of the species for the cage bird market, resulting in its inclusion on the IUCN Red List as globally Endangered in 1994. Our objective was to contrast the historical and current distribution of the Yellow Cardinal with records starting from 1826 until present. We used 506 historical and current records from a revision of bibliography, museum specimens, internet resources, personal communications and our own fieldwork. Maps were generated with QGis 2.16 software. We found a marked reduction from the original distribution to areas where well-preserved areas of thorn forest remain. With this assessment we contribute information about the current distribution of the species, which can be used to develop management and conservation plans for the habitat of the Yellow Cardinal which are urgently needed to complement actions for its conservation in Argentina.

DIET AND FORAGING ECOLOGY

10221 LEARNING WHERE TO STORE YOUR FOOD: MICROSITE CACHING PREFERENCES OF YEARLING AND ADULT FLORIDA SCRUB-JAYS

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Florida Scrub-Jays (*Aphelocoma coerulescens*) survive winter periods of low food availability by harvesting and caching acorns for future consumption. Cached acorns can germinate, rot, be eaten by other acorn predators or be recovered by jays, thus choice of caching sites might be important. However, it is unclear whether site choice is innate or learned. I attempted to determine if caching sites were influenced by microhabitat type or by the social context (age and sex of jays observing). In addition, I asked if food caching site preferences differed relative to the availability of potential cache sites and if those preferences were different between inexperienced birds during their first caching season and experienced birds. I found that inexperienced and experienced jays exhibited significantly different preferences for caching microhabitats. Yearlings cached items exclusively in vegetated sites ($p=.015$, $\chi^2=8.38$); whereas, adult birds cached exclusively in open bare sand sites ($p=.035$, $\chi^2=6.68$). Soil moisture was significantly lower in the sites utilized by adult jays compared to soil moisture of yearling cache sites ($p=.028$). I also found that yearlings cached significantly farther when they were observed by a dominant bird ($p=<.001$) and were more likely to cache in a vegetated site rather than in the open. These results suggest inexperienced birds may cache in poorer quality sites than their experienced, and usually socially-dominant family members. Experienced birds, whether socially dominant or not, preferred to cache in dry, bare sand patches, suggesting they had changed their preferences.

10251 SEED REMOVAL BY BIRDS AND ITS ASSOCIATION WITH GRAZING INTENSITY AND VEGETATION IN THE CENTRAL MONTE DESERT

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Seeds are a crucial stage in the dynamics of vegetation in arid zones and a food resource for granivorous organisms. The posdispersive consumption of seeds can be separated into two components: the number of points that are visited to search for seeds (exploration) and the amount of seeds consumed in each one (exploitation). We hypothesize that there are changes in the seed consumption activity of the granivorous birds in association with their abundance, the abundance of resources and their modification by grazing, and the accessibility to feeding points given by the structure of the perennial vegetation. We experimentally evaluated both components of consumption by offering individual seeds and trays of seeds along transects in the central Monte desert, near General Alvear, Mendoza, Argentina. The results suggest

that seed consumption varies in association with vegetation structure (coverage and height of different strata and presence of trees). The exploration of feeding points was positively correlated with the abundance of birds and with the number of trees, and was negatively correlated with the cover of low shrubs. Exploitation was also positively correlated with the number of trees. The measured variables of grazing intensity (cattle load and grass cover) were not directly related to consumption. However, when considering the variation of bird abundances among transects, we found that exploration intensity per bird is higher when grass cover is low.

10264 FRUGIVORY OF *Euterpe edulis* and *Archotophoenix cunnighamiana* AT THE SERRA DO MAR STATE PARK – CARAGUATATUBA NUCLEOUS

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The Serra do Mar State Park – Caraguatatuba Precinct Parque Estadual Serra do Mar Núcleo Caraguatatuba – PESM has been considered a Conservation Unit – CU of full protection since 1977. The juçara palm *Euterpe edulis* is deemed to be of great environmental importance for the Atlantic Rainforest and is nowadays vulnerable to extinction. The seafórtia palm (*Archontophoenix cunninghamiana*) is considered an invasive alien species in the state of São Paulo. The objective of this study was to describe the behaviour of the flock of birds which visits these palms. 10 individuals from each palm species were GPS-tagged and observed between October/2015 and May/2016, beeing watched with the help of a 8x40 binoculars and photografic records. The birds were classified according to the 2014 Brazilian Ornithological Records Committee. There were 141 birds sighted, distributed in 8 families and 19 species. In *Euterpe edulis* there were records of only *Baryphtthengus ruficapillus*, *Pyrrhura frontalis*, *Tytira cayana* in mixed flock with *Pteroglossus bailoni*, with prominence of the migratory *Pyroderus scutatus* and Procnias nudicollisa. The *Turdus flavipes* species was found very frequently, as noted by other authors, together with *Turdus albicollis*. With *Archontophoenix cunnighamiana* there was an exclusivity of *Ramphocelus bresilius*, *Tangara cyanocephala*, *Tangara seledon*, with emphasis to *Selenidera maculirostris*. The birds that fed from both palm species were *Rhampastos dicolorus*, *Turdus rufiventris*, *Tangara ornata* and *Tangara palmarum*. The Areas of Strategical Importance of the PESM's Management Plan mentions the need of a survey of the local birdlife and also studies about the *E. edulis* ecology and invasive alien species inside the CU.

10334 THE DIET OF THE BURROWING OWL (*Athene cunicularia*), IN THE MARGIN OF THE RESERVOIR LA ANGOSTURA, TAFÍ DEL VALLE, TUCUMÁN, ARGENTINA

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The Burrowing Owl (*Athene cunicularia*) has been widely studied in terms of food habits in Argentina and South America. However, there is little information about feeding in areas adjacent to wetlands. The aim of the present work was to determine the feeding of *A. cunicularia* through the study of the pellets during a year, in the zone of the margin of the Reservoir La Angostura, located in the Department Tafí del Valle, in the western sector of the Province of Tucumán, Argentina, approximately to the 26º 55'S, 65º 41'W, to about 2000 msnm. Five caves, resting places and hangers were identified. The field study was conducted during the months of April 2013 and March 2014. 613 pellets were obtained which were weighed, measured and analyzed. The taxonomic determinations of the prey items were performed to the maximum possible level. A total of 14,791 prey items were identified, including Mammalia, Aves, Anphibia, Chelicerata and Insecta. The most abundant were of the Class Insecta with 14,009 items (7,451 items of the order Hymenoptera and 6.121 items of the Order Coleoptera), followed by Mammalia with 289 items and Anphibia with 135 items. *A. cunicularia* showed a generalist and opportunistic feeding during the year. From the present work could be evaluated the role that this species of Strigidae would perform as biological controller of the population growth of its prey.

10361 TROPHIC ECOLOGY OF *Calidris alba* AND *C. fuscicollis* IN LAGOA DO PEIXE, RIO GRANDE DO SUL, BRAZIL

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The family Scolopacidae includes cosmopolitan migratory waders, which congregate in numerous flocks in tropical coastal environments, used as stopping points for foraging. The Lagoa do Peixe National Park, in Rio Grande do Sul, is one of the most important stopping points for waders coming from the northern hemisphere that have Tierra del Fuego, Argentina, as their destination. The genus *Calidris* includes migratory birds that present an elastic ramphoteca and a sensible bill, and species of this genus generally feed on gastropods, bivalves, polychaetes, crustaceans and insects. Mixed-species foraging flocks of *Calidris alba* and *C. fuscicollis*are usually sighted in the Lagoa do Peixe region, and the analysis of the trophic niche of the two species suggests potential niche overlap or partition. Based on video footages made between February and March 2016 in the Lagoa do Peixe National Park and on ethograms built in BORIS software, we analysed *C. alba* and *C. fuscicollis* behavior, foraging area and foraging techniques. Preliminary results show that *C. alba* forages speedily following the waves, whilst *C. fuscicollis* is frequently sighted foraging far from the water. *C. alba* uses essentially random probes in the intertidal zone while *C. fuscicollis* employs non- random probes, showing interspecific dissimilarities in foraging. In the supralittoral zone, *C. fusicicollis* forages predominantly with long series of pecking, suggesting differences in

the type of substrate or in the composition of macroinvertebrates between the intertidal and the supralittoral zones.

10367 DIET OF THE BURROWING OWL *Athene cunicularia* (MOLINA, 1782) IN A UNIVERSITY CAMPUS OF SOUTHERN BRAZIL

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The burrowing owl *Athene cunicularia* (Molina 1782) is a broadly distributed species, ranging from North America to the southernmost part of South America. It in habits both natural and urban areas, such as grasslands, pastures, and parks. In this study, we aimed to investigate the diet of three pairs of *A. cunicularia* from the Cedeteg campus of Unicentro University, Paraná, Brazil. Pellets (regurgitated material) from the three nests were sampled every 15 days during six months, from June/2016 to December/2016. The sampled pellets were kept in duly labeled paper bags for about 48 hours, after which food items were sorted and identified to the lowest taxonomic resolution possible. The frequency of occurrence of each food item in relation to the total of pellets sampled (N=86) was calculated. Arthropods (100% frequency of occurrence) and vertebrates (76%) were found in pellets of all three nests. Coleopterans were the most frequent arthropods (100%), whereas mammals were the most frequent vertebrates (57%), which also included birds (9%), amphibians (2%), and pisces (1%). The broad variety of food items found in *A. cunicularia* diet indicates generalist and opportunistic feeding habits. Although arthropod frequency of occurrence was higher than that of vertebrates, the last may represent a higher energetic gain in terms of biomass. Finally, given that generalist predators tend to feed on the most abundant prey available (i.e. density-dependent foraging), our results evidence the potential importance of *A. cunicularia* for biological control.

10378 DIET OF *Tyto furcata* IN THE PAMPA REGION

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Tyto furcata is the only species from the Tytonidae family in Brazil. It is a widely distributed owl that successfully occupies a great variety of environments. Part of this success can be explained by its ecological plasticity and to its diet based on the consumption of small mammals, including birds, insects, amphibians and reptiles. In order to understand better the food habits of the *T. furcata* species in the Pampa biome, the present study aims to identify the prey that are part of this owl's diet. The study was based on the analysis of 40 pellets collected in the city of Santa Margarida do Sul, Rio Grande do Sul, Brazil, during the austral summer of 2017. Prey items were identified through hard remains such as skulls, bones, beaks and fragments of exoskeleton, comparing these structures to a reference collection. Rodents were the predominant items in the diet, present in 97.5% of the samples, followed by insects present in 87.5%.

However, insects were representative in term of biomass in just 20.0% (n=8). Only two other vertebrate groups were found, both of them in only two samples each: birds and bats of the Phylostomidae family. The most frequent species in the diet was *Calomys laucha*, a small rodent of about 20g that is difficult to detect in the environment by other methods of study. The present study contributes to understanding of local biodiversity, and provides more information about this species in a still poorly studied biome.

10380 A FAMILY GROUP OF SAVANNA-HAWK PREDATING SNAKES IN THE PAMPAS OF RIO GRANDE DO SUL, BRAZIL

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Small vertebrates are regular items in the diet of a wide range of birds, particularly among Accipitridae. Diurnal reptiles, especially the orders Serpentes and Sauria, while moving or in other specific situations, such as thermoregulation, are conspicuously exposed to predation by birds that share the daytime habit. In the present study, we report two predatory events involving a family group of Savanna-hawks, *Heterospizias meridionalis*, consisting of an adult pair and their nestling, on snakes' species *Xenodon dorbignyi* and *Philodryas patagoniensis*, in municipality of Rosário do Sul (-30.264533 -54.947345), west region of Rio Grande do Sul, southern Brazil. In the first event (09.04.2016), an adult hawk caught a snake of the species *X*. *dorbignyi*, in an area near a small wetland, about 100 meters from the nesting site. Before returning to the nest, with a help of the beak, the hawk removed the serpent's head, taking the rest of the carcass to the nesting. However, due to difficult visualization, we did not notice the presence of nestling, only another adult individual. In a new event (01.26.2017), in the same place, one of the adult birds captured a snake of the species P. patagoniensis. Once again, the carcass had its head removed by the hawk, which delivered it to a young individual under supervision of another adult specimen. Events like these help to better understand the ecological and behavioral aspects of species, since they elucidate the diet, reproductive biology and parental care of these raptors.

10383 FOOD SELECTION OF TWO NEOTROPICAL AUSTRAL MIGRANT BIRDS DURING THE BREEDING SEASON IN THE ESPINAL ECOREGION

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Food availability can be a limiting factor for nest site selection in birds. We evaluated the diet of two migrant Tyrant flycatchers, the Vermilion Flycatcher (*Pyrocephalus*

rubinus) and the Fork-tailed Flycatcher (*Tyrannus savana*) in relation to food availability at their nesting sites. The study was carried out during the 2016-2017 breeding season in an open semiarid forest in La Pampa Province, Argentina. We determined the availability of prey by sampling arthropods using a sweep net at 20 Vermilion Flycatcher nest sites, at 23 Fork-tailed Flycatcher nest sites, and at 31 control sites. We collected and analyzed fecal samples from14 Vermilion flycatchers and from 15 Fork-tailed flycatchers. Prey were identified to the level of Order. Vermilion flycatchers consumed eight orders of insects and one of arachnids. Fork-tailed flycatchers consumed seven orders of insects and one of gastropods. In total, 50 and 83 prey items were consumed by Vermilion flycatchers and Fork-tailed flycatchers, respectively. Both species consumed mostly coleopterans. To determine food availability, we collected 1,260 arthropods at Vermilion Flycatcher nest sites, 1,337 at Fork-tailed Flycatcher nest sites and 1,753 at control sites. Food availability did not significantly differ between nest sites of both species and control sites. Correlation between diet and food availability was significant and positive for Vermilion Flycatcher, but there was no correlation between diet and food availability for Fork-tailed Flycatcher. In the Espinal ecoregion, Vermilion flycatchers consumed the most available insects in the environment and Fork-tailed flycatchers selected predominantly coleopterans and orthopterans, and in a lower number other prey items, such as freshwater gastropods.

10421 DIET OF BIRDS IN A FOREST RESTORATION AREA IN THE ATLANTIC FOREST OF SOUTHEAST BRAZIL

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Studies focusing on diet of birds allow a greater understanding of the trophic relationships among organisms and the environment, and can provide important information for evaluating the progress of revegetation programs. Considering that data on this subject are still new in Brazil in areas of forest restauration here we aimed to sample the diet of birds in a restoration in the region of Itu, SP, Brazil (23º14'04S; 47º24'06"W). For achieving this goal, we captured birds monthly, during a year, by mist-netting. The captured individuals were temporally settled inside individual cloth bags with filter paper for collecting faecal samples. We got 88 captures from 23 species, and that resulted in 30 fecal samples. We found a predominance of unidentified invertebrates with 77% of samples (n=26), besides Araneae (30%; n=9), Lepidoptera (17%; n=5), Coleoptera (13%; n=4), Hemiptera non-Heteroptera (7%, n=2), Orthoptera (3%, n=1), Hymenoptera (3%, n=1), Hemiptera non-Formicidae (3%, n=1) and Isoptera (3%, n=1). We also found four morphospecies of seeds and/or fruits. We classified bird species in trophic guilds of insectivores (n=8), omnivores (n=8), granivores (n=6) and frugivores (n=1). There was a predominance understory insectivores, which forage directly or near the ground, and are more sensitive to habitat fragmentation. Our study

may contribute to understand and evaluate the success of revegetation programs, serving as a starting point for future evaluations.

10459 EFFECTS OF URBAN DUMPS ON THE HEALTH OF A BIRD SCAVENGER

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Organic waste is an important food source, which can be used by different bird species. However, it can produce both positive and negative effects on individuals and populations. In North West Patagonia, Black vultures (*Coragyps atratus*) use rubbish as food resource. In this study, we evaluate the effects produced by this kind of foraging strategy in Black vultures health. Particularly, we focused on poisoning and emerging pathogens. We sampled 57 Black vultures in the rubbish dump of Villa la Angostura city (Neuquén province) and compared them with 53 from a more pristine area of the Patagonian steppe. We sampled blood for evaluation of biochemical parameters and lead levels and cloacae and oropharynx swallows for bacterial isolates. We found a higher prevalence (16%: 9/57) of pathogenic bacteria in individuals captured in the rubbish dump than individuals captured in the steppe (7.5% 4/53). From the birds that we were able to estimate lead, the individuals captured in the rubbish dump (n=16) have a mean of lead in blood of 51.4 ug/dl compared with 7.06 ug/dl in individual trapped in the steppe (n=15). Our results suggest that taking advantage of dumps can expose birds' species to toxics and pathogens, which may alter their health status. In addition, Black vultures can act as carriers of pathogens acquired in dumps, to other species of birds such as the Andean Condor (*Vultur gryphus*) and the Turkey vulture (*Catarthes aura*) when interacting in pristine sites.

10460 EFFECT OF LARVAE INFESTATION ON FRUIT CHOICE OF *Byrsonima intermedia* (A. Juss.) BY BIRDS

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Frugivorous birds consume fruits during foraging to obtain energy for maintaining their activities. Larvae infested fruits may increase energy intake by birds, mainly because of higher protein concentration, since they complement their diet with alternative food resources. In order to assess preference of birds for larvae infested fruits of *Byrsonima intermedia* (A. Juss) we conducted a study using six individuals of this species. Ten branches were marked for each individual and the number of infested and non-infested fruits was counted. In the following morning, fruits were counted again. Mean fruit consumption did not vary according to infestation ($F_{1,118}$ = 0.009, p = 0.924). We recorded the consumption of 129 fruits, 60 were infested and 69 were non-infested. Such pattern may be explained if insects that lay their eggs on *B. intermedia* fruits do not change palatability, nutrition or levels of secondary compounds. Futhermore, synchronous frutification among different individuals may increase fruit avaliability, which would compensate for the low protein content of non-infested fruits. *B.*

intermedia fruits are naturally high quality food resources, so larvae presence may not drastically change protein reward.

10496 THE USE OF HONEYDEW (HEMIPTERA) BY BIRDS IN A PROTECTED AREA OF ATLANTIC FOREST IN THE SOUTH OF THE STATE OF SAO PAULO, BRAZIL

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Honeydew is a carbohydrate solution produced and secreted by scale insects (Hemiptera), which feed on the phloem of host plants, removing nitrogen compounds for protein synthesis. Honeydew-producing scale insects were observed infesting Inga trees in a protected area of Atlantic Rainforest, south of the state of Sao Paulo, Brazil (30-1000m a.s.l.). From September 2016 to June 2017, we performed 202 hours of observation on eight focal trees. We recorded 19 bird species feeding on honeydew, totaling 1191 visits. Most visits occurred in the morning (6am to 8am) and in September, with the most recorded species being Bananaquit (*Coereba flaveola*); Golden-chevroned Tanager (*Thraupis ornata*) and Violet-capped Woodnymph (*Thalurania glaucopis*). Thraupis ornatawas the species that most actively defended the resource, with 38 records of agonistic behaviors. Our results indicate that there is a spatial segregation in honeydew consumption by birds, withThalurania glaucopis feeding mainly on the trunk and other species in the peripheral region of the trees. This study suggests that honeydew can be an important component in the diet of birds in the Atlantic Forest of Brazil, particularly in periods of shortage of flowers and fruits.

10499 NATIVE CAMELIDS AS CARRION RESOURCES FOR ANDEAN CONDORS ACROSS A SPECTRUM OF HUMAN-ALTERED LANDSCAPES

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Vultures are the most threatened group of birds in the world, and their conservation depends on the availability of safe food resources. In South America, the replacement of native camelids by exotic species exposes Andean condors (*Vultur gryphus*) to dietary toxins (e.g., lead) and direct persecution. To evaluate the importance of native camelids to condor diet across a spectrum of human-altered landscapes in central-western Argentina, we identified prey remains in condor pellets collected at Auca Mahuida (AM, n = 212) and La Payunia (LP, n = 152) reserves, which support camelid populations (9.53 and 12.28 ind./Km^2) and ranching (1.85 and 7.89 ind./Km^2). We compared our results with studies from two contrasting areas: 1) where camelids are functionally extinct (NW Patagonia), and 2) where they are the only ungulates present (San Guillermo National Park, SG). Our results indicate that condors have local dietary patterns largely dictated by availability of large mammalian prey. Camelids dominated pellet content at SG (88%) and LP (77%), represented 40% of the prey consumed in AM and were functionally

absent in NW Patagonia (0.4%). Estimated overlap in condor diet was minimum (Pianka index, 0.08) and niche breath was similar (Levin index, 0.07 and 0.09) between SG and NW Patagonia. In contrast, niche breath was highest in reserves with extensive ranching (AM: 0.35, LP: 0.12). Our works shows that wild camelids in reserves still perform an ecological role as food sources for condors, and highlights the value of protected areas and sustainable farming practices for vulture conservation.

10526 STUDY OF THE FOOD HABITS OF *Tyto furcata* (Temminck, 1827) AND *Pulsatrix koeniswaldiana* (Bertoni & Bertoni, 1901) THROUGH ANALYSIS OF THE STOMACAL CONTENT

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The owls play an important role in trophic relationships, however, studies on the diet of these organisms are still scarce. The *Tyto furcata* and *Pulsatrix koeniswaldiana* diets were evaluated by the stomach contents analysis of 50 individuals (n = 25 to *Tyto furcata* and n=25 to *Pulsatrix koeniswaldiana*) deposited in the Zoological Collection of FURB (CZFURB). The items were identified to the lowest taxonomic level possible. For mammals the skulls, jaw and dentition were used; for birds, the skull and feathers were used; for amphibians, the bones of the postcranial skeleton were used, which were compared with specimens deposited in CZFURB. Identification keys were used for invertebrates. We found 127 food items, 50 to *T. furcata* and 77 to *P. koeniswaldiana*. Feeding diets differed statistically (Student's t-test, $p < 0.0001$). The diet of *T. furcata* was predominantly composed of rodents species (58%), particularly *Oligoryzomys* sp., *Mus musculus*, *Akodon montensis* and *Rattus rattus*. Further, other items consumed by this species was invertebrates (36%), birds (4%), and amphibians (2%). The invertebrates of the Coleoptera and Orthoptera orders were the most consumed by *Pulsatrix koeniswaldiana* (71%), followed by mammals (14%), by birds (12%) and amphibians (3%). In relationship to the biomass consumed, the rodents were more representative in the *T. furcata* diet, totaling 71.44%. Also, the diet of *P. koeniswaldiana*, despite the higher frequency of invertebrates, mammals and birds were the most representative of biomass, with 57.46% and 36.89%, respectively. The differences found may be associated with the environment in which each species lives and the availability of the resource.

