

ABSTRACTS ARE ARRANGED ALPHABETICALLY BY LAST NAME. Student presenters are indicated by an abstract. The email address of the primary author is provided. Note that the presenting author's name is **bolded**.

Adrian-Vidal, Walmer*; Soberanis-Vega, Alan; Chablé-Santos, Juan; González-Herrera, Rosana

Universidad Autónoma de Yucatán Mérida YU 97000 México
walmer_amigo7@hotmail.com

Valoración rápida de las aves de la reserva de la biosfera Ría Celestún

La Reserva de la Biósfera Ría Celestún ocupa una superficie de 81,482.33 hectáreas y se ubica en la porción noroccidental de la Península de Yucatán, entre los límites de los estados de Campeche y Yucatán. Su importancia biológica reside en la diversidad de ambientes con composición vegetal en elevado grado de conservación. Fue decretada en el año 2000 como Reserva de la Biosfera, en el 2004 se le asignó la categoría de Sitio RAMSAR y en 2007 como sitio AICA. Dada la importancia del sitio se efectuó una valoración rápida con el fin de contribuir a la actualización de la avifauna de la Reserva. El presente trabajo se realizó en el mes de junio del 2014, utilizando la técnica de transecto sin límite de distancia. Como ambientes de estudio se consideraron tres tipos de vegetación representativos: matorral de duna costera, selva baja inundable y manglar. Se registraron 112 especies incluidas en 19 órdenes y 39 familias taxonómicas. Las familias mejor representadas fueron Tyrannidae y Ardeidae con 15 y 9 especies respectivamente, así como Columbidae e Icteridae, ambas con 8. De estas especies, 51 fueron registradas de forma exclusiva para algún ambiente: 28 para selva baja inundable, 17 para manglar y 6 para matorral de duna costera. De acuerdo con la normatividad mexicana (NOM-059-SEMARNAT-2010), 10 especies se encuentran dentro de alguna categoría de riesgo: 7 bajo protección especial, 1 amenazadas y 2 en Peligro de Extinción (*Doricha eliza* y *Campylorhynchus yucatanicus*). Estas últimas, también endémicas de México. La riqueza registrada representa el 20% de la avifauna de la Península de Yucatán, el 24% de las aves reportadas para el Estado de Yucatán y el 41% de las aves de la Reserva.

Álvarez-Jara, Margarito; Monterrubio-Rico, Tiberio César; Charre-Medellín, Juan Felipe.

Universidad Michoacana de San Nicolás de Hidalgo, Morelia Mn 58030 México
alvarez_jara_m@hotmail.com

Distribución contemporánea de los psitácidos en México.

Estimamos la distribución de las 21 especies de psitácidos mexicanos, usando el algoritmo Maxent, datos de presencia actual, variables climáticas y herramientas técnicas de Sistemas de Información Geográfica. Además estimamos la pérdida de distribución y la comparamos con el estudio de Ríos-Muñoz y Navarro-Sigüenza (2009), en el que usaron datos de colecciones científicas para estimar la distribución potencial de las especies. Usamos 3538 coordenadas únicas (2373 del período 2004-2013; que consideramos actuales). Las especies mejor representadas con más de 300 coordenadas únicas actuales fueron *Amazona albifrons*, *Aratinga nana* y *Aratinga canicularis*. La especie con mayor distribución fue *Ara militaris* 263,919 con km², y la de menor fue *Amazona auropalliata* con 3,252 km². Las especies que han perdido mayor extensión de su distribución de acuerdo a nuestros análisis son *Ara macao* (86.5%), *Amazona oratrix* (77.4%) y *Amazona auropalliata* (74.7%), coincidiendo parcialmente

con lo estimado con Ríos-Muñoz y Navarro-Sigüenza (2009). Resaltamos que para *Ara macao* y *Bolborhynchus lineola*, contamos con menos de 30 coordenadas únicas, en su mayoría históricas, por lo que consideramos los modelos como potenciales y sujetos verificación con trabajo de campo actual. Estimamos que todas las especies han perdido distribución, y de manera más crítica las especies en peligro de extinción, sin embargo es necesario la implementación de estudios de requerimientos de