10528 POTENTIAL DIET FOR THE REINTRODUCED RED AND GREEN MACAWS (*Ara chloropterus*) IN ESTEROS DEL IBERÁ, CORRIENTES, ARGENTINA.

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The Red-and-green Macaw became extinct in Corrientes more than 150 years ago. The project of experimental reintroduction of the Red-and-green Macaw in Esteros del Ibera,

Corrientes, involves the adaptation to the wildlife of captive individuals. A key component of this adaptation process is for individuals to learn to recognize the edible fruits of the release zone. To evaluate the potential incorporation of wild fruits into the macaw's diet, wild fruits were collected and offered ad-libitum according to their seasonal availability to 15 macaws. We recorded the species that were consumed by direct observation during feeding events, and/or the presence of bites on the fruits. In addition, we established the phenological status of the offered plant species for every month through the monitoring of marked trees and literature. Between September 2015 and March 2017, we collected and offered to macaws 56 plant species, belonging to 22 families that were obtained from nearby patches of forest. A total of 49 species showed signs of having been consumed on at least one occasion. The phenology study indicated that during the whole year, an average of 15 edible species can be found with fruits monthly (range: 10-20 species / month). These results indicate that the potential amplitude of the diet and the availability of fruits to feed Red-and-green Macaws in Iberá are high, being higher than that observed for the species at its southern limit of distribution (range: 5-13 total species).

10580 USE OF FOOD RESOURCES BY SYMPATRIC MANAKINS IN THE ATLANTIC FOREST OF SOUTHEASTERN BRAZIL

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The tropics have an enormous diversity of birds, providing models for studies of the ecological interactions between birds and plants. This present study investigated potential resource partitioning among the Red-headed Manakin (*Ceratopipra rubrocapilla*), White-crowned Manakin (*Dixiphia pipra*) and White-bearded Manakin (*Manacus manacus*) in the lowland forest of the União Biological Reserve, a priority area for bird conservation in Rio de Janeiro state and the Americas. We obtained fecal samples from captured and ringed individuals. Fruit dominated the diets of all three species [*C. rubrocapilla*: 97% of samples (n=39); *D. pipra*: 87% (n=115); *M. manacus*: 91% (n=44)] while arthropods were less important (18%, 37%, 32%, respectively), corroborating the potential importance of these birds for seed dispersal. Fruit of 12 families were consumed [*C. rubrocapilla* (5), *D. pipra* (5), and *M. manacus* (9)], but only the Melastomataceae and Rubiaceae were common to all three birds. The Melastomataceae was the most consumed, with four morphotypes, two of which were consumed by all three birds: *Miconia calvescens* (*C. rubrocapilla*: 36%, *D. pipra*: 4%, *M. manacus*: 9%) and *Miconia* sp. (38%, 49%, 57%, respectively). *Ceratopipra rubrocapilla* consumed one exclusive *Miconia* morphotype a nd differed from the other birds in its reduced consumption of arthropods and high rate of consumption of *M. calvescens*, while *D. pipra* consumed more *Miconia* sp. than *M. calvescens.* Our results indicate that *M. manacus* consumes arthropods more frequently in the study

area than at other sites, and was the most generalist of the three manakins monitored in this study.

10600 INTRASPECIFIC VARIATION IN CHINSTRAP PENGUIN'S (*Pygoscelis antarcticus*) TROPHIC NICHE IN TWO ISLANDS FROM THE SOUTH SHETLANDS ARCHIPELAGO, ANTARCTICA

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We assessed intraspecific variation in the Chinstrap penguin's trophic niche through stable isotope analysis in two latitudinally distinct islands, in order to evaluate differences in foraging behavior among and within populations. Whole blood (n = 24) and body feathers (n = 24) were sampled in breeding colonies at Elephant and Livingston Islands during the 2013/14 austral summer, and both tissues were analyzed for bulk δ13C and δ15N stable isotopes. Blood isotope values were used as a proxy for the trophic niche used during the incubation period, while feathers represented the post-breeding period. We extracted isotopic niche metrics, and tested for significant differences inδ13C andδ15N values between the islands for both periods. In order to investigate differences within populations, we tested for intersexual differences for both δ13C andδ15N values, and calculated the coefficient of variation for each population to determine individual variation in trophic niche. Our results show that Chinstrap penguins have variation in the width of their trophic niche between different periods of the annual cycle and among distinct breeding sites. We found significant differences in individual variation between the two periods, and the absence of intersexual differences inδ13C andδ15N values. Overall, breeding individuals of Elephant Island presented enriched δ13C values compared to those of Livingston during incubation, suggesting that the former consumed more nearshore/benthic based resources. δ15N values were more variable in Livingston Island during the post-breeding period, suggesting that individuals consumed a wider variety of prey during this period. Our results contribute to the knowledge on Chinstrap penguin's trophic plasticity in Antarctica.

10628 FORAGING OF INSECTIVOROUS SPECIES IN ARTIFICIAL NESTS IN SOUTH PANTANAL, BRAZIL

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Obtaining food resources is the energetic base for the survival and reproduction of an animal. The set of strategies to find, capture, subjugate, swallow and combat the defense mechanisms developed by prey is titled "foraging." Many published studies about the use of artificial nests by birds are mainly focused on their importance for their reproduction, but there are no studies that report the use of artificial nests in the non-reproductive period. Thus, camera traps were also installed in the post-reproductive

period of the hyacinth macaws (after the flight of the chick, from January to April 2017) in seven nests located in a pasture area, totaling 48:28 observation hours. It was recorded the visit of four species of insectivorous birds: White Woodpecker (*Melanerpes candidus*), Campo Flicker (*Colaptes campestris*), Great Rufous Woodcreeper (*Xiphocolaptes major*) and Narrow-billed Woodcreeper (*Lepidocolaptes Angustirostris*). White Woodpecker and Campo Flicker were registered visiting the boxes at three times, and in one of them, a group of three *Melanerpes candidus* remained for 25 minutes exploring the place, probably foraging inside the nest. *Xiphocolaptes major* and *Lepidocolaptes angustirostris* were recorded visiting the nest, and the Narrow-billed Woodcreeper captured a Blattodea from inside the box and flew. Thus, the usefulness of artificial nests in post-breeding is an alternative source of foraging for other species, especially in altered areas.

10637 TEMPORAL VARIATION IN ISOTOPIC COMPOSITION OF *Spheniscus magellanicus* AT MARTILLO ISLAND

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Due to their restricted foraging range, flightless seabirds are ideal models to study the short-term variability in the trophic niche in response to food availability in changing environments. In order to estimate potential inter-annual variations in trophic niche of Magellanic penguins at Martillo Island (Beagle Channel, Argentina), we investigated short-term isotopic variations in $d^{13}C$ and $d^{15}N$ values on feathers collected during 5 seasons (2009, 2013-16) together with oceanographic conditions. We found that in 2009 both isotopic values were higher than those registered for the rest of the studied years ($p<0.001$) and related with positive sea surface temperature anomalies ($p<0.001$). Although there are other physical, chemical and biological factors that influence the isotopic composition at the base of the food web, a higher water temperature reduces CO_2 solubility, which causes less phytoplanktonic fractionation against ^{13}C, this is reflected in higher $\delta^{13}C$ values in primary producers, thereby, affecting the isotopic values of rest of the trophic web. High $d^{15}N$ values can be explained by 1) a higher microbial activity stimulated by temperature that enriches nitrogen inputs in ^{15}N or 2) diet based on a higher trophic level. These results are a trigger for new questions and might help understanding the relation between Magellanic penguin's diet and environmental conditions, especially in the actual global change scenario.

10647 PRELIMINARY ANALYSIS OF THE FORAGING OF *Crax fasciolata* SPIX 1825, IN ANTHROPIC AREAS IN THE NORTHWEST OF THE STATE OF MINAS GERAIS

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The foraging behavior of *Crax fasciolata* (family: Cracidae) was observed during two consecutive years (2014-2015) in three anthropic areas surrounded by fragments of native forest vegetation of the Cerrado biome. The objective was to identify standard

traits in the foraging behavior of *Crax fasciolata* in these environments, in order to understand what factors lead the individuals of the species to use vulnerable areas in the search of food resources. Three pairs of the species (n = 6) and their juveniles (n = 8) were monitored periodically, systematically at dawn, totaling 228 hours of observation, through direct visualization of consumption. The pairs are free-living, and from the total hours monitored during the study, we obtained a rate of 88% of our records of them in the anthropic environment, near domestic poultry farms. The pairs remained in the vulnerable environment for about 45-60 minutes, returning to forest fragments at the end of their feeding. In the reproductive periods observed, pairs returned on average three times a day with their juveniles. During the incubation period, the foraging was carried out only by the male and with time spent in the reduced environment. Partial results indicate a high dependence of the individuals on the anthropic environment to meet their daily basic diet, because the forest fragments have been reduced to the point that the resources do not supply their diet. Further analysis is needed on the foraging of this species.

10653 FIRST EXPLORATION OF THE FEEDING AREAS OF BROWN SKUAS DURING THE INCUBATION STAGE AT ISLAS BLANCAS, CHUBUT

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The Brown Skua (*Catharacta antarctica*) occupies an important position in the marine ecosystem, functioning like opportunistic predator, scavenger and kleptoparasite. To date, very little is known about its trophic ecology on the Patagonian coast. To evaluate the patterns of use of feeding areas during the incubation period, a total of 10 global positioning system loggers were deployed on incubating adults during the 2016 breeding season. A total of 104 foraging trips were recorded, 70% of which were performed in daylight hours. On average, each bird performed 2 trips per day (range: 1-5). The average distance traveled in foraging trips was 44.5 ± 36.4 km (range: 0.7-472.0), with an average duration of 110 ± 67 minutes. The feeding areas were located at 13 ± 10 km from the nests, all located at-sea and mainly to the east of the colony. The total feeding area used by the skuas was 1173 km^2. This is the first study on the spatial ecology of skuas in Patagonia and shows that at least during incubation, Brown Skuas from Islas Blancas obtain their food at sea. These results show the importance of waters surrounding the colony in the trophic ecology of the species and suggest the need for further studies to assess if Brown Skuas maintain this feeding strategy during other stages of the reproductive cycle.

10666 DIFFERENTIATION IN FORAGING ECOLOGY BETWEEN THREE SYMPATRIC WOODPECKER SPECIES OF THE ATLANTIC FOREST IN ARGENTINA

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The Helmeted Woodpecker (*Celeus galeatus*), a threatened species endemic to the Atlantic Forest, co-exists with two other woodpecker species of similar appearance: the Lineated Woodpecker (*Dryocopus lineatus*) and the Robust Woodpecker (*Campephilus robustus*). These are the three largest woodpecker species in the Atlantic Forest and they show a notable convergence in the colors and patterns of their plumages. However, Lineated Woodpecker (210 g) and Robust Woodpecker (261 g) are considerably heavier than Helmeted Woodpecker (130 g). We compared the foraging ecology of the three species in forests with and without selective logging. Out of 315 foraging observations, 257 observations came from 19 radio-tagged woodpeckers. Foraging substrate diameter was similar between Helmeted and Lineated Woodpeckers, but averaged more than double in Robust Woodpecker. Lineated and Robust Woodpeckers used trees of similar diameter at breast height whereas Helmeted Woodpeckers used trees with trunks that were significantly more slender. In foraging height, Robust Woodpecker foraged highest up followed by Lineated and then Helmeted Woodpecker. Helmeted Woodpecker foraged more on dead substrates. Helmeted Woodpecker included bamboos (*Guadua trinii* and *Merostachys claussenii*) as foraging substrates whereas only Lineated and Robust Woodpeckers were seen foraging on Paraná Pines (*Araucaria angustifolia*). There were only minor differences in foraging ecology in old-growth and selectively logged forests. In all, the three woodpecker species are well differentiated in foraging ecology. We will apply our findings of this foraging differentiation in upcoming works on species co-existence and plumage convergence, and on differentiation in responses to selective logging.

10691 MODELLING AVIAN VISUAL DETECTION OF PREY SPECIES

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Research in the past 30 years has established that birds are tetrachromatic, with an SWS1 opsin sensitive to either violet (VS) or ultraviolet (UVS) wavelengths. Much work has been done to investigate the existence of UV signals in avian plumage and their potential role in mate choice, but less has been done on the role the SWS1 opsin plays in detecting prey. To investigate this, I am using objective multispectral (Visible + UV) photography and cone-catch modelling to investigate perceived brightness and chromatic contrast of potential animal prey items (frogs and lizards) against a variety of natural backgrounds, as perceived by the avian visual system. I can also compare the

differences in perception between VS and UVS models. I find that in general crypsis tends to extend into the UV. VS and UVS models generally differ in perceived contrast by very little, indicating that the shift in sensitivity of the SWS1 opsin is not driven by prey color. Some lizards have tails which reflect brightly in the UV, contrasting their body and the background. This may be an adaptation for visual deflection, attracting the avian predator's gaze to the detachable and non-vital tail. Individual lizards can change their luminance (brightness) as perceived by the avian double cone (dbl) by 300-1000 percent. Contrasting patterns of high and low UV reflectance are common in the aposematic signals of poison frogs.

DISEASES AND PARASITES

10208 SALMONELLA SP. EN AVES SILVESTRES DE LA PROVINCIA DE ENTRE RÍOS, ARGENTINA

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The present work determined the presence of *Salmonella* sp. in wild birds of the province of Entre Rios, Argentina, and the antibiotic resistance profile of the isolated strains. Sampling was performed from April 2014 to July 2016; 667 samples of cloacal swabs were taken. The sampled counties were Victoria, Gualeguay, Gualeguaychù and Uruguay. *Salmonella* spp. isolation was carried out through four steps. Isolates were serologically characterized by the White-Kauffman-Le Minor scheme and 19 antibiotics were tested for each strain. Six samples were positive for *Salmonella* sp. (0.9%), corresponding to the following birds: one Plumbeos Ibis (*Theristicus caerulescens*), two Brazilian Duck (*Amazonetta brasiliensis*), one Rosy-billed Pochard (*Netta peposaca*), one Speckled Teal (*Anas flavirostris*) and one Great Egret (*Ardea alba*). The serovars found were: *Salmonella* Typhimurium (ST), *S*. Subspecies I, *S*. Subspecies IIIb and *S*. Schwarzengrund. More than one serovar were found in two birds. All strains were resistant to erythromycin and an intermediate resistance was observed, in some cases, to streptomycin, neomycin and ciprofloxacin. Although the prevalence of*Salmonella* sp. was low, it should not be underestimated since most of the isolations are ST, a serovar of great importance in public and birds health. Wild birds can act as vectors, transmitting and contaminating different production facilities with their feces. Erythromicin is not appropriate for the control of *Salmonella* sp. in such birds.

10223 NEW RECORDS OF LICE IN CHILEAN ANATIDS

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Lice (Insecta: Phthiraptera) are common highly specific ectoparasites of birds that feed upon feathers, skin flakes, sebaceous secretions and/or blood of their hosts. In Chile, the anatids (Aves: Anseriformes) are represented by 28 species, however their associated phthirapterofauna is known only in four species. The present work aimed to contribute with the knowledge of Phthiraptera in other birds of the anatidae family. For this purpose, 77 birds from four different sources were analyzed: Collection of the Museo Nacional de Historia Natural de Chile (n= 26), Wildlife Rescue Center of the Universidad de Concepción (n= 14), haunted birds (n= 19) and also birds found dead in their habitat (n= 18). Observed lice were extracted with anatomical tweezers from the the birds, preserved in 70% ethanol, and subsequently slide-mounted for morphological identification following keys for generic and specific diagnoses. The following lice species were recorded in their respective hosts: *Anaticola crassicornis* in *Anas sibilatrix*, *Anas platalea*, *Anas flavirostris*and *Anas cyanoptera*; *Anatoecus icterodes* in *A. platalea* and *A. flavirostris*; *Trinoton querquedulae* in *A. flavirostris*, *Anas discor* and *A. cyanoptera*; *Menacanthus cornutus* in *Chloephaga picta*; *Anaticola mergiserrati* in *Merganetta armata*; *Acidoproctus rostratus* in *Anas georgica* and *Dendrocygna viduata*; *Anaticola marginellus* in *Chloephaga poliocephala*, and *Holomenopon* sp. in *A. georgica*. With these results, fifteen new phthiraptera associations were registered for 10 Chilean anatids, and eight of these are new for the country. *A. rostratus*, *M. cornutus* and *A. mergiserrati* represent new species for parasitic fauna in Chilean birds.

10276 NATURAL EXPOSURE FOR ST. LOUIS ENCEPHALITIS AND WEST NILE VIRUSES IN BIRDS OF PREY FROM LA PAMPA, ARGENTINA

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Viruses transmitted by arthropods represent the most important emerging virus in the world. The Saint Louis encephalitis (SLEV) and West Nile virus (WNV) are transmitting by *Culex* mosquitoes as vectors and several bird species as hosts. The purpose of this research was to study the exposure of birds of prey communities for SLEV and WNV in La Pampa province. We analyzed 524 plasmas samples by plaque reduction neutralization test. Samples belonged to 8 species of birds of prey and were collected from 2008 to 2015. The 20, 83% (n=24) of the Black Vultures (*Coragyps atratus*), 33, 33% (n=3) of the Southern Crested Caracara (*Caracara plancus*) and 0, 28% (n=360) of the American Kestrels (*Falco sparverius*) were positives for SLEV; while the 81, 48% (n=27)

of the Swainson´s Hawk (*Buteo swainsoni*) were positives for WNV. One Swainson´s Hawk was positive for both viruses (3.7%). No positive sample was found in plasmas from the 4 remaining species (*Milvago chimango*, *Athene cunicularia*, *Glaucidium brasilianum* and *Cathartes aura*). Our results confirm the circulation of SLEV and WNV in resident and migratory populations of birds of prey in agroecosystems of La Pampa. Although the overall seroprevalence detected for this group is low compared to other groups of birds, the prevalences for some of the species analyzed were very high. These findings point to a need for further studies on the circulation and ecological characterization of these viruses in the bird communities of the La Pampa agricultural systems.

10409 AVIAN HAEMOSPORIDIAN DISTRIBUTIONS IN SOUTH AMERICA SHAPED BY HOST DISTRIBUTIONS BUT NOT BY CLIMATE OR DISTANCE

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Understanding the forces that shape species distributions remains a central goal in ecology. These forces include colonization ability, environmental filters such as climate, and biotic interactions. Additionally, the distributions of vector-transmitted parasites can be influenced by host- and vector-switching and by host and vector dispersal. We sampled birds and their haemosporidian blood parasites (*Plasmodium* and *Haemoproteus*) at sites across South America and used Mantel tests to examine how host communities and parasite assemblages vary with each other, with climatic variation, and with distance. Across sites, we sampled 6,836 birds and identified 1,091 infections in 481 lineages (336 *Plasmodium*, 145 *Haemoproteus*). Parasite assemblages reflected the distributions of their avian hosts, but the amount of variation explained was low (19.2%). When controlling statistically for host community, parasite assemblage similarity was not related to climatic variation or to distance between sites. Furthermore, similarity of parasite assemblages did not decrease with distance when controlling for host community or climate, suggesting that parasite lineages are well dispersed within the ranges of their host species. When examined separately, *Plasmodium* and for *Haemoproteus* assemblages showed similar results. In contrast, bird community similarity decreased with differences in climate and with distance, even when controlling for parasites. Bird community similarity decreased with distance even when controlling for climate, suggesting that bird species are dispersal-limited. Together, our findings suggest that distance and climate influence bird distributions and the distributions of avian hosts influence the distributions of their haemosporidian parasites, but climate and distance do not influence parasite distributions directly.

10422 CORRELATION BETWEEN MICRONUCLEUS AND PREVALENCE OF HEMOSPORIDS IN SPECIES OF BIRDS FROM BRAZILIAN CERRADO

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Birds may be subject to innumerable adversities, such as hemosporids and micronucleus, which occur within their erythrocytes. Hemosporids are protozoa transmitted by dipterans and may compromise the host's fitness. Micronucleus are chromosomal mutations that act as biomarkers for carcinogenesis, being related to pollution and/or stress. This work proposes to verify if there is a relationship between the prevalence of hemosporids and the means of micronucleus found in species of birds from four forest fragments of the Cerrado. From 2013 to 2014, 245 individuals (15 species) were captured and 490 blood smears were performed. Of these individuals, 136 (55%) of 14 species had micronucleus, while 20 individuals (8.16%) of eight species were infected with hemosporids (*Haemoproteus*/*Plasmodium*). The prevalence of hemosporids ranged from zero to 100% among species, while mean of micronucleus ranged from zero to 4.4. A negative and significant correlation between the mean of micronucleus and the prevalence of hemosporids in the bird species (r=-0.853; gl=13; p=0.008) was observed, suggesting that the variables are inversely proportional. By controlling infections, birds can go through periods of stress due to the allocation of energy to the immune system. After the infections are controlled, it is possible that micronucleus arise, since micronucleus can occur naturally due to stressors in organisms. Thus, it was verified that the presence of micronucleus in birds may be related to infection by hemosporids, however, the causes of this relationship are unknown, making further studies necessary to address this question.

10423 PREVALENCE OF COCCIDIAN PARASITES (PHYLUM APICOMPLEXA) IN UNDERSTORY BIRDS FROM THE ATLANTIC FOREST

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Coccidia are among the most representative endoparasites in birds. They live in the gastrointestinal tract and extract nutrients that are essential for the host's survival, leading to death when the infection is severe. This study aims to describe the prevalence of coccidians in understory birds of the Atlantic Forest and to test whether there exists a relationship between these parasites and host body mass. We conducted the study in ten sample units with different altitudes at Reserva Natural Guaricica (Paraná, Brazil). We captured 45 birds of 18 species and, from each individual, we measured body mass (m) and tarsal length (t) and we collected fecal samples. We prepared these samples

following the sugar fluctuation protocol, preparing a slide for each bird. We found coccidia oocysts on 10 slides, totalizing a prevalence of 22%. *Turdus albicollis* exhibited the highest prevalence of infection (50%), followed by *Schiffornis virescens* and *Xiphorhynchus fuscus* (33.3%, each) and *Conopophaga melanops* (25%). We did not find a relationship between mass index (m/t) and incidence of oocysts in *T. albicollis* (t=-0.48, df=10, p=0.64), the most abundant species. This absence of a negative effect of endoparasites on *T. albicollis* may indicate that the degree of infection in these birds is not severe enough to affect their body condition (measured as body mass). Future studies may clarify whether there is a relationship between coccidia infection and other host's characteristics.

10531 PREVALENCE OF MICROFILARIAE IN UNDERSTORY BIRDS IN THE ATLANTIC FOREST OF PARANÁ, BRAZIL

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Microfilariae are the larval stage of filarioid nematodes living in the bloodstream of hosts which became infected after contact with bloodsucker invertebrates. Despite absence of clinical signals, microfilariae may still affect host's fitness. This study describes the prevalence of microfilaria in Parana's Atlantic Forest birds. Samplings occurred in Spring 2016 at seven points along an altitudinal gradient of forest with different successional stages at Reserva Natural Guaricica (Antonina/PR). We mist-netted birds for identification, banding and blood sampling. We made blood smears for each individual, latter stained in the lab with GIEMSA solution. We observed 100 fields at 400x magnification to determine microfilarial prevalence and intensity of infection in each smear. We used digital morphometry to acquire each larvae's length, width, and tail and nerve ring. We analyzed 41 samples of 23 species out of which seven individuals were positive to microfilaria (six species). Two *Turdus albicollis* individuals had the highest infection intensity (12 and 8%, respectively), followed by *T. flavipes* (3%), *Chiroxiphia caudata, Dendrocincla turdina, Mionectes rufiventris,* and *Tachyphonus coronatus* (1% each). Only three sampling points had infected birds, the one located in a primary forest at 120m asl presenting 57% (n=4) of all infected birds. Larvae length varied from 44.11 to 107.17µm, width from 3.53 to 4.04µm, tail from 17.89 to 28.58µm and nerve ring from 12.19 to 25.7µm. Our results show the highest microfilaria prevalence (17.05%) in Neotropical birds, stimulating future studies to check for any environmental factors' role on this elevated rate.

10586 DIVERSITY OF ECTO AND ENDOPARASITES IN THRUSHES (TURDIDAE) OF SUBTROPICAL ANDEAN FORESTS

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Parasitismaffects the growth, reproduction, and susceptibility to other infections of the hosts. Birds are hosts of a great variety of parasites, an interaction that is relevant in the dispersion of the birds and their pathogens. We studied the diversity of ectoparasites and endoparasites in three species of thrushes (Turdidae) with differences in their migratory behavior in subtropical Andean forest. We worked with *Catharus ustulatus* (Neartic latitudinal migrant), *Turdus nigriceps* (Austral latitudinal migrant of the Neotropics.) and *T. rufiventris* (resident) in the Selva Montana of Yungas, Tucumán, Argentina. We inspect edevery host in search of ectoparasites, made blood smears for the study of hemoparasites and collected dregs for coproparasitologicals analysis. We reported: (1) Ectoparasites: *Ixodes auritulus eI*. *parariсinus* in both *T*. *rufiventris* and *T. nigriceps* and *Ixodes* sp. in the three especies of birds; (2) Hemoparasites: microfilaria in both Turdus; (3) Endoparasites: cestodes (*Dilepis* sp. and *Wardium* sp.) in both *Turdus*, three species of nematodes (e.g. *Syngamus trachea* and *T*. rufiventris, Superfamily Trichostrongiloidea in both *Turdus* and Order *Spirurida* in *T*. *rufiventris*), and two species of coccids of the *Isospora* genera in *T*. *rufiventris* and *C. ustulatus*. The diversity of prasites by species was related to the number of tested individuals, being *T. rufiventris* the most infested and *C. ustulatus* the less infested. Our results suggest that the interactions between parasites and thrushes are complex, and that although they are closely related species, their life histories could be influencing the nature and extent of the infestation.

10643 INFLUENZA A VIRUSES IN WILD DUCKS, FINDINGS FROM A SURVEILLANCE IN NORTH-EAST ARGENTINA

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The major natural reservoir of influenza A viruses are wild aquatic birds. Contrary to the extensive information on the ecology of these viruses in North America and Eurasia, little is known about the presence, movement and ecology of Avian Influenza Viruses (AIV) in South America. Previous studies showed that AIV can infect a wide range of hosts, highlighting the importance of surveillance activities in detecting and preventing a potential transmission to other species. Northeastern Argentina represents a key area for waterfowl, holding some of the highest diversity of species and largest populations, and coinciding with an important area for poultry production. The goal of this study was

to determine the frequency and variety of AIV in Anseriformes species of Argentina. Data was collected from 2008-2012 and 2016 in ten different sites located in Entre Ríos, Corrientes, Santa Fe and Buenos Aires Provinces. A total 2119 individuals were sampled of 17 wild duck species. Using Real Time PCR we obtained 42 AIV positive detections from cloacal swabs. Here we report the first isolates of six different AIV subtypes in South America, the first AIV isolates obtained from Anas cyanoptera, Anas flavirostris and Anas georgica in Argentina, and particularly, from Anas versicolor and Sarkidiornis melanotos in South America. Our results summarized the AIV data obtained from wild duck species in Argentina, making a valuable contribution to the understanding of the ecology of AIV in South America, and providing baseline information to facilitate decision making processes for wildlife conservation management.

10658 BACTERIAL RESISTANCE TO ANTIBIOTICS IN PROCELLARIIFORMES: THREATS FOR ENDANGERED OCEANIC BIRDS OR SIGNS OF COEVOLUTION?

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Albatrosses and Petrels are among the most endangered seabirds and rarely approach land, except for breeding. Only two species nest in Brazilian territory, the others are migratory birds. Mortality from industrial fisheries bycatch is one of the greatest threats. The main objective of this study was to identify cloacal and oropharyngeal microbiota resistance to antibiotics for these birds. Sampling for this study was carried out in partnership with the Beach Monitoring Project in Santa Catarina (Associação R3 Animal) and material from nesting areas were obtained by field expedition to the Fernando de Noronha archipelago. A total of 69 cloacal and oral samples were analysed from *Puffinus ilhermieri, Puffinus puffinus, Puffinus griseus, Thalassarche melanophris, Procellaria aequinoctialis, Macronectes giganteus, Colonectris diomedea, Procellaria conspicillata* and *Puffinus gravis.* 72 colonies were isolated, culminating in the identification of eleven bacteria: *Citrobacter diversus, Citrobacter freundii, Escherichia coli, Serratia marcescens, Klebsiella pneumoniae, Proteus mirabilis, Bacillus sp, Streptococus sp, Serratia sp, Estafilococos sp* and, *Enterobacter sp.* Antibiotic resistance patterns were observed. Albatrosses and Petrels are sentinels of oceans health and these microbiological tools studied potentially can be used on population and environment monitoring.

ECOLOGICAL MODELS AND SURVEY METHODS, USE OF TECHNOLOGY

10230 SPECTRORADIOMETRIC QUANTIFICATION OF THE COLOR VARIATION IN SPECIMENS FROM *Myioborus brunniceps* DEPOSITED IN THE ORNITHOLOGICAL COLLECTION OF THE FML, TUCUMÁN, ARGENTINA

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The world is full of color, but this is not an intrinsic feature of the objects but the result of sensations processed by our brains, which gives rise to the psychophisiological phenomenon of vision. Estimating the variation in the color of bird skins deposited in museums forms the basis for many research topics. In this sense, biological collections are an invaluable tool for knowledge and protection of biodiversity. This study will ask about some variables (storage time, sex, time of year and geographical location of the collection event) that could affect the plumage coloration of *M. brunniceps* specimens deposited in COFML, using reflectance spectroradiometry on a sample of n = 47 taxidermized skins. Color coordinates L*a*b* were recorded at three points in each of the four body regions of each specimen. Our results suggest caution in using data from *M. brunniceps* specimens stored in collections to test hypotheses on plumage coloration patterns, since we recorded a color variation with respect to storage time of the skins, associated with evidence of cryptic and seasonal sexual dichromatism not described so far. We recommend extending the study sample and the use of color quantification devices that allow recording of spectral data in the UV range. In addition, we emphasize the need to continue collection campaigns in order to record long-term variations in populations that can be contrasted with live specimens.

10244 IS CAMERA TRAPPING AN EFFECTIVE METHOD TO DETECT GRASSLAND BIRDS?

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Remnants of highland grasslands in Tandilia Mountains are a key habitat for grassland birds, but also provide refuge for many medium to large sized mammals and reptiles, which are nest predators of grassland birds. How these highland grasslands are used by grassland birds and predators is essential information to design a sound conservation strategy. In this work we assess the usage of two low-cost trap cameras as a monitoring tool for grassland birds and medium to large-sized predators. Between September 2016 and May 2017 we placed between 9 and 15 trap cameras in one or more highland grassland remnant in three regions of Tandilia. We completed 544 trap-days in 39 stations. We detected 37 species, including 10 medium and large-sized predators, 10 nesting grassland bird species, and another 17 bird species which usually nest in trees associated to highland grasslands. A 10 trap-days survey would be enough to detect all the species. The average time to the first detection was 4.7 d (range: 2.8-8.0 d) for predators and nesting grassland birds. The effectiveness of P8B20 Nano 8 was three times higher than the 5210A LTL-Acorn (22.4% vs 7.5%). To cancel side sensors and/or use low-sensitivity dramatically reduced the number of false detections. Camera trapping allowed us detecting a wide range of grassland birds and predators, including rare or secretive species. Low-cost cameras were effective monitoring tools for

grassland birds, and they will be a good option to monitor both game birds (i.e. tinamous) and threatened species in the Pampean region.

10448 USE OF ACOUSTIC INDEXES TO VERIFY THE INFLUENCE OF HIGH LEVELS OF ANTHROPIC NOISE ON THE DIVERSITY OF SPECIES

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The increase in urbanization due to the expansion of cities has reduced the diversity of species and the homogenization of bird communities. Natural areas near cities have high levels of noise, which pose great challenges for species that use sound communication. Analysis of the temporal and spatial distribution of sounds reflects important ecosystem processes and human activities. Acoustic indices are quick and practical ways to verify the characteristics of communities. The Acoustic Diversity Index (ADI) reflects the diversity of species that are vocalizing and the Normalized Difference Soundscape Index (NDSI) the ratio of anthropogenic noise to vocalizations. The objective of the study was to calculate ADI and NDSI and verify if there is a relationship between them. Were performed recordings of bird vocalizations with Marantz PDM 661 Mark II recorder and Sennheiser ME67K6 directional microphone from 06:00 to 9:00 am between April/2015 and April/2017 in 16 Brazilian Cerrado forest fragments. The indices were calculated by the *SoundEcology* package of the *R Statistic* program and performed a Simple Linear Regression to verify the interaction between the indices. Were analyzed 657 02min. stretch each, extracted from field recordings. The ADI value was 0.67±0.47 (mean±standard deviation) and NDSI of 0.52±0.33. There was a positive association between ADI and NDSI ($p<0.01$), so that the higher the NDSI values, the higher the ADI values. Higher values of NDSI reflect a lower amount of anthropogenic source noise and are positively related to higher species diversity (higher ADI).

10605 BIRD CENSUS IN GRASSLANDS: DO DIFFERENT COUNT METHODS PRESENT DISTINCT RESULTS?

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We compare methods routinely used to count birds in field surveys such as point counts and transects to see differences between them regarding bird grassland richness and abundance. Additionally we test the relationship between an environmental variable (vegetation height) and the parameters recorded by both census methods. From September 2014 to January 2015, we surveyed birds in 132 point counts and 129 transects spread across the southern Brazilian grasslands. We conducted one method in sequence of another, in the same place with the same observer and at the same weather conditions. We standardized data to eliminate effort bias caused by area covered and

time in each method. We recorded 4,757 individuals of 188 species in point counts, and 4,440 of 177 species in transects. The two methods did not differ in abundance of birds recorded (p = 0.38), but they had a statistically significant difference in richness (p = 0.02). Both point counts and transects did show a weakly negative relationship of bird abundance with vegetation height (r^2 = 0.03; p = 0.05 and r^2 = 0.07; p = 0.004, respectively). For richness values both methods did not show relation with vegetation height (r^2= 0.002; p = 0.63 to point counts and r^2 = 0.02; p = 0.15 to transects). We found that for some parameters analyzed both point counts and transects are similar; however, to detect richness, point counts are more effective.

10652 ECOLOGICAL NICHE MODELLING AND FISHERIES INTERACTIONS IN AN ANTARCTIC POPULATION OF SOUTHERN GIANT PETRELS *Macronectes giganteus*

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Fisheries and climate change are the main factor threatening seabirds. In this study, we applied ecological niche modeling to estimate the distribution of a Southern Giant Petrel *Macronectes giganteus* population from an island in Antarctic Peninsula, considering oceanographic variables along with fishing activities. We tracked 17 males and 15 females using geolocators in 2011 and 2014. Respective geographical positions were used in modeling. Models presented an excellent precision (AUC>0.9). During the breeding season, central foraging areas of both sexes were positioned south of the Polar Front, with higher probabilities of occurrence closer to the colony. The ecological niche during this period was similar between sexes. During the non-breeding season, females used waters of the continental shelf off of southern Argentina and less frequently the Polar Frontal Zone. Males presented an opposite pattern to females, occurring mainly in the PFZ during the non-breeding season. The most important variables for the distribution of this population were sea surface temperature and wind speed. Habitat use differed between sexes mainly during the non-breeding season. In this period, females used areas of oceanic fronts with greater density of fishing vessels, while males used areas with higher concentration of chlorophyll-a and greater ice coverage. Habitat use differences among sexes may lead females to use zones of higher fishing activities. The influence of such phenomena upon the population deserves better attention, since this population is most likely feeding on fishing discards.

10683 EFFICIENCY OF THE PLAYBACK TECHNIQUE IN THE DETECTION OF ATLANTIC FOREST OWLS

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Owls are birds that are difficult to detect, since most of them are nocturnal, of forest habits and with low population densities. One commonly used method for studying and surveying owls is "playback." The method consists in the reproduction of vocalizations of owls, waiting for the birds to respond to the calls. The objective of this study was to evaluate the efficiency of the playback technique in the detection of forest owls. Between the years of 2012 and 2016, nocturnal samplings were carried out in some forest remnants in the State of Paraná and São Paulo, Brazil, all within the Atlantic Forest biome. Two methods were used to detect owls: 1 - listening points, 2 - playback, both concentrated in the first 3 hours of the night. As a result, playback proved to be the most efficient method to detect the presence of owls in the sample areas, especially the species of the genus *Strix*, *Aegolius* and *Pulsatrix*. Compared to the listening point, the playback increased from 30% to 80% the success in detecting owls at the sampling points. Species such as *Aegolius harrisii*, *Strix virgata* and *Strix huhula* were only confirmed by this method. Based on these results, it is advisable to use playback as the main technique for surveying owls in forest areas.

ECOTOXICOLOGY, PHYSIOLOGY, HORMONES, AND IMMUNOLOGY

10226 BODY CONDITION AND ABUNDANCE OF ENDEMIC PASSERINES OF FERNANDO DE NORONHA, BRAZIL

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Habitat quality - resource availability and environmental conditions - affects body condition of birds, and when altered can lead to population decline and extinctions. Thus, we evaluated body condition and abundance of Noronha Elaenia (*Elaenia ridleyana*) and Noronha Vireo (*Vireo gracilirostris*) in anthropic and preserved areas in Fernando de Noronha, and sampled vegetation cover and food resource availability. We measured body condition (weight, fat, feather wear, ectoparasites, brood patch and cloacal protuberance) of 45 Noronha Elaenia and 52 Noronha Vireo, food resource availability (10 sample points of malaise trap and 20 of entomological umbrella) and vegetal cover (20 sample points). We observed that feathers were worn in the anthropic area for Noronha Elaenia (X^2 = 15.2647; p = 0.009) and Noronha Vireo (X^2 = 13.1024; p = 0.0042) and a greater number of Noronha Elaenia individuals with brood patches in the preserved area. The abundance of Noronha Elaenia and Noronha Vireo was greater in the preserved area (GLMM Chi^2 = 9.9121, p = 0.001, GLMM Chi^2 = 56.615, p <0.000, respectively), being associated with the vegetation cover. The anthropization process, with less food resource availability and vegetation cover in the anthropic area (t = -2.8959, df = 304.76, p-value = 0.004; F = 24.755, p = 0.001, respectively) may be leading to changes in body condition in Noronha Elaenia and Noronha Vireo. Our findings might

assist with conservation and management actions, providing ecological information of endemic and threatened species exposed to habitat alteration.

10296 BIOCHEMICAL PARAMETERS IN FREE-LIVING OLROG´S GULL (*Larus atlanticus*)

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The determination of blood parameters in free-living animals is fundamental for the evaluation of the health status of their populations. The study of these parameters can provide important information in the promotion of management measures for threatened species. The Olrog's Gull is endemic to the Atlantic coast of southern South America and one of the few globally threatened species of *Larus*, being listed as near threatened. Although several studies have evaluated the ecology and foraging behavior of this species, no studies about the blood parameters have been undertaken. As part of an long-term study on the ecology and conservation of the Olrog´s Gull, blood samples were collected to establish baseline values for biochemical parameters (glucose, urea, uric acid, total protein, albumin: globulin ratio, cholesterol, triglycerides, alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, creatine phosphokinase, calcium, phosphorus). The individuals were captured during May-August 2016 at the Mar Chiquita Reserve (37°46' S, 57°27' W). All birds appeared to be in good body condition and no abnormalities were noted during physical examination. In general terms, we did not observe differences in the parameters studied as a function of the age classes. Body mass, total protein and calcium were higher in males than females. This study presents the first values of biochemical parameters for this species and contributes to our knowledge of its overall health status during the non-breeding season.

10321 STRANDING OF MAGELLANIC PENGUINS *Spheniscus magellanicus* IN THE SOUTHEASTERN BUENOS AIRES: AN ASSESSMENT OF THEIR SANITARY STATUS

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The study of blood parameters in birds is commonly used to characterize the nutritional and health status of individuals throughout their life history. This work evaluates the sanitary status of live stranded individuals of Magellanic Penguin during their post reproductive migration along the Buenos Aires coast. Blood samples (n=30) were collected on sandy beaches south of Mar del Plata (Province of Buenos Aires, Argentina) between February and May 2017. Hematological parameters (total erythrocyte and leukocyte count, hematocrit, hemoglobin, leukocyte profile, heterophil/ lymphocyte

ratio) and serum biochemistry (glucose, urea, creatinine, uric acid, total proteins, albumin/ globulin ratio, cholesterol, triglycerides, alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, creatine phosphokinase, phosphorus and calcium) were determined. Only 30% of the birds were found in good body condition and without abnormalities during the physical examination. More than 70% of the individuals suffered anemia, hypoglycemia, hypoproteinemia and hypocholesterolemia, with an average body mass of 1.743 ± 0.202 kg; indicating the presence of a starvation period. 63% of the individuals showed abnormalities in the number of leukocytes reported. The heterophil/ lymphocyte ratio was 4.67 ± 4.57. Of the total sampled individuals, 90% displayed elevated creatine phosphokinase levels (4080.46 ± 2686.92 IU/ L); indicating clear muscle damage. The knowledge of the sanitary status of the Magellanic penguin during its post-reproductive migration generates important information in order to promote management measures for a species listed as Near Threatened.

10346 NUTRITIONAL CONDITION OF ANTARCTIC CORMORANT (*Phalacrocorax bransfieldensis*) IN NELSON ISLAND, SOUTH SHETLAND ISLANDS

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Blood parameters provide information to monitor the physical condition of wild bird populations. These parameters depend on the intrinsic factors of each species and the environmental conditions at each site. Therefore, they can vary with the diet and consequently with the nutritional condition of individuals, as with the period of reproduction. The Antarctic cormorant (*Phalacrocorax bransfieldensis)* is a sea bird with extensive biparental care and highly sensitive to the availability of food around breeding sites. The feeding grounds close to the colonies of the Antarctic cormorant located in the South Shetland Islands (ISS) underwent an intense fishing activity which resulted in a decrease in the food supply for cormorants that nest in this archipelago. Throughout the 2016 reproductive cycle at Punta Armonía, Nelson Island (ISS) the nutritional condition of adult cormorants was evaluated by mean of determination of biochemical parameters related to the food ingested (glucose, cholesterol, triglycerides and total proteins). The only parameter that showed a significant intra-seasonal variation was the glucose, decreasing with the advance of the breeding season and with the stage of raising of nestlings. Decrease of glucose could be the result of the immediate energy investment required for parental care of the nestlings therefore, it could be considered that the ISS cormorants maintain a stable nutritional condition throughout the breeding season.

10447 DIFFERENCE IN THE AMOUNT OF MICRONUCLEUS IN ERYTHROCYTES OF BIRD SPECIES

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Industrial activities and vehicular traffic cause intense air pollution that triggers mutations, as is the case of micronucleus. Birds are sensitive to respond quickly and in various ways to environmental changes, because the species present different habits. The objective was to compare the amount of micronucleus between species of birds dependent and semi-dependent of forest environment. The birds were captured with mist nets in forest areas of the Brazilian Cerrado and branded with metal rings (CEMAVE/ICMBio). Blood extensions were made and were analyzed at optical microscope 5,000 erythrocytes/individual. Was used the Kruskal-Wallis test to verify the difference in the quantity of micronucleus between species and the Mann-Whitney test to prove the difference between dependent and semi-dependent species. We analyzed 490 slides of 245 individuals (15 species). 136 individuals presented micronuclei, totalizing 266 micronucleus. The quantity of micronucleus differed among species ($p=0.006$), and dependent species had less quantity of micronucleus ($p=0.009$). The dependence and semi-dependence of forests determines the appearance of micronucleus, because it is a habit that delimits the degree of contact of the birds with toxic agents that generate this type of mutation, once semi-dependent birds can leave the forest environment, being more exposed to urban pollution. For example, *Turdus leucomelas*, classified as semi-dependent, is found in several habitats, including anthropized, reflecting a higher micronucleus mean (2.60±0.89). While *Leptopogon amaurocephalus*, classified as dependent and sensitive to alterations environmental presented lower mean (0.55±0.52). The amount of micronucleus varied among species, where species dependent on forest environment had less micronucleus.

10509 HEMATOLOGICAL PARAMETERS AS INDICATORS OF HEALTH OF THREE SPECIES OF THRUSHES IN SUBTROPICAL ANDEAN FORESTS

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Hematological evaluation is a useful tool to deduce the health condition of birds. We worked with *T. rufiventris* (resident), *T. nigriceps* (a latitudinal Austral migrant of the Neotropics) and *Catharus ustulatus*(a latitudinal Neartic migrant) in the Selva Montana

of Yungas, Tucumán, Argentina.From blood smears, we determined hematocrit, differential leukocyte count, and the relationship between heterophilic leukocytes and lymphocytes (H: L) as a hematological measure of stress. For *T. rufiventris*, *T. nigriceps* and *C. ustulatus*, we reported respectively: 1) Hematocrit average ± DS: 47.09 % ± 5.10; 46.86 ± 8.15; 46.41± 4.18. 2)Differential count of leukocytes: Lymphocytes (72% ± 13.10, 74.01% ± 12.21, 79.58 ± 13.46), Heterophiles (18% ± 9.89, 18.29 ± 11.71, 9.97 ± 8.13), Eosinophils (8% ± 5.64, 4.15 ± 2.59; 5.41 ± 5.76), Monocytes (2% ± 1.41, 3.54 ± 2.47, 5.04 ± 4.19).3) H: L average and range: 0.29 (0.03-0.73), 0.28 (0.05-0.73), 0.15 (0.03-0.53). At an interspecific level, the similarity of hematological values did not show a differential investment in the production of blood cells.However, variations in the H: L quotient in the intraspecific level could be indicating a process of chronic illness or stress, affecting the general health of the individual and the population in the case of infectious agents. The results obtained are useful as reference values for the species analyzed in the region to evaluate the health condition of species from the subtropical Andean forests.

10518 HEMATOLOGY AND BLOOD CHEMISTRY VALUES IN FREE-LIVING CHIMANGO CARACARA (*Milvago chimango*)

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The study of blood parameters is frequently used to evaluate the condition and health of individual and population level of wildlife species. Furthermore, they are useful diagnostic tools in clinical practice and are especially important in birds, which frequently show few clinical signs of visible disease. The Chimango Carara (*Milvago chimango*), a South American endemic species, is spread over a wide spectrum of environments, being the only raptor in Argentina whose abundance is positively correlated with the level of anthropization. In the framework of a project that studies the flexibility in the physiological and behavioral responses of this species to urbanization, blood was extracted from 23 individuals with the aim of establishing reference values of the main blood parameters. All birds appeared to be in good body condition and no abnormalities were noted during physical examination. The reference values of the main blood parameters measured were: hematocrit 43.91±4.43%, total erythrocytes $2.49\times10^{6}\pm0.43\times10^{6}$ mm^3, total leukocytes $15.93\times10^{3}\pm5.88\times10^{3}$ mm^3, hemoglobin 14.19±1.95 g/dl, glucose 3.73±0.72 g/l, urea 0.46±0.29 g/l, creatinine 1.32±0.99 mg/dl, uric acid 6.49±3.38 mg/dl, total protein 4.17±1.08 g/dl, albumin: globulin 1.63±1.04, cholesterol 153.63±38.58 mg/dl, phosphatase alkaline 460.50±208.13 IU/l, alanine aminotransferase 75.69±42.70 IU/l, aspartate aminotransferase 106.38±45.20 IU/l, creatine phosphokinase 1739.47±986.72 IU/l, phosphorus 5.83±3.13 mg/dl and calcium 6.68±2.17 mg/dl. This study presents the first

values of blood parameters indicating the state of health and individual condition of the Chimango Caracara, contributing to the knowledge of the raptor and generating key information when promoting management plans for this species that is constantly expanding.

10593 DO BIRDS AVOID COTYLEDONS COMING FROM IMIDACLOPRID-TREATED SEED?

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Insecticides applied to seeds before sowing may present a toxicological risk to seed-eating birds. Non-buried treated seeds and cotyledons from treated seeds of soybean can be eaten by birds. To evaluate if the avoidance behavior (rejection of treated food) limits the exposure and consequently the risk for birds, three fields of the Paraná Agriculture Experimental Station were sown with soybean. Equal parts of each field were sown with non-treated and insecticide treated seeds (imidacloprid 60% w/v). The amount of non-buried seeds and the number of missed cotyledons/linear meter were measured by systematic sampling, beginning at random. Birds were surveyed using point counts from field-edge. The amount of non-buried seeds/linear meter was not significantly different between the sowing and 48 h after of sowing. The difference of missed cotyledons/linear meter between control and treated plots was significant in the three fields, with the amount of missed cotyledons/linear meter 51, 37 and 26% being lower in the treated plots than in control plots in the three fields, respectively. As a function of published studies, approximately 50% of the surveyed birds in this field experiment eat seeds. Due to the high percentage of seed-eating birds, although the chemical shown a repellent effect, determining if this effect prevent the intoxication will be necessary.

10657 CHARACTERIZATION OF ACETYLCHOLINESTERASE LEVELS IN *Falco femoralis* AND *Caracara plancus* IN ENVIRONMENTS WITH DIFFERENT INSECTICIDE EXPOSURE

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Organophosphate and carbamate insecticides are commonly used agrochemicals highly toxic to birds. These act by inhibition of acetylcholinesterase enzyme in central and peripheral nervous system. Two raptors especially susceptible to contamination by these insecticides are the Aplomado falcon (*Falco femoralis*) and the Southern caracara (*Caracara plancus*). The aim of this work is to determine the level of cholinesterase activity in these species and to compare it between environments with greater and lesser potential exposure. For this, individuals were captured in agricultural and forest

areas of Caldén in La Pampa province. Blood samples collection allowed to determine acetylcholinesterase plasmatic activity by colorimetric techniques. Through GLM was analyzed if nestlings of both species showed different levels of enzymatic activity when compared between environments. Sex or weight were also included as explanatory variables. Mean levels of activity were 931 and 857.6 for males (n = 5) and females (n = 19) adult Aplomado falcon respectively, while they were 963.5 and 1044.2 U / l for pigeons (n = 34 and 38 respectively). Discriminating by environment the activity was lower in agricultural areas (p = 0.016) and had no influence of sex. The mean for Southern caracara nestlings was 787.3 U / l (n = 30) and did not show zone effect or weight (p>0.05). Even though none of the analyzed individuals showed signs of deterioration, it is possible that exposure to sublethal doses in agroecosystems may have effects on the physiology and behavior altering the normal performance of individuals and their population dynamics, these factors should be more deeply analyzed.

IMMUNE STATUS OF PYGOSCELIS PENGUINS IN ANTARCTIC ENVIRONMENTS WITH DIFFERENT ANTHROPOGENIC IMPACT

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During the Antarctic summer, in Hope Bay (Antarctica), *Pygoscelis adeliae* (Adelie) and *Pygoscelis papua* (Gentoo) penguins breed in sympatry. There are groups of both species that breed in the proximity to the Argentine Scientific station, exposed chronically to pollutants and pathogens as a consequence of human activity, while others do so in remote sites not exposed to such factors. In this work the effect of the anthropogenic impact on the immunocompetence of the Adelie and Gentoo penguins in areas with high -D- and low -ND- impact was evaluated. To determine the blood immunological status of the penguins, we analyzed the abundance of the γ-globulin fraction, the concentration of albumin and plasma proteins and the IgY level. In Adelie -D-, lower concentration of plasma proteins ($P<0.05$) and albumin ($P<0.05$) was observed with respect to Adelie –ND-, whereas only albumin decreased ($P<0.05$) in Gentoo. On the other hand, levels of γ-globulins and IgY in Adelie -D- penguins were higher than Adelie -ND- ($P<0.01$ and $P<0.05$, respectively), while in Gentoo no differences were observed. Together, this would indicate that in the environment exposed to contaminants and pathogens, high immune responses and protein catabolism are induced in Adelie penguins, showing that this specie is more sensitive than Gentoo penguins, which do not present changes in their immunocompetence. This could be due to the existence of different adaptive physiological mechanisms in each species to face changes in the environment.

GENERAL ECOLOGY

10327 EFFICIENCY OF ARTIFICIAL PERCHES IN RELATION TO THE DISTANCE FROM THE FOREST EDGE IN THE BRAZILIAN AMAZON

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The natural regeneration of degraded areas can be enhanced by artificial perches that attract frugivorous birds. Here, we analyzed the effect of distance from the forest edge on the seed input from artificial perches in a forest fragment. The study was conducted between March 2016 and March 2017 on the Catuaba Experimental Farm in Senador Guiomard, Acre (Brazil). We installed three collectors with artificial perches and three controls in open areas at the edge of the fragment. The study perches were placed along a transect at 5m, 20m, and 40m from the forest edge. The control collectors were set at the same distances along a parallel transect, separated by 7m. The seeds were collected weekly. The data were assessed for normality using the Shapiro-Wilk test (W=0.4). The efficiency of seed dispersal by the artificial perches *vs.* the control collectors was analyzed using t. We collected 32,175 seeds, of which 29,927 (93.01%) from the test collectors (artificial perches), and 2,248 (6.98%) from the controls. The artificial perches were significantly more efficient (t=4.5; p=0.001) for the collection of seeds than the controls. The results also indicate a potentially positive effect on the input of seeds according to the distance from the edge of the forest (5m [t=1.4; p=0.2]; 20m [t=3.7; p=0.02]; 40m [t=3.1; p=0.08]). The use of artificial perches was effective for the increase in the input of zoochorous seeds in degraded areas.

10358 BIRD SPECIES RICHNESS IN WESTERN PARANÁ STATE AND CITIZEN SCIENCE: FIRST APPROACH

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Citizen science aids researchers by involving a considerable non-scientist contingent to accumulate large amounts of information. The Wiki Aves depository revolutionized the knowledge of species ranges within Brazil, and we used it to analyze the pattern of bird species richness in western Paraná state, southern Brazil. This region is composed of 50 municipalities. Of these, as of 16 Mat 2017, 92% have at least one record (1 to 311 ± 43.3), for a total of 408 species. Twenty-three municipalities have records of Atlantic Forest endemic species. The cities with the highest species richness are Foz do Iguaçu (311), Cascavel (273) and Toledo (162). We used the following municipality's variables to verify their contributions to the observed species richness pattern: area, amount of remaining vegetation, percentage of remaining vegetation in relation to area, number of users registered in Wiki Aves, protected area, number of endemic Atlantic Forest species and presence or absence of protected areas. By using a log-likelihood ratio, we determined the model which explains species richness has inflation of zeros. We, then,

fitted a zero-inflated negative binomial distribution regression model; we did not consider interaction among variables. We verified that, at the 95% level of confidence, protected area is not statistically significant to explain neither species richness nor the number of zeros. Percentage of remaining vegetation is not statistically significant to explain species richness. We conclude species richness patterns do not result from the presence of protected areas or amount of remaining vegetation of each municipality.

10477 USE OF DIFFERENT TYPES OF ARTIFICIAL PERCHES ON FOREST RECOVERY.

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Artificial perches are low cost nucleating methods, which attract bird fauna and increase seed dispersal. The objectives of the project are applied to the artificial perches as a mean of recovering the forest regeneration area at the Instituto Federal Farroupilha - Santa Rosa Campus, RS, identify the birds that use the artificial perches and evaluate the effectiveness of the different types of non-aid poles seed dispersal. Twenty-seven perches of three different types were constructed: with "x" (A) rods, with multiple cables (B) and with twigs (C). These perches were arranged randomly and arround five feet apart. The type of bird that uses the perch, the type and the identification of the perch and the time of permanence were recorded. A total of 53 observation hours were carried out between November 2016 and May 2017. A total of 30 birds species were classified in 12 families. The perch C was more used by birds, regarding the number of visits and permanence time, being visited by 21 species. The perch A was visited by 21 species and the perch B by 13 species, however, there are five species unique to this type of perch. The C perch was the most visited, as a result of its similarity with trees and for offering more landing points. Considering that most of the observed species are omnivorous or frugivorous, the perches are considered efficient for the project's purpose.

10630 COMMUNAL DORMITORIES OF BLUE-FRONTED AMAZON ON SANTA CATARINA ISLAND, BRAZIL

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The successful establishment of the Blue-fronted Amazon *Amazona aestiva* after release or escape of captivity contributed to the expansion of the species in several urban centers around the world. In the State of Santa Catarina, Brazil, the first couple of *Amazonas aestiva* was documented in 1997 on the Island of Santa Catarina, and since then the status of its population is little known. This study aimed to identify the communal dormitories of the Blue-fronted Amazon on the Island of Santa Catarina, SC, and to perform the counting of individuals from each dormitory for an estimation of the current population size. The counts were made in February, March and April of 2017, in two dormitories, one located in the North and the other in the South of the Island.

Both dormitories were in residential neighborhoods. The North dormitory is in an isolated tree of *Eucalyptus* sp, whereas the South dormitory is located in a homogenous plantation, also of *Eucalyptus* sp., contiguous to a plantation of *Pinus* sp. with approximately five hectares. The census method was used by counting the parrots that arrived in the dormitory before sunset. The maximum number of parrots observed in the South dormitory was 98 individuals, and in the North dormitory was 66 individuals. The results show a population increase, but studies are necessary to confirm the reproductive activity of the species. In addition, it is recommended the monitoring of the dormitories, besides studies about the feeding habits of the species in its new areas of life.

10659 SEX AND AGE DETERMINATION OF CREAMY-BELLIED THRUSH, *Turdus amarochalinus*, AT CARIJÓS ECOLOGICAL STATION, SANTA CATARINA, BRAZIL

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Sex and determination using molt and plumage criteria are important tools for population demographic studies. We analyzed and determine the strategy and extension of molt individuals of *Turdus amaurochalinus* (n=31). According to data, the breeding season starts in September. Males, identified by the cloacal protuberance, exhibited an intensely yellow bill, while females/immatures presented partially yellow bills. The juvenile plumage is characterized by brown-spotted white feathers on the breast and rusty tips to the brown feathers of the head, body, and wing coverts, in addition to an evident gape/brown beak. In January, the preformative molt occurred while other birds were still breeding. Preformative and prebasic molts were characterized by a strong body molt, and prebasic molts also included sequential primary replacement. The preformative plumage was observed between April and September, with molt limits and incomplete skull ossification. Eight birds exhibited partial preformative molts including the replacement of all body feathers, lesser and median coverts, and 4-9 (6.9±2.2) inner greater coverts. Thus, the molt strategy of the species appears to follow the Complex Basic Strategy, consistent with the Turdidae. We found one individual with an eccentric preformative molt, replacing p7-10, along with two outer primary coverts, all alulas, and all secondaries and tertials. To our knowledge, this pattern is not known from other New World *Turdus*. Understanding the within- and between-population variation in the extent of the preformative molt is critical for developing accurate aging criteria and can reveal insights into the ecological and evolutionary pressures that drive this variation.

HABITAT RELATIONSHIPS

10374 HABITAT USE BY SHOREBIRDS IN A PERI-URBAN LAKE OF SOUTH BRAZIL

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Freshwater shorebirds can contribute to inputs of organic matter and organisms to aquatic ecosystems and can also control fish and invertebrate populations, thus playing an important role in lake dynamics. Moreover, shorebirds are considered good indicators of habitat quality for their rapid response to changes in environmental conditions. In this study we aimed to investigate the habitat use by eight shorebird species in a peri-urban lake of approximately 4.66 ha in Guarapuava municipality, South Brazil. Species were monitored for two consecutive days of each month during six months. Habitat use by each species was assessed through instantaneous scan sampling at ten-minute intervals. The evaluated habitat categories were: water, island, land, dry vegetation, green vegetation, tree, and perch. Dry vegetation was the habitat with the highest species richness (S=8), whereas only one species occupied the perches. *Gallinula galeata* and *Butorides striata* were the species that used the greatest habitat variety, *Megaceryle torquatus* and *Butorides striata* used mainlytrees (83.3% and 63.7%, respectively), and *Egretta thula* and *Ardea alba* used mainly dry vegetation (84.0% and 41.9%, respectively). *Amazonetta brasiliensis* and *Gallinula galeata* used mainly water (54.7% and 47.1%), *Nannopterum brasilianus* used the perch (70.9%), and *Porphyrio martinicus* used mainlygreen vegetation (68.8%). The occupation of distinct habitat patches by different species can be beneficial for the shorebird community and the spatial segregation observed probably contributes to species coexistence in the lake area.

10375 SPACIAL DISTRIBUTION OF AN ASSEMBLY OF BIRDS IN THE PAMPA BIOMA

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The pampa biome has suffered changes due to the replacement of native fields by monocultures. In the Campus São Gabriel of the Universidade Federal do Pampa, besides the changes in vegetation, the expansion of the built areas is occurring. The objective of this work is to compare the richness of birds and their distribution within the different environments of the Campus. The survey occurred between May 2015 and April 2016, with weekly morning and afternoon observations. The environments sampled were: ciliary vegetation, silviculture, woody field and clean field. We reached an n=127 species. The similarity for richness among the environments was compared through Cluster analysis. We got four big groups. Group one is composed of three types of environment: shrub field, clean field and ciliary vegetation, being segregated from the others by four species that appeared only in this group. Group one is similar to group two, composed of ciliary vegetation and segregated by five species that appeared only

at this sampling point. Group three (silviculture) segregated the other two groups by 13 species that appeared exclusively in this environment. Group four is composed of ciliary vegetation and built areas and was isolated by two species. We obtained 27 generalist species, appearing in all sampled environments. We conclude that the homogeneity of the environments of group one interfered in their agglomeration, while the others were separated more specifically by type of environment and human presence, because some species do not tolerate this presence, while others benefit from it.

10382 INTERACTIONS BETWEEN BIRDS AND MARINE PLATFORMS IN THE SANTOS BASIN, BRAZIL

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The records of this study were obtained from the Bird Management Plan for Platforms (PMAVE, in Portuguese), a Federal requirement of the environmental licensing processes of maritime oil and gas production in Brazil. The Plan's main objective is to document all occurrences involving birds on the platforms. These records were collected on platforms present in Santos Basin, between April 2015 and March 2017, through direct observation and/or capture for rehabilitation. Of the recorded birds (n=62), about 80% were terrestrial species with high frequencies of Thraupidae (16%) and Columbidae (14%). There was a predominance of insectivorous birds (42%), and granivorous species (24%). Around 11% were waterbirds, and pelagic seabirds represented only 3% of the records. One of the hypotheses to explain these observations is that terrestrial birds and waterbirds access the platforms following support vessels or fishing vessels that operate near the platforms. Other factors such as food availability, the availability of roosting sites, disorientation by lights, and meteorological events may be involved. Flying birds may be influenced by storms, cyclones and other weather processes that force them offshore. There was no pattern in the data from the two years, so further data collection is necessary for a better understanding of the interactions between birdlife and the marine platforms, especially for terrestrial birds.

10389 EVALUATION OF THE BIODIVERSITY CONTAINED IN THE GREEN INFRAESTRUCTURE COMPONENTS OF ALGARROBO

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The present study intends to evaluate the biodiversity contained in the green infrastructure components of Algarrobo, Chile. For this purpose, the green infrastructure components were identified and then analyzed in terms of the biodiversity of avifauna and vegetation they harbored. To achieve this, several bird counts and floristic inventories were performed during the spring of 2016 and the summer of 2016-2017. This information was then used to calculate different biodiversity indexes, the proportion of native species, endemic species and species in conservation

category. Subsequently, the components were compared using different statistical methods acompanied by a cluster analysis, in order to distinguish those sites that require more attention than others. In general, it was possible to identify a large number of species and individuals, some native species of vegetation and several native species of avifauna, a greater number of endemic species of vegetation than avifauna, and a very small number of species in conservation categories. The type of components that presented a better situation were the scrubland, and the specific components that exhibited the best conditions were the water courses that are concentrated toward the southern zone of the study area along with the largest forest. In contrast, the areas that require more attention were the urban typologies: sports and leisure facilities, urban green areas and private gardens. In addition, the forests and wetlands are the most threatened natural components.

10438 HABITAT USE BY THE BURROWING OWL *Athene cunicularia* (STRIGIFORMES: STRIGIDAE) IN A UNIVERSITY CAMPUS OF SOUTH BRAZIL

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Unlike most owls, the burrowing owl *Athene cunicularia* (Molina, 1782) lives mostly on land. In this study, we aimed to investigate habitat use patterns of an *A. cunicularia* pair by evaluating their living area, the use of height, and the use of substrate in a University area of Guarapuava city, Paraná, Brazil. The owl pair was monitored once a month for 24 hours straight from August 2016 to March 2017. We used the instantaneous scan sampling method for each 24-hour monitoring and recorded the substrate used, the height they were at, and the GPS location of each individual at ten-minute intervals. The height was measured using a metric tape and an inclinometer and the living area was estimated through the minimum convex polygon method. The owl pair was monitored for 192h in total. The ground was the most frequently used substrate (52.7% of all records), whereas the artificial substrate was the least used (6.5%). The *A. cunicularia* pair occupied mostly the ground level (0 m; 76% of all records) and their living area was 4,431 m^2 (0.4431 ha). The obtained results of height and substrate use were expected for a burrowing species. The living area observed was relatively small for a bird, though our data suggests that *A. cunicularia* is a territorial species that spends most of the time near or within its nests.

10494 OPTIMAL HABITAT FOR AUSTRAL RAIL *Rallus antarcticus* AND THE PROBLEM OF AMERICAN MINK AND CATTLE MANAGEMENT

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Austral Rail (*Rallus antarcticus*), a globally vulnerable species, inhabits wetlands in Argentinean and Chilean Patagonia, a rare habitat in the region, which occupies only a 1.13% of its surface. The invasive American Mink (*Neovison vison*) and cattle

management including rush burning and harvesting have been suggested as threats to Austral Rail populations, and some characteristics of its habitat were described at a minor scale. At a wetland scale, we related the occupancy and relative abundance of the rail with different rates and combinations of these threats. At a finer scale, we related the rail´s presence to rush features (height and density), bird community and presence of water. We studied five rush lands located in ranches with and without cattle management in Santa Cruz province, Argentina, between December 2015 and April 2016. We used Occupancy Models and GLM. Occupancy and relative abundance were higher in rush lands without mink or cattle management. In rush lands with only cattle management both parameters declined and where mink was present no rails were detected. At the finer scale, the best model for rail's presence included the size of the rushes (with a strong association to medium size rushes, $Z=2.073$, $p<0.05$) and rush density (avoiding low density rushes, $Z=2.037$, $p<0.05$). Here we present for the first time, an association between environmental features and this rail's occupancy and abundance. Wetlands that favor Austral Rail conservation seems to be those least impacted by humans, especially those without mink, and those with tall and dense rushes.

10515 INCREASING WARM SEASON GRASSES DOES NOT INCREASE AVIAN SPECIES RICHNESS IN ISOLATED TEMPERATE GRASSLANDS

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A diverse array of early successional habitats are being created in Eastern Deciduous Forests offering a fantastic opportunity to study the drivers of avian biodiversity. We compared avian diversity at fifteen sites in northeastern Pennsylvania (USA) to area and site shape, site context, land use history, disturbance regime, vegetative composition, primary productivity, canopy structure, insect diversity, and food web structure. Average number of avian species per point count location varied more than threefold from 4.0 to 12.9 species per point. Habitat area and the ratios of edge to area appeared to produce an increase in both numbers of birds and numbers of bird species. The distance to the nearest patch of early successional habitat also had a positive effect on numbers of birds and bird species. For the vegetative characteristics, primary productivity was positively correlated with bird numbers and diversity, whereas the proportion of primary productivity from C_4 grasses was negatively correlated with bird numbers and diversity. The food web studies showed that warm season grasses are included in the food webs of sites where they are found in abundance. Nevertheless, even when warm season grasses produce most of the biomass on a site, there is substantial use of grasses and forbs with the C_3 photosynthetic pathway, which may explain why sites with mostly warm season grasses tend to have lower numbers of species.

10560 INFLUENCE OF THE ENVIRONMENTAL COMPLEXITY OF GREEN FOREST AREAS IN GATED COMMUNITIES IN THE ECOLOGY OF URBAN BIRDS

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The landscape compositionof Brazilian cities has been changing, with the growing of the so-called "gated communities" (LF), with a clear temporal and spatial change in land use. These LFhostforest green areas (AVF), and usually are located outside the central areas, in formerly agricultural or natural sites. Little is known about the importance of these AVF for biodiversity conservation, since studies onurban birdsoften address public areas. Thus, we aimto analyze the influence of the vegetation structural complexity of AVF in LF on bird's ecology and conservation. We performed this study in Sorocaba (SP, Brazil) in 17 LF, collecting datafrom September 2016 to August 2017. We sampled birds by 48 fixed points (one to six per LF), evaluating 10 environmental variables in 10x10m plots aroundthese points. We recorded 62 species of birds. We found that some environmental variables (tree richness, number of standing dead trees, size and percentage of AVF in relation to the total LF size) have positively influenced richness of bird species, supportingthe theory of environmental heterogeneity. We verified that most of these birds are forest-dependent (n = 9; 15%) and semidependent (n = 27; 45%). Thus, AVF with greater extensions harbor largerbird biodiversity, representing important data to support public policies, which should focus conservation in the most extensive and intact LF of AVF.

10622 BIRD DIVERSITY AND ITS RELATIONSHIP WITH HABITAT CHARACTERISTICS IN HIGH ANDEAN PEATBOGS

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High Andean peatbogs are key functional wetlands in the dry Puna region and essential in conserving local biodiversity, including bird communities. We surveyed the bird communities of 18 peatbogs in the Argentinean Puna (Salta and Catamarca Provinces) to describe their species composition, their patterns of species richness and diversity; and their relationship to landscape features and local environmental variables. In total, we registered 60 species belonging to 21 families during summer 2014–2015. Species richness ranged from six to 20 species per peatbog. The Bright-rumped Yellow-finch *Sicalis uropygialis*, Ash-breasted Sierra Finch *Phrygilus plebejus*, Golden-spotted Ground Dove *Metriopelia aymara* and Puna Miner *Geositta punensis* were the most abundant representative species. The change in bird species composition among peatbogs showed a nested structure. The present study is the first one made for the

avifauna of peatbogs of the Argentinean Puna and shows that the peatbogs with more irregular forms and more interconnected with other wetlands support more abundance and diversity of birds.

10656 DIFFERENT USES OF MANGROVE BY BIRDS IN SÃO SEBASTIÃO, SÃO PAULO, BRAZIL

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Mangroves are important for many bird species, where they breed, rest and feed, but their habitat use depends on the area and structure of the vegetation. One of the last remnants of mangroves in northern coast of São Paulo State is in São Sebastião municipality. Here we evaluate the avifauna from mangrove vegetation (Ferry's site) which naturally grew above a landfill close to the São Sebastião port, since 2000. Bird surveys were carried out monthly between June 2014 and May 2015, through direct counting, between 6:00 and 12:00 am, three days per month, totaling 120 hours. Habitat use (foraging, resting or flying) was recorded during the morning surveys. Censuses at sunset were carried out one day per month, one hour before the sunset to record birds that use Ferry's site as roosting area, totaling 16 hours of observations. Overall 52 bird species (24 families, 11 orders) were detected, being 63% terrestrial, 27% waders and 10% marine. Overall, 35% of the species were frequent, 20% common and 45% occasional. For aquatic birds the site was mainly used for resting (62%) and foraging (21%). Twenty species use Ferry's site as roosting area. Richness, abundance, diversity and evenness did not vary seasonally. In the summer about 70 herons nest in the mangrove vegetation, probably due to high tree density and height. We highlight the importance of this new mangrove in the bird's life cycle and their aggregation. Therefore, the protection and restoration of these habitats should be high management and conservation priorities.

10692 USE OF ARTIFICIAL PERCHES BY BIRDS FOR ECOLOGICAL RESTORATION IN CERRADO AND ATLANTIC FOREST IN BRAZIL

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Artificial perches are broadly used in ecological restoration studies but there isn't one synthesis about the main results obtained. In this way, the goals were to describe taxonomic structure of birds and to diagnose which birds most frequently using artificial perches used to promote the ecological restoration of Cerrado and Atlantic Forest Biomes. This study utilized secondary data obtained from a systematic literature review available on the internet. A total of 16 studies from two biomes was obtained; but only 14 were analyzed, from which 120 species were registered, about 18.50±8.04 birds per

report. Seven species were categorized as regular users of artificial perches (*Pitangus sulphuratus*, *Tyrannus melancholicus*, *Mimus saturninus*, *Columbina talpacoti*, *Furnarius rufus*, *Tyrannus savana* and *Zonotrichia capensis*). The results provide implications for the ecological restoration process, because seed dispersal can only be accomplished by a restricted group of generalist birds. The large number of species able to use artificial perches highlights the importance of these structures to support birdlife diversity and in helping provide ecosystem services.

MATING SYSTEMS, SEXUAL SELECTION

10235 DELAYED PLUMAGE MATURATION EXPLAINS DIFFERENCES IN REPRODUCTIVE OUTPUT IN SAFFRON FINCHES

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The paradigm of the life history of birds states that temperate birds have a faster pace of life than tropical birds. However, in South America, paces of life do not exhibit a latitudinal gradient, and high local variability across species is common. This variability also occurs within populations, as is the case with the Saffron Finch *Sicalis flaveola*. This finch has broad variation in clutch size (2-6 eggs) and nests per year (1-4). It is widely distributed and readily breeds in nest-boxes. These attributes make this bird a good model to learn common mechanisms driving life history variation in South America. However, before exploring hypotheses applicable to other species, we must clarify mechanisms responsible for a fraction of the life-history variation particular to this species. We asked if plumage color is a proxy of individual quality, and whether it explains some of the variation in breeding investment. We measured plumage colors and monitored nests from 2012 to 2016 in subtropical Brazil. Assortative mating occurs based on color. Colorful males have better feather and body condition, while colorful females are fatter and own better territories. Colorful parents invest more in reproduction and fledge more offspring than dull parents. Female color predicts breeding investment better than male color. Earlier studies indicate that color signal status among individuals. Therefore, some of the breeding variation is explained by plumage color, which in turn signals differences in individual quality. In the future, we will analyze the remaining variation in the context of phenotypic plasticity and weather variation.

10337 "BUG-EGGS" ENABLE PARENTAL SAMPLING AND CHARACTERIZATION OF THE GENETIC MATING SYSTEM OF CATTLE EGRETS

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Breeding in dense colonies during a limited time-period, characteristics of many waterbirds – herons, egrets and spoonbills – may have promoted the evolution of non-monogamous reproductive tactics. Yet, to date, only a handful of studies have investigated the genetic mating systems of waterbirds, mostly because the difficulty of sampling elusive candidate parents has hindered the application of conventional DNA-based parentage tests. Here, we characterize the genetic mating system of Cattle Egrets *Bubulcus ibis* breeding in a natural colony located on trees. Using, for the first time, the Neotropical bug *Panstrongylus megistus* contained in fake fiber-glass eggs, we collected blood from incubating males and females in 31 nests. We drew blood from the nestlings (n = 89) at those nests, and genotyped all samples at 14 microsatellites. In line with previous behavioral observations, we found evidence supporting a non-monogamous genetic mating system in Cattle Egrets. The parentage allocation method inferred extra-pair paternity (EPP) in 62% of nests and conspecific brood parasitism (CBP) in 64% of nests, while the kinship classification of nestlings in broods disregarding parental information inferred EPP in 50% and CBP in 43% of nests. These results indicate that inferences about the genetic mating system made in the absence of parental information could underestimate the 'true' rates of alternative reproductive tactics occurring in nature. We expand knowledge on the genetic mating system of colonial waterbirds, highlight the importance of including parental samples in these analyses, and contribute new information to guide management strategies of the highly invasive Cattle Egret.

10373 SEXUAL DIMORPHISM IN ACHROMATIC PLUMAGE REFLECTANCE OF WHITE-RUMPED SWALLOWS, *Tachycineta leucorrhoa*

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Achromatic plumage (white, grey or black) is a good candidate signal for visual communication, yet it is relatively less studied than melanin and carotenoid based, or structural plumage. Here, we sought to determine whether the white plumage of the White-rumped Swallow, *Tachycineta leucorrhoa*, exhibits variation within and between sexes. Previous recent research in the congeneric Tree Swallows, found that white plumage brightness is related to the bactericidal capacity of individuals´ plasma thus revealing its potential as a signal of individual quality. We removed five to seven feathers from the breast, belly and rump of eight males and 15 females breeding inChascomús, Argentina (35°34'S, 58°01'W), measured their reflectance in the lab using an Ocean Optics USB2000 spectrophotometer, and applied an avian visual model to estimate chromatic and achromatic contrasts among body regions. We compared

colorimetric variables (hue, UV-chroma and brightness) with t-tests and calculated units of "Just Noticeable Differences" for each body region, sex and between sexes. In addition, we performed a multi-response permutation procedure to generate a "null" distribution of expected values against which we compared the observed values. We found evidence of significant sexual dichromatism in the belly, breast and rump of breeding White-rumped Swallows. Females showed more brightness in belly, whereas males showed more brightness and greater reflectance in the 300-400 nm interval in the breast; sexes were also different in the rump.These variable traits could, therefore, be subjected to sexual selection in this socially monogamous yet sexually promiscuous species with high rates of extra-pair paternity.

10578 COMPARATIVE STUDY OF THE RELATIONSHIP BETWEEN GENETIC MATING SYSTEM, TESTES SIZE AND BODY-SIZE DIMORPHISM IN SWALLOWS (HIRUNDINIDAE)

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Sexual selection can occur in two ways: it can favor the competitive ability of the individuals of one sex to gain access and fertilize individuals of the other, or it can favor the development of characters in individuals of one sex that are attractive to the other sex. The objectives of this work are: 1) to compare testes size (gonadal volume as a primary sexual character that might be an indicator of intrasexual competition) and body size (a secondary sexual character of males competition) in swallows (Fam. Hirundinidae) that differ in their extra-pair paternity (EPP); and, 2) to analyze if gonadal volume and body size dimorphism are good predictors of the level of EPP in the species studied. We found information for a total of nine species from the "Museo Argentino de Ciencias Naturales" and in the database VertNet. Overall, species differed in their body size dimorphism and gonadal volume. However, this difference did not seem to be related to their level of EPP. When we looked at the relationship between EPP and gonadal volume and sexual dimorphism in body size we did not find the expected relationship between intensity of sexual selection (measured in terms of EPP), and these variables. It is possible that the relationship between these characters does not exist, or that it exists but with these data we could not detect it. Anatomical changes might respond to sustained ecological differences in mating systems, and differences in reproductive anatomy might become visible at deeper evolutionary relationships.

MOVEMENTS AND DISPERSAL, MIGRATION AND STOPOVER BIOLOGY

10258 ENERGETIC CONDITION AND MASS GAIN IN SIX SPECIES OF PARULID WARBLER DURING STOPOVER ALONG THE SOUTHERN SHORE OF LAKE ONTARIO

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Passerines use stopover sites to refuel during migration. However, some studies have shown that refueling rates during stopover can vary with sex, time of arrival, density of

conspecifics, or season. Using AIC model sets, we addressed two main questions: (1) Which factors – season, sex, arrival date, or time of day - best explain variability in energetic condition and (2) do season, sex, and arrival date influence mass-gain rate? Data were collected for six species of migratory warbler between 1999-2016 at the Braddock Bay Bird Observatory, a stopover site near Rochester, New York. While there was significant species variation, arrival date, sex, and season explained more variation in condition than time of day. For all species, birds arriving later in the season were in better condition than earlier migrants, females were in better condition than males, and spring birds were in better condition than fall. Likewise, all birds gained mass over the course of the day. There was no difference in mass gain between the sexes in any species. Mass gain was consistent across season and arrival date for *Geothlypis trichas* and *Setophaga caerulescens*, fall birds gained mass at a greater rate than spring birds in *S. ruticilla* and *S. magnolia*, and arrival date influenced mass gain of *Cardellina pusilla* and *S. coronata*. This suggests that the factors that most influence energetic condition and mass gain may be species specific. Further studies need to be conducted in order to determine the causes of these variations.

10376 OCCURRENCE OF MIGRATORY BIRDS IN AN URBAN FOREST FRAGMENT IN RIO BRANCO, ACRE, BRAZIL

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Migratory birds abandon their breeding sites to travel long distances, stimulated by a scarcity of feeding resources, associated with climatic factors and other, endogenous variables. In between August 2016 and May 2017 to detect and identify the bird species that use this area as part of their migratory routes. The area called Campus and zoobotanical park of the Federal University of Acre are located in the urban zone of Rio Branco, in the southwestern Amazon, Acre, Brazil. During the study period, a total of 22 migratory species were detected, originating from number of different parts of the Americas. of these species, 10 (45.45%) are austral migrants (*Porphyrio flavirostris, Sporophila lineola, Elaenia parvirostris, Elaenia spectabilis, Griseotyrannus aurantioatrocristatus, Pyrocephalus rubinus, Tyrannus savana, Tyrannus albogularis, Sublegatus modestus*, and *Vireo chivi*), seven (31.82%) are Nearctic migrants (*Buteo swainsoni, Pandion haliaetus, Actitis macularius, Calidris melanotos, Tringa flavipes, Tringa solitaria*, and *Calidris fuscicollis*), three (13.64%) are intratropical migrants (*Chrysolampis mosquitus, Columbina picui*, and *Sporophila bouvronides*), and two (9.09%) are regional migrants (*Amazonetta brasiliensis* and *Dendrocygna viduata*). The order represented by the most species was the Passeriformes (n=10;45.45%), followed by the Charadriiformes (n=5;22.73%), Accipitriformes (n=2;9.09%), Anseriformes (n=2;9.09%), Apodiformes (n=1;4.55%), Columbiformes (n=1;4.55%), and Gruiformes (n=1;4.55%). The largest number of records were collected for *Tringa solitaria*, which was observed between September 2016 and February 2017. The systematic monitoring of the region's migratory birds contributed to the understanding of migration patterns

(timing of arrival, duration of stay), as well as establishing georeferenced points on the route of each species.

10432 AGE-RELATED DIFFERENCES IN BODY CONDITION DURING FALL MIGRATION IN RESPONSE TO PEDESTRIAN ACTIVITY

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Successful stopovers are critical to the survival of migratory landbirds. As the environment becomes increasingly urbanized, understanding the role urban greenspaces play as stopover sites becomes more and more important. One potential detriment migrants may face in these urban stopovers is pedestrian activity. A migrant may not be able to accumulate sufficient fat stores if it is repeatedly being flushed by passing pedestrians or if it is having to be more vigilant of pedestrians as potential predators. Using a body condition index, we compared body condition of birds in areas of different pedestrian activity during fall migration. Overall, HY birds were in better condition in the less intruded site, whereas AHY birds showed no difference. When comparing migrants versus residents, migrants were in better condition away from pedestrian activity, regardless of age. Residents, regardless of age, showed no differences. These results suggest that HY birds in general are more sensitive to pedestrian activity, and that migratory species may require a longer stopover to accumulate sufficient energy stores so as to resume migration.

10456 MIGRATORY BIRDS IN A WETLAND AREA INSIDE THE STATE OF SÃO PAULO, BRAZIL

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Migratory species have special requirements to survive, as they require conserved habitats and food resources in disjointed areas. There are species that interrupt their migratory movements to the process of changing feathers and the maintenance of rest and feeding areas between two regions is crucial for survival. Globally about 20% of bird species migrate, and it is believed that 40% of them are suffering from population decline. The present study had as objective to inventory migratory bird species present in a wetland at Fazenda Itapuã. The collections were carried out from September 2015 to August 2016 in a 21 hectare wetland at Fazenda Itapuã, (Gália, SP) using the transect methodology. A total of 54 migratory bird species were recorded, three of which were northern migratory, seven were southern, 22 were migrants in South America and 22 national migrants. Of this total, 13 are forest species, 17 are aquatic and 24 are savannah species. Northern species were richer in the warmer months (boreal winter), while the southern ones were colder (austral winter). The aquatic species were predominantly regional migrants, while the savannah ones, migrants in South America. Conservation of migratory birds is directly related to feeding, resting and breeding sites, and loss of

wintering sites may lead to a decrease in population. Studies show the importance of the quality of habitats used as a resting and feeding point for migratory birds. In this way, it is possible to observe the importance of small isolated areas for the maintenance of these species.

10467 INTRA- AND INTER-SPECIFIC SPATIAL SEGREGATION BETWEEN THE BLACK-BROWED ALBATROSS AND THE WHITE-CHINNED PETREL IN WATERS OF THE SOUTHWEST ATLANTIC DURING THE NON-BREEDING SEASON

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Seabirds are useful tools for studying the segregation of the habitat use. The general aim of the present study is to evaluate the intra- and inter-specific spatial segregation in Black-browed Albatross (BBA, *Thalassarche melanophris*) and White-chinned Petrel (WCP, *Procellaria aequinoctialis*) during the non-breeding season in waters of the Southwest Atlantic. Satellite transmitters (n=25) were deployed during the period 2011-2015. In order to determine the segregation, Kernel analysis (core area: 50%) and Generalized Linear Models using an overlap index considering age and sex (UDOI=0 no overlap; UDOI≥1 total overlap) were performed. The BBA used areas in Río de la Plata, El Rincón and at south of Península Valdés while the WCP in addition to the first two areas also used an area in Brazil. There were no significant differences that indicated inter-specific segregation ($UDOI_{50\%WCP/BBA}$=0.013±0.026; P>0.05). In relation to intra-specific segregation in BBA, adult birds had a more extensive distribution than juveniles. Adult females used more pelagic areas than males and juvenile females. The core areas corresponded to El Rincón and Río de la Plata, although adult individuals also made use of areas located further south. With respect to UDOI, only significant differences were found in age group, where segregation was greater between adults and juveniles than between juvenile individuals ($UDOI_{50\%JA}$=0.017±0.029; $UDOI_{50\%JJ}$=1.25±2.43; P<0.05). The results presented here are of great relevance for the establishment of conservation measures considering that by-catch is one of the main threats for both species.

10511 THE CHALLENGE OF PROTECTING DISPERSANTS OF A SPECIES WITH LARGE HOME RANGES, THE ANDEAN CONDOR

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The establishment of protected areas (PA) are among the main strategies for the conservation of biodiversity. However, often these PA are inefficient for species with large home ranges (particularly for dispersing individuals), since they protect a small proportion of the area they use. To conserve a species, daily activities and key moments

in their life history must be considered. Even for the same species, space use may differ depending on age. We studied immature Andean Condor (*Vultur gryphus*) space use in general and then we distinguished between different behaviors (foraging, flying and resting), to analyze how they overlap with PA.We tagged 21 immature individuals with satellitetransmitters in the Argentine Patagonia. We analyzed the overlap of each behavior with the existing PA inside their home range. The 63.42% of the immature Andean condors' locations were in unprotected areas, 14.12% inside PA with effective protection (IUCN categories I-III), 8.44% in categories with lower protection (IV-VI) and 14.02% inside Biosphere Reserve (UNESCO). This pattern is consistent between behaviors. Although biosphere reserves improve the arid zones (ecotono and steppe) used by condors, that areas have a low representation of PA with adequate controls and management. The lack of protection could be a threat for the species and the environments they use since those unprotected areas are exposed to several threats, such as poisoning, or persecution. Our results highlight the importance of non-protected private lands for the conservation of the species, and the need to consider arid zones when designing PA.

10548 SEASONAL DISTRIBUTION AND MOVEMENTS OF THE CAMPO MINER *Geositta poeciloptera*

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Geositta poeciloptera is a rare, endemic to the Cerrado, and globally Vulnerable passerine, whose movement ecology is still unclear. We investigated whether this Neotropical grassland specie performs seasonal migratory movements (long distance and altitudinal) based on secondary sources (literature review, photo and sound archives, online databases, and museum collections). We also investigated the occurrence of local movements in a color-banded population (46 specimens monitored) studied for two and a half years (July 2014 to December 2016) in the municipality of São João del-Rei, Minas Gerais, Brazil. We gathered 325 records of the species from secondary sources, which were distributed in the Brazilian states of Tocantins, Goiás, Distrito Federal, Mato Grosso, Mato Grosso do Sul, Minas Gerais, and São Paulo, as well as in Bolivia and Paraguay. The majority (66%) of the secondary records available are from August to November, coinciding with the species' breeding season. Records from February to May (8%), when the detectability of the species is reduced, are scarce. We found no evidence of seasonal long-distance or altitudinal migration. Data obtained in São João del-Rei indicates that the specie is recorded in the region throughout the year, but that it may performs local movements, especially because birds usually leave their territories whenever there are significant changes in the structure of the grass cover

(e.g. several years without fire or grazing). Seasonal changes in the species detectability (e.g. changes in vocalization rates and playback responsiveness) may also lead to misperceptions about seasonal variations in their abundance.

10568 UNDERSTANDING ALTITUDINAL MIGRATION IN THE ATLANTIC FORES: A BIOACOUSTICS APPROACH

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The intratropical altitudinal migration system is the least considered in studies on bird migration in the Americas. *Turdus flavipes* (Turdidae) has a complex pattern of partial altitudinal migration in the Atlantic Forest, where populations that breed separately at the top and base of cliffs seem to exist, but jointly wintering at mid-altitudes. In this study, we explored the complex vocal repertoire of this species, which also mimics others, to identify a vocal identity unique to the populations from the top and base of cliffs. Once confirmed, such fact shall serve as additional evidence to confirm the existence of different breeding populations at both altitude extremes in the region. We recorded vocalizations of individuals at ~35 and ~1,100m a.s.l. We identified each note in the repertoires of each individual and classified them as exclusive or shared among individuals from each altitude. Note diversity in each area was described by the Shannon diversity index (H'). Individuals (n=6) from both sampled areas shared only 25 notes, but presented similar vocal diversity (35m: H'=3.60±0.41; 1,100m: H'=3.75±0.35). Individuals from lowland areas had 70 exclusive notes and the other 101 exclusive notes made up the repertoire of birds from the highland area. Results show apparent vocal segregation between individuals from both altitudes. Therefore, we expect that proceeding with this study we shall produce more evidences of spatial segregation of breeding populations of *T*. *flavipes*, thus allowing a more detailed understanding of the complex altitudinal migratory pattern that this species performs in the Atlantic Forest mountain range.

10587 THREATS IN THE AIRSPACE FOR THE ANDEAN CONDOR (*Vultur gryphus*): THE CONFLICTS WITH CURRENT AND FUTURE HUMAN INFRASTRUCTURE

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The increasing use of the airspace by humans is causing a growing conflict with the flying wildlife. For example, buildings, electric towers and wind turbines represent a constant challenge for birds due to the risk of collision and electrocution. Our aim is to analyze if the use of the airspace by the Andean Condor (*Vultur gryphus*) overlaps with current or projected aerial infrastructure. For this, we compared the condors flight patterns with the location and height of towers, electric lines and wind turbines in North-Western Patagonia. In this area the collision of condors with aerial infrastructure has been observed. We used the information of three-dimensional location (latitude, longitude

and altitude) of 44 individuals marked with satellite transmitters. We overlapped condors data with a geographic information system including information on anthropic use of airspace. We found an overlap in the use of the land with the electrical infrastructures, as well as two wind farms that are being built inside condors home range. We also found that condors fly most of the time between 5 and 150 meters above ground level (magl), particularly up to 50 magl. These heights strongly overlap with those of the medium (15m) and high (55m) voltage transmission towers and wind turbines (160m). Thus, we show an integrated preliminary analysis of how some anthropic structures may represent a high potential risk of direct collision with flying fauna in an area that is still wild but with large potential for population growth and consequently increasing airspace disturbances.

10618 MIGRATORY CONNECTIVITY OF SHOREBIRD POPULATIONS FROM PERU

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The marking of shorebirds has been used for decades to reveal key stopover sites and important migratory corridors in the hemisphere. To study this migratory connectivity, flagging is the most used technique. Birds are individually marked with a flag characterized by a country-specific color and a three-digit alphanumeric code. From 2012 to 2017, we flagged 5,071 individuals in the Paracas National Reserve, Perú: 3,346 Semipalmated sandpipers, 1,355 Western sandpipers, 155 Sanderlings and 215 Semipalmated plovers. We received 87 independent international sightings, covering all the existing migratory flyways in the Western Hemisphere. Also, we resighted two Red knots marked in the USA, one marked in Chile, and one Sanderling from Canada in Paracas. Our results confirm that most of Semipalmated sandpipers use the central corridor of the USA and Canada during both northward and southward migration from Paracas, but a few cross towards the Atlantic route northbound. Red knots migrate south through the central corridor, but at least one individual used the Pacific coast while migrating northward from Chile. Western sandpipers are restricted to the Pacific corridor during both migrations, and Sanderlings maintain their elliptical migration around the hemisphere. Semipalmated plovers use the Atlantic corridor on southward migration and the central corridor during northward migration. We found an apparent heterogeneity in the migratory behavior of each species and we postulate that there is individual variation in migratory behaviour.

PHYLOGENETICS, EVOLUTION, SYSTEMATICS, TAXONOMY AND MORPHOLOGY

10330 TEMPORAL VARIATION IN ALLELE FREQUENCY OF MICROSATELLITES OF SPIX´S MACAW (*Cyanopsitta spixii*) IN CAPTIVITY

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The Spix´s macaw (*Cyanopsitta spixii*, Psittaciformes) is endemic to Brazil and is extinct in the wild due to habitat degradation and illegal trade. There are records of the first captures for captive breeding during the 1970s. Currently, there are about 130 individuals in three reproduction centers coordinated by the Brazilian government for future reintroduction. The objective of the present study was to estimate the allelic diversity of the species during this period in captivity. Based on data from twelve polymorphic microsatellites (nine specific) and the studbook (birth and death dates) we observed that allele frequency varied over the decades in captivity. At the beginning, when wild founders were introduced in the captive population, the number of alleles increased. However, in recent decades alleles were lost because some founders died without leaving descendants. These results suggest that deleterious effect of drift may be increasing and this may also be affecting genes of adaptive importance. As all individuals are closely related and there are few effective founders and no wild individuals to improve the genetic diversity of the captive population, it is imperative to maximize the retention of genetic diversity by the reproduction of all individuals, mainly those least genetically represented in the population.

10345 A COMPARISON OF SEX DETERMINATION METHODS FOR THE CHILEAN FLAMINGO (*Phoenicopterus chilensis*)

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In the flamingos of the genus Phoenicopterus, sexual dimorphism is limited to the slightly larger size of the males, making it difficult to determine the sex of the individuals by direct observation. During a routine veterinary check at Fundación Temaikèn, five morphometric variables were measured: body mass (gr), culmen length, tarsus, middle finger and flat wing (mm), and blood or feather samples were obtained from 66 adult Chilean Flamingo (*Phoenicopterus chilensis*). Chelex 100 was used for DNA purification and three primers (P2, P8 and P0) were used for the amplification of sex-specific bands. Males were significantly larger than females for all variables under study except the culmen length. Based on the DNA-determined sexes, we used discriminant analysis (DFA) to create equations for determining sex. The obtained functions allowed to correctly classify 78.8% of the individuals studied. Although DFA produced significant discriminant functions for correct sex assignment, the correct classification percentage was low indicating that the use of morphometric measures is not a reliable method for determining the sex of this species. According to these results, DNA-based techniques allow the unequivocal sex determination in these birds with scarce sexual dimorphism. In this work we demonstrate the efficacy of molecular analysis from feathers, a type of sample that can be easily obtained, minimizing the manipulation time of the animals. Feathers do not require special storage conditions, which can facilitate the collection of samples in field campaigns at remote sites.

10403 ANALYSIS OF CHROMOSOME POLIMORFISMS IN *Zonotrichia capensis* TROUGH CHROMOSOME PAINTING

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The tico-tico (*Zonotrichia capensis*) is an inhabitant of open landscapes, with wide distribution in the Neotropics. Cytogenetic studies have demonstrated the presence of 80 chromosomes and the occurrence of polymorphisms involving two and four autosomal pairs. These polymorphisms are probably due to pericentric inversions. Molecular techniques as fluorescence in situ hybridization allow a better characterization of the karyotype, as well as the identification and interpretation of chromosomal rearrangements. Therefore, this work aimed to characterize the *Z. capensis* chromosomes, using classical cytogenetic techniques and comparative chromosome painting with *Gallus gallus* (GGA) probes. To detect the location of the ribosomal RNA genes, we applied the 18S probe. Metaphasic chromosomes were obtained by culture of fibroblasts from *Z. capensis* skin biopsies of four individuals. Application of the 18S rDNA probe demonstrated that ribosomal genes are located in one pair of micro chromosomes as in *G. gallus* and most basal bird species. Through classical cytogenetic, we confirmed the presence of four of chromosomic polymorphisms reported in the second and fourth autosomic pairs. The comparative chromosome painting indicated that the second pair of ZCA corresponds to GGA1q and that the fourth pair of ZCA corresponds to GGA4q. In addition, we observed the synteny corresponding of chromosomes GGA2, 3, 5-10. The use of the GGA probes did not allow the identification of the mechanism that led to the appearance of polymorphisms. Therefore, the next step will be the use of *Leucopternis albicollis* probes, which are more effective in detecting intracromosomal rearrangements.

10435 BIOMETRY AND BODY WEIGHT OF TWO SYMPATRIC *Myiozetetes* IN AN URBAN AREA OF SOUTHWESTERN BRAZILIAN AMAZONIA

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While they present some variation in plumage, the species *Myiozetetes cayanensis* and *Myiozetetes similis* share many traits that can hamper their reliable identification, especially in the case of the juveniles. The present study investigated possible differences in the morphometry of the two species, found on the campus of the Federal University of Acre and the adjoining Zoobotanical Park in Rio Branco, Acre, Brazil. The campus is covered in grassy vegetation with some trees, while the park is a 160-ha fragment of secondary forest at varying stages of regeneration. Artificial ponds are found in both areas. Wing Length (WL) and Total Length (TL) were measured with a

ruler, and the tarsus (T) with a calliper, while the birds were weighed (W) with a precision balance. We used the Mann-Whitney test to compare datasets. The birds were captured in 36 mm mesh mist-nets (12 m x 2 m) between 2010 and 2016. Overall, 38 adult *Myiozetetes cayanensis* and 39 adult *Myiozetetes similes* were measured. The results for *Myiozetetes cayanensis* were WL= 88.8±3.84 mm, TL = 177.4±6.91 mm, T=17.6±2.93 mm, W=27.5±2.95 g, and those for *Myiozetetes similes* were WL=89.1± 5.56 mm, TL= 178.4±8.10 mm, T=17.8± 2.36 mm, W=31.1±2.96 g. Only the weights varied significantly ($P<0.001$) between species. These results indicate that morphometry is not a useful criterion for the differentiation of the two species.

10440 CYCLE OF FEATHER MOLT AND BREEDING OF BIRDS (PASSERIFORMES) OF MURICI ECOLOGICAL STATION, ALAGOAS

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Knowing a bird's life cycle help us answer such questions such as habitat conservation status, since these animals are excellent bioindicators. Non-migratory birds, which require high energy demand to molt and reproduce, would be selected to accomplish those activities when fruits and insects are more abundant, but without overlapping such activities. The availability of food resources is generally influenced by precipitation. The seasonality of molt and the breeding season of Passeriformes of the Murici-AL Ecological Station, located in the Pernambuco Center of Endemism, one of the most important areas of Atlantic Forest, was investigated, as well as whether there exists a correlation with local rainfall. During five years, monthly expeditions were carried out in a fragment of the Fazenda da Bananeira Forest, using mist nets opened for 20h during each expedition. The precipitation averages and frequencies of birds that were undergoing different life cycle activities were tested with a Pearson correlation. The complete molt, when birds molted all feathers of flight and contour, occurred between March and April, at the beginning of the rainy season. Breeding occur between September and December in the spring, just after rainy season, and in April, at the beginning of the rainy season. Overlaps between activities were very rare; however, the molting period began soon after the first breeding period. Also, no correlation was found between average rainfall and these life cycle activities. The low sample number and the methodology applied may have influenced the results, which means that more effort is needed to make a more informed statement.

10487 IMPLICATIONS OF THE FORELIMB MYOLOGY ON THE FALCONID HABITS

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The mass of a muscle or a functional group can provide information about the importance of the muscles during locomotion. The Falconidae Family is composed of three subfamilies, which present different flight modes. The aim of this study was to explore whether the main muscles of the humerus and ulna-radius have variations in mass that are indicative of their flying habits. A total of nine species that represented the subfamilies (n= one to five specimens per species) were studied. The body mass and the individual unilateral wing muscles were recorded, their proportions were calculated and a principal component analysis (PCA) was performed for a selection of muscles of the humerus and ulna-radius (n = 11). The wing muscles ranged from 5.5% (*Falco subbuteo*) to 11% (*F. peregrinus*) of the bodymass. The selection of some muscles in particular was more informative for the subfamily segregation than all the muscles as a whole.The ACP showed that the muscles that contributed most to the variability among the subfamilies were the pectoralis, supracoracoideus and deltoids. This segregation could be related to the degree of use of the flight to obtain food: The Falconinae species seek and hunt on the wing, whereas this is not the main habit in the Polyborinae as they mainly obtain their food from the ground and Micrastur (Herpetotherinae) flies among dense vegetation to hunt prey, a habit that requires greater maneuverability.

10491 TAXONOMIC REVIEW OF THE POLYTYPIC SPECIES *Tolmomyias flaviventris* (WIED, 1831) (AVES: RHYNCHOCYCLIDAE) USING MOLECULAR, MORPHOLOGICAL AND VOCAL ANALYSES

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The Ochre-lored Flatbill (*Tolmomyias flaviventris*; Rhynchocyclidae) currently includes six recognised subspecies based exclusively on morphological characteristics (*T. f. flaviventris, T. f. subsmilis, T. f. viridiceps, T. f. aurulentus, T. f. zimmeri* and *T. f. dissors*), presenting a broad distribution across most northern and central South America, including parts of Panama, inhabiting a great diversity of forest types. Using *multilocu*s molecular analyses, allied with morphological and vocal characters, this study aimed to define whether these six subspecies represent distinct valid taxonomic units. We sequenced 42 tissue samples covering four out of the six subspecies of *T. flaviventris*. The molecular analyses revealed at least four different clades whose limits were not concordant with currently recognised subspecies. In the group's phylogeography there is a substantial separation between western Amazonian populations (*T. f. viridiceps*) and the others (Nothern and East Amazonia and Eastern Brazil), which is also evident in the haplotype network and genetic distances analyses. The morphological and vocal data also validate these results, showing a clear diagnosis between these two sets of populations. The results obtained are congruent with the elevation of the western Amazonian population to the species level, as proposed by some authors, named *Tolmomyias viridiceps*, which would include three subspecies (*T. v. viridiceps, T. v. subsimilis* and *T. v. zimmeri*).

10504 EVOLUTION OF VISUAL SIGNALS IN THE ANTWRENS OF THE TRIBE FORMICIVORINI (AVES, THAMNOPHILIDAE)

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Thamnophilidae is a large family of insectivorous passerine birds which has high phenotypic, ecological, and behavioural diversity. One of the best supported groups in the family by recent molecular studies is the tribe Formicivorini, which contains 39 species, commonly known as antwrens. They are small birds that inhabit a wide diversity ofhabitats and exhibit contrasting patterns of foraging behavior, acoustic and visual signals that are linked to environmental conditions. In addition, they are sexually dimorphic in plumage anddifferences among species are associated to both color and plumagepatterns. Our main objectives were to 1) quantify the variation of visual signals in the Formicivorini, and 2) assess to what extent such variation is associated to foraging behavior and habitat. We collected plumage data using standardized photos of taxidermised museum specimens. Males and females of each species were photographed in such way that the following regions were available for analyses: head, throat, cheek, belly, back, wings, flanks and tail. The calibration and plumage values were made in ImageJ software. Preliminary results indicate that throat, belly and flanks are lighter and more diverse than the wing, head, back and tail. In relation to sexual dimorphism, throat and belly regions are more different between males and females than other body regions. The spotted and streaked patterns of the different body regions vary inside the group, but are not different between sexes. Lastly, we found that variation in coloration seems to be associated with habitat.

10510 FIRST RECORD OF THE GENETIC VARIABILITY OF *Neochen jubata* (ANSERIFORMES, ANATIDAE) IN BRAZIL BY MITOCHONDRIAL DNA

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The species *Neochen jubata* (Spix, 1825) (Anseriformes, Anatidae), popularly known as Orinoco-goose, is distributed from northern South America to northern Argentina, inhabits sandy beaches along medium and large rivers with ciliary vegetation well-developed, and is capable of performing long-distance migrations. According to the IUCN, there are populations of this species considered as "near threatened", whose population decline is associated with anthropic activities. Thus, the objective of this work was to evaluate the genetic diversity of the mitochondrial DNA control region (D-loop), of 29 individuals of the Neochen jubata species from the Instituto Chico Mendes de Conservação da Biodiversidade (RAN - ICMBio) of São Miguel do Araguaia, GO,

representative of three population groups sampled during three years of collections (2010, 2013 e 2014). 650 base pairs were sequenced, but only two haplotypes are present in the sample. The analyzes showed a very low haplotypic diversity (Hd = 0.069), only eight segregating sites and overall genetic distance of 0.001. This shows that this population in Brazil is homogeneous in its variability, not showing significant genetic differences or population structure between the groups. These characteristics are related to high rate of inbreeding and low gene flow. These are extremely worrisome results, since it is a species considered "near threatened" and with indications of “possibly extinct” in some states of Brazil, so that in addition to the low population number it also exhibits a very low genetic variability, which is a serious issue of conservation concern.

10542 DONATIONS AND CONFISCATED MATERIAL: AN IMPORTANT CONTRIBUTION TO MUSEUM COLLECTIONS

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Private and institutional donations and the incorporation of confiscated specimens in museum biological collections can complement the material deposited as a result of collecting trips. The objective of this analysis was to evaluate the contribution of donations and confiscated materials to the National Ultrafrozen Tissue Collection from the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", using birds as a study case. Of 8892 bird tissue samples, 13% correspond to donations and 11% to confiscated specimens. In relation to donations, only 10% of them are blood samples (donated by institutions that have live animals), and the rest of them correspond to whole specimens. Regarding confiscated material, 62 species have been received, 26 of which are only represented in the collection as a result of confiscations. Anseriformes and Passeriformes are the most confiscated orders. Although, in most cases, the place of provenance of the confiscated material is unknown, this material source and the donations are very valuable for the mentioned collection. In fact, the samples acquired in this way had been used in several research projects. Both sources of material require working together with other institutions (governmental and private) and the awareness in society that a museum is the appropriate place to deposit biological material.

10545 *Chiroxiphia pareola* DNA SHOWS DIVERSIFICATION IN AMAZON AND RECENT CONNECTION WITH ATLANTIC FOREST

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Disjunct species between the Amazonian and Atlantic forests are good models to test hypotheses of rivers asbiogeographic barriers and Pleistocene forest refuges, which are

used to explain diversification in Neotropical rainforests. We use molecular analyses, ancestral area reconstruction, and potential paleodistribution analyses of*Chiroxiphia pareola*, a bird species with a disjunct distribution between the Amazonian and Atlantic forests, to test the above hypotheses and examine the potential processes of diversification and geographical expansion of its populations. Six genes, two mitochondrial and four nuclear, were analyzed. Our results supported the recognition of four evolutionarily independent lineages of the polytypic species *C. pareola* that we suggest be divided into the following full species: *C. regina*, *C. napensis*, *C. pareola*, and one new species. All splits were estimated to have occurred in the Pliocene-Pleistocene and were supported by the historical river dynamics in the Amazon. Moreover, the molecular divergence between the Amazonian and Atlantic forest populations of the new species is very low when compared to divergences between the lineages separated by Amazonian rivers. Our results also suggest a connection between the Amazonian and Atlantic forests during the Middle Pleistocene near the mountain slopes and river drainages in the interior of northeastern Brazil. A grater probability of dispersal from Amazon to Atlantic Forest was recorded. Although our results support the stability of Pleistocene forest refuges in the Northeastern Atlantic Forest, they are not consistent with the role of rivers as a diversification mechanism in this region, during the Pleistocene.

10589 SYSTEMATIC REVIEW OF *Rhynchocyclus olivaceus* (AVES: RHYNCHOCYCLIDAE) BASED ON A MULTI-CHARACTER APPROACH

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Birds are the group for which the largest amount of evolutionary and ecological information is available. However, recent studies have shown that many polytypic species are in fact complexes of species, thus revealing a “hidden” diversity within already recognized species. The species *Rhynchocyclus olivaceus* (Aves: Rhynchocyclidae) has nine currently recognized subspecies, but so far no phylogenetic hypothesis exists for the evolutionary relationships among them. To estimate a phylogeography for the group we sequenced three mithocondrial genes and two nuclear loci, from five *R.olivaceus* subspecies (n=89). The obtained phylogeny pointed to several taxonomic inconsistencies within *R.olivaceus* evolutionary history. First, the analysis suggest that the species is paraphyletic. Second, two subspecies of *R.olivaceus* are not monophyletic; *R.o.aequinoctialis*is polyphyletic and divided into five distinct phylogroups (all of them located in the Napo and Inambari centers of endemism); and *R.o.sordidus* is paraphyletic with respect to the Atlantic Forest endemic nominate*R.o.olivaceus*. Although the phylogeny indicates the need of taxonomic updates, the large groups found within “*R.olivaceus*” are apparently morphologically very similar. However, a preliminary acoustic analysis suggest that these groups have

conspicuously distinct vocalizations consistent with genetic differences, reinforcing the cryptic nature of the speciation process in the group.

10595 MOLECULAR SYSTEMATICS OF THE *Dendrocolaptes picumnus* / *hoffmannsi* / *platyrostris* SPECIES COMPLEX

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The polytypic *Dendrocolaptes picumnus* forms a monophyletic group with *D. hoffmannsi* and *D. platyrostris* and together this whole complex is distributed from Central America to northern Argentina, including all biomes of Brazilian territory. A previous molecular study, using one sample from each taxon in the complex, recovered *D. picumnus* and *D. hoffmannsi* as sister species and *D. platyrostris* as basal in the group. Although the basal node joining the entire complex is well supported, the one that joins *D. picumnus* and *D. hoffmannsi* lacked statistical support. Thus, sampling multiple taxa and populations in this complex is important to resolve several taxonomic issues and reconstruct the group's history of diversification. Here, we present the most complete data set for complex to date based on a broad taxon sampling. Altogether, 68 samples belonging to 7 out of the 12 taxa grouped in the complex were sequenced for the ND2 and used in a preliminary phylogenetic analysis. An inferred Bayesian tree recovered five main clades with high support. Although the basal relationships among these five clases nodes lack statistical support, the inferred phylogeny suggests that *D. picumnus* is paraphyletic with respect to *D. hoffmannsi* and *D. platyrostris.* Specifically, the phenotypically distinct *D. picumnus transfasciatus* was recovered as more closely related to *D. hoffmannsi* and *D. platyrostris* than to the other subspecies of *D. picumnus.* Samples from additional taxa in the complex as well as more mitochondrial and nuclear genes will be incorporated into this study in the near future.

10598 MOLECULAR PHYLOGENY OF THE GENUS ATTILA LESSON, 1831 (PASSERIFORMES: TYRANNIDAE)

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Attila Lesson, 1831 belongs to the order Passeriformes, allocated in Tyrannidae, which currently comprises seven species (*A. bolivianus, A. cinnamomeus, A. citriniventris*, *A. phoenicurus*, *A. rufus*, *A. spadiceus* and *A. torridus*). This genus occurs in the Neotropical region, from western of Mexico to northeastern of Argentina. *Attila* was the target of some taxonomic studies, although no phylogenetic hypothesis has been proposed for the evolutionary relationships within this genus. The present work aimed to estimate a molecular phylogeny of *Attila*. We used sequences of the mitochondrial gene cytochrome *B* belonging to all species in the genus (*A. bolivianus*, *A. cinnamomeus*, *A. citriniventris*, *A. spadiceus* and *A. torridus*), except *A. phoenicurus* and *A. rufus*, in

addition to the outgroup (*Megarhyncus pitangua*, *Myiodynastes maculatus* and *Pitangus sulphuratus*). All sequences were obtained from GenBank. The sequences were aligned through the program MAFFT, using default parameters. A Bayesian analysis was run on program MrBayes to infer phylogenetics relationships within *Attila*. The genus *Attila* was recovered as monophyletic, presenting two major clades, one formed by *A. bolivianus* and *A. citriniventris* and another by *A. cinnamomeus* sister to *A. spadiceus + A. torridus.* Despite preliminary, our results support the genus' monophyly. However, future studies should include more molecular markers and sample *A. phoenicurus* and *A. rufus* in to confirm the genus monophyly with a more powerful dataset.

POPULATION BIOLOGY

10225 HOME RANGE AND ABUNDANCE OF *Crax globulosa* (WATTLED CURASSOW) IN THE JURUÁ RIVER, AMAZONAS, BRAZIL

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Crax globulosa is endemic to the Amazon basin, occurring in lowland forests in Brazil, Colombia, Ecuador, Peru and Bolivia. It is considered endangered because of its small population, which has been estimated to have suffered a rapid decline. Researches on its ecology are scarce, especially within Brazilian populations. In this work, we have estimated the home range of *Crax globulosa* and through censuses we've calculated the abundance of the species in the locality. The study was conducted on Juruá River, Carauari, Amazonas, Brazil. In the home range analysis we used the VHF radio-telemetry technique. The captured individuals were monitored for 13 months, from September 2014 to September 2015. For the home range calculation we used the 95% MPC and 95% Fixed Kernel estimators. For the estimation of population abundance, 10 transects were sampled by the line-transect census protocol, between July/September 2015. We captured three individuals of*Crax globulosa*, two females and one male. The average home range was 804ha with MPC and 468ha with Kernel. The largest home range was 1393ha for MPC and 893ha for Kernel and the lowest was 286ha and 226ha respectively. In the census there were 148 records of the species, with 52.7% female, 43.3% male and 4% undetermined. Generating an estimate of 7.1 ind/Km^2 within the study area. The size of the flocks ranged from 2-5 individuals, with 69.6% observed perching. These results are important tools for future conservation strategies, also studies of this nature fill important gaps in the ecology of *Crax globulosa*.

10249 SEASONAL DEMOGRAPHIC PATTERNS AND HABITAT UTILIZATION OF *Chloephaga picta* IN THE SARMIENTO VALLEY, CHUBUT

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The present work was carried out during the winter (WS) and reproductive (RS) seasons from 2014 to 2017 in the Sarmiento Valley (45° 36'S, 69°04'W). The purpose of this research was to study seasonal demographic patterns and habitat utilization by the Upland Geese. The maximum number of specimens was estimated at 14,000 and 8,500 for WS and RS, respectively. In addition, during WS both mean numbers of individuals (429 vs 130) and flocks (63 vs 35) per transect and the proportion of barred males (8.4% vs 0.3%) was significantly higher than during RS. On the other hand, the number of flocks composed of two specimens (78% vs 48%) was significantly higher during RS. In an environment that was comparatively not very variable between seasons, the Upland Geese used in greater proportion pasture implanted habitats with the presence of domestic cattle during the WS in relation to RS. In contrast, they were associated more with high vegetation (> 20 cm) and water bodies during RS. These results would indicate that the Upland Geese adopt the expected theoretical patterns to protect their clutches (RS) and maximize the energy gain (WS).

10522 DENSITY AND SPATIAL DISTRIBUTION OF THE CAATINGA ENDEMIC WHITE-BROWED GUAN (*Penelope jacucaca*) IN NORTHEASTERN BRAZIL

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Understanding ecological aspects of threatened populations is one of the fundamental steps for a correct management. Information concerning geographic distribution and population size are the most important criteria for the definition of threat categories, which in turn guide the investment of resources in conservation programs. The White-browed Guan (*Penelope jacucaca*) is a Caatinga endemic species classified as vulnerable at national and global level. Little is known about its ecological aspects, and demographic data are practically nonexistent. These gaps constitute a major challenge for effective conservation measures. We analyzed the spatial distribution and population density of the White-browed Guan along a 130km corridor between the states of Ceará (CE) and Paraíba (PB) during three years (2014-16). The study area presents a heterogeneous soil cover, with predominance of crops and pastures, interspersed by small patches of native vegetation. Linear transections were applied at 22 sampling areas, with an effort of 370 km traveled and 246 observation hours. We recorded 219 individuals in 45 records. The species occurred in higher density in the areas with greater forest cover, dominated by the arboreal and shrub caatinga. The Catolé (CE) and Serra de Santa Catarina (PB) regions concentrated 80% of the records

and represent the most important areas for the species along the corridor. These areas represent the last relatively preserved forest refuges in the study area. Hunting and deforestation are the main deleterious factors for this species in the region.

10603 HOW MUCH DO PENGUINS TAKE CARE OF THEIR HABITAT? POPULATION REGULATION IN MAGELLANIC PENGUIN, *Spheniscus magellanicus*, AT MARTILLO ISLAND, BEAGLE CHANNEL, TIERRA DEL FUEGO.

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Habitat degradation is one of the major threats to wildlife populations. Several factors have been found responsible for this degradation. Can a species degrade its own habitat? Between years 2004-2016 we performed censuses of Magellanic penguins (MP) at a colony on Martillo Island. The point-transect methodology was used to estimate nest density (Dn: nests/ha) at each point of a permanent grid, registering new areas colonized over years. In 2016 the degree of erosion was estimated at the same points and then extrapolated to the entire colony area, identifying areas with high, medium and low percentage of degradation (aH, aM, aL, respectively) on the island. Reproductive success, adult body indexes and foraging characteristics were compared among areas. The population increased over years in accordance with nest density, being larger to the east of the island and expanding towards the west on aL areas. In areas with higher Dn the erosion degree was higher (GLM $p < 0.0001$). Particularly, in the aH, the Dn increased until 2012 and then decreased. The reproductive success was similar in the different zones (aH= 1.31 ± 0.91, n=51, aM = 1.4 ± 0.84, n=163, aL: 1.30 ± 0.67, n=10, H=0.58, gl=2, p=0.68) and trophic parameters and body indexes differed between zones without a defined pattern. The MP colony of Martillo Island has been increasing during the last years although evidence suggests a deterioration of habitat with potential implications for population regulation.

10661 CLASSIFYING EDGE TOLERANCE IN UNDERSTORY BIRDS IN AMAZONIAN FOREST ISLANDS: A QUANTITATIVE APPROACH

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Species distributions in forest fragments are affected by their tolerance to edge habitats. Here we estimated the extent of edge effects for understory birds to assign them into four categories: (1) edge-associated, (2) edge-tolerant and (3) edge-intolerant and (4) rare to classify. We sampled 38 sites at different distances to the edge (15–2,950m) at five continuous forest sites and 33 forest islands at the Balbina Hydroelectric Reservoir, Brazilian Amazonia. In each site, we used 16 mist-nets from 06:00 to 15:00 over two days in both 2015 and 2016 between July and December, totalling 2,115 captures of 130

species during 21,888 net-hours. Species composition, represented by a multivariate axis (NMDS), along the gradient of increasing distance from forest edges were highly variable up to 100m, converging into a similar pattern from this distance. Species were then classified according to their distribution between edge (<100m, n=19) and forest interior habitats (>100m, n=19) based on a multinomial model. Three species were classified as edge-associated, 19 as edge-tolerant, eight as edge-intolerant, and 100 as rare to classify. Of the 30 species classified, most (n=17) corroborate Parker et al. 1996, apart from 13 intolerant species which were not expected to occur within edge habitats, such as *Dixiphia pipra* and *Xiphorhynchus pardalotus*. We show that, although species' habitat associations assigned based on qualitative data from the literature can be generally accurate, this can be substantially improved using a quantitative approach.

RECORDS AND INVENTORIES

10331 THE BANDING STATION OF THE BOTANICAL GARDEN OF THE HORCO MOLLE EXPERIMENTAL RESERVE

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During the creation of the Botanical Garden (JB) of the Horco Molle Experimental Reserve (REHM), it was decided to establish a semi-permanent bird monitoring station in the same area, using mist netting and marking with metal and color bands. The objective was to create a banding station that follows international parameters and rules for monitoring and catching birds, unifying biometric measurements, banding, number of nets and hours of operation, molt and feather wear analysis, determination of reproductive condition, sexing and ageing. The station was operated with 10 nets, 9 m long by 2 m high, placed randomly at the site. Nets were opened from 9:00 to 16:00, totaling 70 net-hours per day. Sampling was conducted from June 2016 to May 2017, over a total of 18 days. A worksheet was designed for data collection. Metal rings provided by the National Banding Center (CeNAA) were used. In this sampling period, 139 birds from 11 families and 24 species were captured, of which the two most frequent were *Turdus rufiventris* and *Arremon flavirostris*. Seventy-seven percent were adults. The most abundant trophic group was insectivorous birds, which made up 27% of records. The most abundant birds are Residents - Frequent (76%) and secondly Migratory - Altitudinal (20%). Twenty-four birds were recaptured at the site, with one being recaptured 5 km away, in the Sierra de San Javier Park. These activities are carried out through volunteer ornithologists of the (REHM). These activities are also open to the general public who visit the botanical garden. Banding activities have also been carried out, aimed at the general public, using this activity as an environmental education tool.

10332 AVIFAUNA OF THE SAN PABLO PRIVATE RESERVE, TUCUMÁN, ARGENTINA

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The San Pablo Reserve is a privately managed protected area, located in the southern foothills of the Sierra de San Javier, in the province of Tucumán, with an area of 750 ha, with an altitude range of 650 to 1,300 meters above sea level in the Yungas ecoregion. In order to contribute to the knowledge of its avifauna during the creation of the reserve, we performed bird sampling through fixed point counts, transect counts, mist netting and playback for nocturnal birds. We encountered highly variable dynamics in the avifauna, with species that migrate altitudinally, resident species, and others that nest in the reserve and then migrate to winter in latitudes of northern South America, as well as species migrating from North America. A total of 155 species were recorded, many of which are of conservation priority because they are endemics, with low population numbers and which suffer persecution from hunting or are long distance migrants. These include *Trigrisoma fasciatum, Ramphastos toco, Amazona tucumana, Buteo leucorrhous, Buteo platypterus, Micrastur semitorcuatus, Oroaetus isidori, Megascops hoyi, Pheusticus aureoventris, Atlapetes citrinellus, Poospiza erythrophrys and Catharus dryas,* among others. This initiative of creating a new reserve protects the environments of many birds representative of the Southern Yungas. The reserve is also a supplier of important environmental services, such as water catchment and provision, carbon capture and as a refuge for pollinators and predators of biological pests.

10359 RECORDS OF UNUSUAL BIRD SPECIES IN WESTERN PARANÁ STATE, BRAZIL

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There is currently a lack of studies on other micro-regions of western Paraná apart from the Iguaçu National Park. Thus, ornithological knowledge of this region remains with knowledge gaps. Here we present records of unusual bird species in Paraná, obtained during development of different studies. *Sporophila palustris*, globally critically endangered, was recorded on 04 November 2016 in an area with fruiting Guinea grass Megathyrsus maximus (Jacq.) on the Universidade Tecnológica Federal do Paraná campus, Santa Helena municipality. We observed and photographed one male, which failed to be found on following days; the individual was among hundreds of *S. caerulescens*. In migratory movement, it is expected the species will be registered again during its return to Cerrado. The species had only two other records for the state. In the same municipality, on 16 February 2017, we heard a couple of *Campylorhynchus turdinus* which, a few days later, were photographed in sparse trees in the center of the city. It was known from Foz do Iguaçu municipality. In Palotina municipality, 100 km northeast of Santa Helena, we found an individual of *Campylorhamphus trochilirostris* of unknown sex, which had crashed into a glass window on the Universidade Federal do Paraná campus on 25 February 2017. This species is known from five other localities within the state. These records contribute to the knowledge of the occurrence of endangered species, and in the border of this state with Mato Grosso do Sul state (Brazil) and Paraguay.

10472 CHARACTERIZATION OF THE AVIFAUNA IN THE SURROUNDINGS OF A PLANTED FOREST IN THE BRAZILIAN CERRADO

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The high demand for timber resources led to an increase of plantation forests, which currently cover a large portion of the Cerrado. Due to this, the effect and importance of eucalyptus and pine forests on bird communities has aroused great interest. We aim to characterize the avifauna in a Cerrado area surrounded by plantation forests. The survey was conducted in Nova Ponte Farm (property of Duratex S.A.) in Central Brazil. Brazilian Cerrado is the dominant phytophysiognomy in the region, but most of the land-use in the farm is eucalyptus and pinus forest. Between May 2016 and February 2017 an 8km transect was sampled weekly. Each species found by visual or sound record were classified according with their trophic guild, endemism in Brazilian Cerrado, sensibility to habitat disturbance and conservation status. We registered 154 bird species, in 20 orders and 45 families. Insectivores were the most frequent (n=53), followed by omnivorous (n=37). Six endemic species, *Alipiopsitta xanthops, Herpsilochmus longirostris, Melanopareia torquata, Antilophia galeata, Cyanocorax cristatellus* and *Saltatricula atricollis* were registered, representing about 20% of the endemic species in the Cerrado. Two species *Aramide scajanea* and *Urubitinga coronata* are considered highly sensitive to anthropogenic disturbances and three threatened species, *Ara ararauna*, *Alipiopsitta xanthops* and *Urubitinga coronate,* were found in the area. Forest plantations present better support for plants and animals compared to pastures and other types of monoculture, and may be important mechanisms for the conservation of biodiversity when associated with the management and preservation of natural areas in surrounding.

10473 WATERBIRDS IN THE JUNGLE?! 25 YEARS OF CENSUSES

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Within the framework of the Neotropical Waterbird Census (Wetlands International), 31 winter and summer censuses were conducted, by canoeing at three sites in the Iguazú National Park, Misiones, Argentina. The sites differ in terms of flow and physiognomy: the Iguazu River with and without islands and the Yacuy stream. Seventeen species of aquatic birds and three species of Alcedinidae were detected; 2-10 species were observed per season of the year and no one season had greater richness. Between seasons of the same year, there were increases from zero to six species, with turnover. In the summer some species are much more frequent and abundant: *Butorides striatus*, *Nycticorax nycticorax*, *Megaceryle torquata* and *Chloroceryle americana*, and in winter: *Mesembrinibis cayennensis*. The richest summers were in 1993 and 2015 (10 spp) and

the winter of 2012 (nine spp), the richest year was 2013 (11 spp). The richest site was the Iguazu River with islands, with an average of four spp/10 Km, then the Yacuy stream, with two spp/10 Km and the Iguazú River without islands with 1.1 spp/10 Km. The Iguazú River without islands was the only site where *Egretta thula*, *Cochlearius cochlearius* and *Amazonetta brasiliensis* were recorded. In the Iguazú NP, the most abundant species were *Phalacrocorax brasiliensis* with an average of 11 ind./10 Km; *Chloroceryle amazona* with 1.7 ind./10 Km and *Butorides striatus* with 1.1 ind./10 Km. Other frequent but less abundant species were: *Anhinga anhinga, Mesembrinibis cayennensis, Cairina moschata, Megaceryle torquata* and *Chloroceryle americana*.

10512 THE BIRDS OF THE URUGUA-Í-FOERSTER BIOLOGICAL CORRIDOR: CURRENT INVENTORY AND RELEVANT RECORDS

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The Urugua-í-Foerster Biological Corridor is located in the northeast of Misiones, Argentina. This corridor is an area of great importance for the conservation and study of birds in the Atlantic Forest. The area presents a mosaic of propierties with different degrees of transformation, used for both traditional agriculture and the application of agroecological models, ecotourism projects and scientific research during the last 15 years. With the objective of generating basic information for future studies and contributing to the knowledge of the bird comunity of the area, this work presents all the species of birds recorded in the period 2002-2017 through the use of two standarizaed sampling techniques: Mist netting and point counts and *ad libitum* records made by the authors and collaborators. Species with different degrees of threat were recorded, both at national and international level.

10552 STRIGIFORMES OF THE URBAN AREA OF CAMPO GRANDE, MATO GROSSO DO SUL, BRAZIL

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The order Strigiformes, represented by owls, has species with very characteristic patterns of behavior, morphology and anatomy. These birds provide a number of important ecosystem services, control the prey population, and assist in the stability of ecosystems and, consequently, maintain high levels of biological diversity. Strigiformes are found in the most diverse environments, from dense forests, savannas, to urban wooded areas. The objective of this study was to determine the composition of Strigiformes in the urban area of Campo Grande, Mato Grosso do Sul, central-western Brazil. The municipality is part of the Cerrado biome, with significant afforestation in the urban area, providing shelter and / or food for different bird species. Night sampling was carried out in the main parks of the municipality: Prosa State Park, Matas do Segredo

State Park, Linear Imbirussu Park and Anhanduí Park, as well as random samplings on urban roads. Data were collected between December 2016 and April 2017. To complement the list of species, records were also used available online, from citizen science initiatives. Seven species of owls were recorded in the urban area of the municipality, representing about 50% of the total known for the territory of Mato Grosso. We highlight the record of *Pulsatrix perspicillata* and *Strix huhula*, both rare in the State and of forest habits. These records reaffirm the importance of urban green areas for the maintenance and conservation of rare and / or endangered forest species.

10554 INVENTORY OF BIRDS OF PREY IN THE VALLEY OF SÃO JOSÉ STREAM AREA OF CAATINGA IN THE AGRESTE OF PERNAMBUCO

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The objective of this work is to conduct a survey of species of birds of prey in the valley of São José stream, Caetés. Therefore, between August 2016 and May 2017, a total of 19 field trips were undertaken, which occurred during day and night shifts, totaling 115 hours of sample effort. Two ornithological techniques were used: visual and auditory contact. Visual contact was realized with the aid of binoculars and camera. Auditory records were executed based on prior knowledge and through comparisons with specialized material. During the study, 18 species were registered: *Buteo nitidus, Elanus leucurus, Geranoaetus melanoleucus, Geranospiza caerulescens, Rupornis magnirostris, Gampsonyx swainsonii, Falco sparverius, F. peregrinus, Herpetotheres cachinnans, F. rufigularis, Caracara plancus, Asio clamator, Athene cunicularia, Megascops choliba, Glaucidium brasillianum, Cathartes burrovianus, C. aura* e *Coragyps atratus.* This number corresponds to 36.7% of the number of birds of prey listed for the Caatinga, and resembles listings made for other areas of this biome, for example the PARNA Catimbau, in Buíque. With 19 species, but exceeding the number of species for the agreste Pernambuco (13 species).The occurrence status of the species was also defined based on the number of observations throughout the study, where 13 species were classified as rare, four species were classified as moderately common and one as uncommon. Thus, the importance of the area in the maintenance of biodiversity is notable, since the preservation of these birds implies the protection of others.

10588 PRESENCE OF THE HARPY EAGLE (*Harpia harpyja*) IN THE SUBTROPICAL YUNGAS OF ARGENTINA

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The Harpy Eagle (*Harpia harpyja*) is the bird of prey of largest size that inhabits the Neotropics, ranging from the South of Mexico to the extreme north of Argentina, where

is considered Critically Endangered, for having few recent records, only confirmed for the province of Misiones. During the 24th and 25th of March, we observed, recorded, and photographed two individuals of this species, in the Calilegua National Park (Province of Jujuy). They were perched inside the canopy formed by large trees (*Anadenanthera colubrina*, *Enterolobium contortisiliquum,* and *Tipuana tipu*), from where they made low-altitude flights through the forest treetop along the steep slopes of the mountains, at 1150 meters above sea level. The study area is situated in the lower montane forest of the Subtropical Yungas. One of the individuals was observed carrying branches in its claws, indicating that the species was nesting in the Calilegua National Park. There are historical records of Harpy Eagle in northwestern Argentina, particularly in the provinces of Salta and Tucumán; however, the presence of the species in the region was later dismissed by diverse authors, probably due to the lack of verifiable material. In this paper we confirm the presence of the Harpy Eagle in the subtropical forests of northwestern Argentina.

10620 BIRDS ON THE ROCK GLACIERS (JUJUY, ARGENTINA)

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In the province of Jujuy the glacial environment was present during the Pliocene, Pleistocene, and early Holocene. Today, the periglacial environment only remains, with the presence of rock glaciers that are formed by frozen debris/rubble saturated with ice, situated above the 4.000 meters above sea level, and whose origins are related to the permafrost cryogenic processes and the subterranean ice. Information regarding the bird fauna that inhabits these places is virtually unknown. The aim of this study is to show the results of six expeditions that took place between 2010 and 2014 to the mountaing ranges of Santa Victoria, Zenta, Chañi, and Tilcara, where rock glaciers were found. I recorded 120 bird species (73 non passerines; 47 passerines) from which 15 are currently regarded as threatened for Argentina. The presence of country's endemic birds species such as *Metriopelia morenoi*, *Compsospiza baeri*, and species with globally restricted range as *Cinclus schulzi*, *Pseudosaltator rufiventris*, *Leptasthenura yanacensis*, *Asthenes heterura*, *A. maculicauda* and *Lophospingus griseocristatus* gives a great interest for conservation in these periglacial habitats as well as for the biogeography of Andean birds.

10654 ORNITHOLOGICAL COLLECTION OF THE NATURAL HISTORY MUSEUM FROM LA PAMPA

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The Natural History Museum from La Pampa (MHNLPam) was founded in 1935, initiating the Ornithological Collection (MHNLPam-ZO) in 1962 with material for exhibition and incorporating scientific specimens since the early 1970s. At the present time it is

composed of 584 skins of which 255 are destined to exhibition and 329 for scientific purposes. Most of these became from La Pampa province, identifying as noticeable the following taxa: *Teledromas fuscus, Pseudoseisura gutturalis, Lophonetta specularioides, Sephanoides sephanoides, Strix chacoensis* exhibition material and *Gubernatrix cristata*. The collection also includes interesting specimens from other provinces: *Chrysolampis mosquitus*, *Amblyramphus holosericeus* and *Geositta rufiipennis gaii*, a specimen with leucism of *Sturnella loyca* and a hybrid between *G. cristata* and *Diuca diuca*. Additionally, the collection includes a blood bank of species rare, exotics, hybrids and those with conservation issues. Also being contemplated is the incorporation of osteological material. In addition, efforts are being carried out to include the collection in the National Biological Data System (SNDB), and for this the collection is being organized following the standardized protocols from the Darwin Core (DwC).

10627 *Anodorhynchus hyacinthinus* KILLS *Cairina moschata* IN ARTIFICIAL NEST IN THE SOUTH PANTANAL, BRAZIL

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One of the factors that limit species reproduction is the scarcity of nesting sites. Over the years, the Hyacinth Macaw Project has installed nest boxes in the Pantanal as a short-term alternative, where not only the Hyacinth Macaw (*Anodorhynchus hyacinthinus*), but other species of birds reproduce successfully. However, the dynamics of cavity occupation is intense in the region, because as natural nests break or are occupied by bees (*Apis mellifera*), the dispute for artificial cavities increases. In South Pantanal, there were situations where Muscovy Ducks (*Cairina moschata*) and other birds were found dead inside hyacinth macaw nests. Cameras trap are used in active nests and in December 2016, one of them was installed in an artificial nest with two hyacinth macaw eggs. Near the egg hatching period, a muscovy duck female arrived in the artificial nest, just after the macaws left. The female, intrusive, was caught in the nest by the couple of macaws that, furious, attacked her with violent pecks on her head, killing her in a few seconds. A few days before the images show that several times the *Cairina moschata* lay on the nest, being expelled by the macaw that was incubating the eggs. Subsequently, only a small piece of egg shell was seen inside the box, as the eggs were probably broken during the agonistic encounter. It was the first time that this situation is recorded, proving the intense behavior of defense of the macaws during the reproductive period and the dispute for cavities for reproduction.

URBAN AND AGRICULTURAL ECOLOGY

10213 LAND-USE INTENSIFICATION REDUCES FUNCTIONAL DIVERSITY IN BIRDS OF SOUTH AMERICAN PAMPAS

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Agricultural intensification and changes in land use have modified the complexity of habitats for birds worldwide and are considered the main causes of declining populations. The effect of these disturbances on the functional responses of the animals has become a concern of interest in ecology. The objective of this study is to determine the traits-habitat relations to quantify the variation of species traits through environmental variables representative of a gradient of land-use changes (natural habitats to agroecosystems) in the Pampa ecoregion, Argentina. We used a combination of complementary analysis techniques: RLQ and Fourth-corner. The main co-variations between traits and habitats were (1) a decrease in bird species richness as habitat transformation increased for most functional traits; (2) species associated with less transformed sites are mainly insectivorous, use shrubs for nesting and are sensitive to environmental changes; (3) sites with higher transformation were associated with large-sized species and species that build the nest in the soil; (4) absence of species sensitive to environmental changes in transformed habitats. Reducing responses from multiple species to a few functional traits and linking these traits to habitat characteristics provides an empirical, integrated, and concise framework for linking bird assemblage responses to environmental changes.

10279 WOODED STREET USE BY BIRDS IN BUENOS AIRES CITY: THE ROLE OF LOCAL CHARACTERISTICS AND URBAN PARKS CONNECTIVITY

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Every day, the urban environment expands on rural and natural areas. Therefore, knowing the environmental factors that determine bird diversity in urban areas is essential for the management and design of sustainable cities. In this study, we analyze how birds use wooded streets in the Buenos Aires city. We selected 26 wooded streets with different levels of tree cover, human disturbance (pedestrian and car traffic) and degree of connectivity with urban parks. We analyzed the relationship between bird richness, taxonomic and functional diversity and the environmental variables using Generalized Linear Models. We also modeled the standardized effect size of functional diversity to evaluate the environmental filtering variation on wooded streets. Bird richness, taxonomic and functional diversity were negatively related to human

disturbance, whereas taxonomic diversity was positively related to urban parks connectivity and to tree height and its variation. The environmental filtering was greater on streets with a large amount of pedestrians, which were dominated by omnivorous birds that foraged gregariously on the ground. Results suggest that an urban design with streets connected with parks and having taller trees and a greater tree height variation would contribute to greater bird diversity. Moreover, the level of human disturbance caused by pedestrian traffic should be controlled to avoid a decrease of bird ecosystem functions.

10287 ECOLOGICAL ASPECTS OF THE URBAN AVIFAUNA OF THE SANTO ANTÔNIO RIVER, CARAGUATATUBA, SÃO PAULO.

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Brazil has one of the highest levels of biodiversity in the world. The Atlantic Forest has high diversity and endemism. The objective of the study was to compare the richness, diversity, composition and trophic guilds of the avifauna in the urban corridor of the Santo Antônio River in Caraguatatuba, São Paulo. In the period from November 2016 to April 2017, twelve fixed points were established where each species was analyzed: identification and counting of the number of individuals, characterization of the type of activity and diet. The results indicate 2150 individuals belonging to 22 families, 11 orders, 41 genera and 44 species. Twenty-two of these species are likely residents, 20 residents and 2 are occasional and or survivors. Regarding diet, 25% were insectivores, 22.73% omnivores, 20.45% piscivores, 13.64% granivores, 9.09% frugivores, 6.82% nectarivores and 2.27% detritivores. The activity levels of the individuals was 45.21% resting, 22.42% foraging, 21.91% vocalizing and 10.46% displacement from one substrate to another. According to the diversity indexes of Simpson (0.8976) and Shannon (2.938), the bird community in this environment has a high level of diversity, considering the anthropic influence in the area.

10295 USE OF ARTIFICIAL BURROWS BY *Athene cunicularia* IN THE CITY OF BUENOS AIRES

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The burrowing owl (*Athene cunicularia*) is a species of the family Strigidae that often breeds in caves made by burrowing animals or by itself. It lives in colonies, is usually monogamous, present a high philopatry rate and has lately started to colonize urban areas. In this study, we constantly followed a resident pair at Parque Sarmiento

(CABA, 34°33’26’’S, 58°29’57’’W), that instantly occupied an artificial burrow installed in April 2015. During two years (2015-2017) the nest was visited at least twice per week to register number of individuals, reproductive events and during 2016 pellets were also collected (n = 299). Two reproductive events were observed each summer: three were successful and one failed, with a total of 6 successful chicks per year. During the second summer, both breeding events were successful, something scarcely registered for this species. Pellet analysis showed that the main prey item were anuran amphibians (total consumed biomass: >90%) and several species of arthropods (absolute frequency: >60%). Our results suggest that installation of artificial burrows in the parks of this city can replace the lack of natural burrows. In addition, recommendations are presented for the protection of nesting sites in urban environment.

10303 IMPORTANCE OF FORESTS AND URBAN AREAS FOR NON-MIGRATORY THRUSHES

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Thrushes are widely distributed species and have an important role in maintaining biodiversity and landscape connectivity, mainly due their high abundance, movement capability and degree of frugivory and seed dispersal. In this study, we compared the use of the landscape by these birds in two different environments: rural and urban. Sampling was conducted in a rural area in Itatiba city and another in an urban area in Rio Claro, within the State of São Paulo, southeastern Brazil, Two species of thrushes of the genus *Turdus* spp. were monitored (*T. leucomelas* and *T. rufiventris*) by radio telemetry (n = 10, rural; n = 12, urban). The habitat selection (Research Selection Function) as evaluated using homerange areas and following the protocol designs II and III. Six landscape classes were measured: forest, construction, pasture, abandoned pasture, agriculture and water; and for the rural area forest edge distance was also calculated. There was no significant difference between the two species. In urban environments the selection is positive for forest areas, showing a dependency for forest structure. For rural areas, the selection was positive for both forest and urbanized areas, showing a wider range in the choice of habitat, and their adaptability. The selection was positive when approaching the forest edges in rural areas. We conclude that, despite being considered generalists, both species are plastic and select mainly forest formations in spite of their context (rural vs urban), primarily in rural areas.

10338 DO FARMERS CONSIDER BIRD SCAVENGERS AS A PROBLEM? EVALUATION OF THE PERCEPTIONS OF DIFFERENT RURAL COMMUNITIES

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The conflict between humans and potential predators of livestock exists since the domestication of livestock. The negative perception of some livestock producers about carnivorous mammals (for example pumas) is well known. However, studies on human perception about scavenger birds are scarce. Our aim is to take an ethnozoological approach on the knowledge and attitudes of Patagonian rural worker (indigenous and criollos farmers), to identify possible conflicts between bird scavengers (obligate and facultative) and agricultural production in northwestern Patagonia. Semi-structured interviews were conducted with people in three focus groups: the mapuche community, the criollo community (<500 cattle) and cattle ranches (> 500 cattle). Almost all of the interviewees indicated at least one species as harmful to livestock. Southern Caracara (*Caracara plancus*) and Black-chested buzzard eagle (*Geranoaetus melanoleucus*) were the most common scavenger birds pointed out by criollo and mapuche communities. However, the Andean condor (*Vultur gryphus*) an obligate scavenger bird was also considered harmful in mapuche communities. On the other hand, the cattle ranches indicate as harmful C. plancus and the obligate scavenger bird, Black Vulture (*Coragyps atratus*). The three groups of people responded to the problem by eliminating the birds, as about half of the interviewees expressed this strategy as the most appropriate to reduce the predation damage perceived. We present a preliminary analysis of the perception of these social groups to be able to contrast it empirically in the field with possible predation, which can then be used to develop strategies to reduce conflict.

10369 RAPTORS AND FEAR OF HUMANS: VARIATION ON THE DEGREE OF AVERSION IN RELATION TO URBANIZATION

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Fear of humans is a behavioral feature that could determine the presence and establishment of certain species in an urbanized environment. This behavioral feature has been quantified in birds as Flight Initiation Distance (FID). We tested whether urbanization has an effect on the degree of fear of human presence in La Pampa's raptors population. We obtained a total of 95 FIDs from 13 towns with different population sizes (573-57,669 inhabitants). The sampled environments were rural (N=23), suburban (N=55) and urban (N=17). Only *Athene cunicularia* (N=35), *Caracara plancus* (N=8), *Falco sparverius* (N=5) and *Milvago chimango* (N=47) were taken into account for data processing. The FID was 22.26 ± 23.12 m (Min = 2.5, Max = 168.29). Generalized Linear Models were constructed; which have detected the environment as the most significant variable that accounts for the FID variation, whereas the distance

between a waypoint where the FID was measured and the town centre, and the inhabitants were not significant. Results show that the lower FID belonged to birds of the urban environment (11.96 ± 7.74), a higher one for the suburban (22.10 ± 20.60) and the highest FID in rural (30.25 ± 32.41). This decrease in the fear of humans, which applies to raptors living in highly anthropized environments, shows that urban development may constitute a selective force that prevents the entry of the birds with greater aversion to humans.

10437 *Parabuteo unicinctus*: VARIABLES ECOLÓGICAS RELACIONADAS CON SU NIDIFICACIÓN EN UN AMBIENTE URBANO

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The number of records that can be obtained for *Parabuteo unicinctus* in an urban environment at Ciudad Autónoma de Buenos Aires and its surroundings is remarkable. Therefore we studied this species in this area through direct observations, bibliographic data and personal communications of colleagues during November and December of 2016 with the aim of registering ecological variables related to its nesting. During both months, already known nesting sites were visited and new territories were found. Each time a nest was found, we registered: tree species, height (m), diameter at breast height (cm), presence/absence of the adults, number of nestlings, number of successful nestlings and the minimum distance between active nests (km). Three nests received assistance for nestlings falling out of them. We found a total of 10 nests, all in exotic trees for the ecoregion: *Tipuana tipu* (four), *Casuarina* sp. (three), *Eucaliptus giganteus* (two) and *Acacia nigra* (one). The average height was 21 m and average diameter at breast height was 0.82 m. Seven nests showed adult activity but in only four, at least one successful nestling was registered. Three of these latter nests later fell. Minimum distance between active nests was 1.65 Km. With this study, we confirm *P. unicinctus* as a resident and breeding species in the Metropolitan Area of Buenos Aires.

10450 MONK PARAKEET NIDIFICATION IN URBAN TREE AREAS: A CASE IN LA PLATA CITY (2008-2016)

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Monk parakeets are very successful invaders in different cities of the world, where they formed wild populations thanks to biological and behavioral characteristics. In Pampean region they also expanded using land use changes and in the city of La Plata began to be registered at the beginning of the 21st century. In previous works we show some

primitive foci in the city and since then we have monitored how its population grows and new sites are colonized. We worked in Paseo del Bosque, the squares and parks that are regularly located in the trace of the city, and the bypass green places of La Plata, relieving the trees where the Monk parakeets built their nest. We recorded the number of chambers and calculated the average of nests / tree and chambers / nest. The objective of this communication is to provide results from one of the tree-lined sites of the city: Parque Alberti (3.76 ha). We counted 74 nests and 163 chambers (2.2 chambers / nest). The nests were found in 32 eucalyptus *Eucalyptus* sp. (2.3 nests / tree with nest). 23% of the park's eucalyptus trees had nests. Nests were formed by one chamber (41%), two (25%), three (15%), four (14%) and five or more chambers (5%). The data obtained in 2008 indicates a 155% increase in nests, 262% in chambers and 88% in trees with nests. On the other hand, the number of nests with a single chamber decreased, 31%, increasing the rest of the categories.

10451 OCCUPANCY OF ENVIRONMENTS AND INDICES OF OCCURRENCE OF RAPTORS IN THE PERI-URBAN AREA OF UBERLÂNDIA – MG, BRAZIL

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Predatory birds are predators of higher trophic levels that act to maintain the balance of ecosystems. With the fragmentation process, they alternate in remaining areas of native vegetation. The objective of this study was to verify the rates of occurrence of raptors, according to vegetation gradients in a peri-urban area, under the domain of the Cerrado biome. From 04/15 to 12/16 bi-weekly observations (165h) were performed with a 10x50 binocular. Seven fixed points were established, walked on foot for one hour at each point.There were 399 individuals of ten species: *Coragyps atratus*, *Caracara plancus, Rupornis magnirostris, Falco femoralis, Heterospizias meridionalis, Falco sparverius, Elanus leucurus, Ictinia plumbea, Milvago chimachima* and *Genarospizias caerulescens*. The relative abundance and frequency of occurrence ranged from 41.3% (*Coragyps atratus*) and 77.8% (*Caracara plancus*) to 0.2 and 3.7% (*Geranospizias caerulescens*). There were records of 230 individuals (57%) in the pasture, 77 (19%) in the cerradão, 60 in the path (15%) and 32 (8%) in gallery forest. The community is composed of species that adapt in altered areas, which shows that such fragments associated to urban environments can contribute to the maintenance of raptors.

10492 BIRD COMPOSITION CHANGES IN URBAN RESERVES IN BUENOS AIRES METROPOLITAN AREA: UNRAVELING PATTERNS AND PROCESSES USING EBIRD DATA

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Urban reserves are important for education, scientific research and biodiversity conservation. Citizen-science initiatives, such as eBird, may provide important information. The aim of this study was to compare avian composition changes using the

eBird data-set across four urban reserves in the Buenos Aires Metropolitan Area (AMBA) located in a biological corridor on the coast of the Río de la Plata: Reserva Ecológica Costanera Sur (CS), Reserva Ecológica Costanera Norte (CN), Reserva Ecológica Vicente López (VL) and Parque Natural Municipal Ribera Norte (RN). We randomly selected 100 avian lists for each reserve, loaded in eBird between August 2014 and February 2017 and calculated total dissimilarity, and their additive components of nestedness and species turnover using the Jaccard index with presence-absence data. The average total dissimilarity between reserves was 32% (SD= 4%). The highest values of dissimilarity were between CS and the rest of reserves, probably because it is bigger and has the highest species richness. Between VL, RN and the other reserves the dissimilarity was due to turnover, because they have more than 20 species absent in CN and CS. Between CS and CN, nestedness was the principal component of dissimilarity; this means that the bird community of CN is a subset of the CS community. Despite of its proximity and environmental similarities, the differences in bird composition allow the riparian biological corridor to have 80% of total bird species in Buenos Aires Province. We highlight the usefulness of eBird data to understand patterns and processes of bird communities in urban green areas.

10503 HOW DOES URBANIZATION AFFECT THE FUNCTIONAL BIRD GROUPS?

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There are many small to medium sized districts that have been settled within the original extension of Brazilian Interior Atlantic Forest. Within the São Paulo state, many of these districts are now composed of highly contrasting urban and agricultural ecosystem. Using the district of Tietê as study case, we investigated the occurrence of functional bird groups in the urban and rural zones in order to evaluate significant differences. To do so, we carried out bird survey in 18 point counts within the urban zone and 28 within the city's rural zone. Each one was sampled monthly (December/2015 - June/2016) with 12 minutes of sampling and unlimited radius. All species were classified into functional groups according to the following criteria: nesting site, diet type, foraging site, residents or migratory and response to urbanization (urban avoiders, urban users and urban dwellers). Factorial analysis (72.4% of the variance) has grouped 4 different functional groups. Two groups were related only to the urban areas (Mann-Whitney α= 0.05; U= 91, p = 0.0003; U= 150, p= 0.022), which are respectively composed of: birds that nest in cavities, granivores, ground foragers and urban dwellers; aerial foragers. Two other groups were related to both areas (U= 289, p= 0.411; U= 263, p= 0.813) and were composed respectively by: birds that nest and forage in vegetation, resident birds, insectivores, omnivores, urban avoiders and urban users; birds that nest on the ground

and forage in the water. These results indicated the functional bird groups that were positively affected by urbanization.

10521 BIRD SPECIES DIVERSITY IN GROVES AND EDGES OF FOREST PATCHES OF FOUR GREEN AREAS OF THE CITY OF ASUNCIÓN

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Urban green areas are ideal spaces for studying urban biological diversity, whose characteristics are related to environmental quality. The work was carried out in the Jardín Botánico (JB), Parque de la Salud (PSa), Parque Seminario (PSe) and Parque Carlos Antonio López (PCAL), with the main objetive of evaluate abundance, richness and diversity of birds in four green areas of Asunción. In each of the study areas, sites with groves and edges of forest patches were selected, with 4 random point counts per area. At each point, 6 replicates of 10 minutes were made between May and July 2016, registering birds by sight and sound within a radius of 30 m. JB and PSa presented higher species richness, more species with low and rare relative abundance, higher diversity index, and the second highest similarity index after the PCAL and PSe, which presented lower richness, lower index of diversity, and greater dominance of species with general habits. No significant difference was found between JB and PSa diversity indexes, as well as between PCAL and PSe; however, the other comparisons were significantly different, being the most extensive between JB and PCAL. The richness and diversity of species had a strong positive correlation with the size of the areas. In contrast, abundance was negatively correlated, but not significant. The results show that green areas of considerable size can maintain an interesting diversity of birds and must be conserved to provide habitat for urban fauna and flora.

10525 OCCUPATION OF LIGHTING TOWERS BY MONK PARAKEETS (*Myiopsitta monachus*) IN LA PLATA CITY, ARGENTINA

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In the city of La Plata we studied lighting towers used as nest platform of the Monk Parakeets (*Myiopsitta monachus*), in order to record the number of chambers and estimate a rate of construction. We found nests in four types of lighting towers and to check their present and past photographic records, we used Street View. There were detected a total of 13 lighting columns with 18 nests (1.4 nests /column with nest, D.S= 0.5). Each nest had between one and five chambers (1.6 chambers /nest, D.S. = 1). All nests were active. In those columns we calculated a construction rate of 12 nests / year. The occupation rate was 22% and our projection indicates that all the columns would be

occupied with nests in 2018. We advise to make structural modifications to avoid the advance in the use of these particular columns.

10562 USE OF VISUAL CUES AND LEARNING ABILITY IN INDIVIDUALS OF *Milvago chimango* (AVES: FALCONIDAE) FROM ENVIRONMENTS WITH DIFFERENT LEVEL OF URBANIZATION

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Variations in environment structural complexity and in spatial and temporal resource availability can lead to behavioral differences between populations. The use of visual cues, such as color, is efficient for searching ephemeral resources. However, when resources are temporary or spatially stable, the use of spatial cues is more effective. Considering the urban environment as structurally more complex and temporally more stable than natural or rural ones, the objective of this work was analyze the influence of urbanization on learning ability and the use of visual cues. Adults of *Milvago chimango* from urban (n = 8), suburban (n = 10) and rural (n = 13) environments were compared. Birds were trained to search for food in presence of visual cues of color, position and a distractor. Also, it was expected that urban individuals tended to use more often spatial cues than rural individuals, whereas intermediate values were expected for suburban birds. Results indicated that the chimangos used visual cues in greater proportion compared to the distractor. It was also found that rural individuals tended to use with higher proportion the position cue than did the suburban individuals. In addition, urban and suburban chimangos used more often the color visual cues than rural chimangos. These results contradict the initial predictions, suggesting the need of reconsider the assumptions about the characteristics of urban environments and its effect on the behavior mainly of those species associated with anthropic food resources.

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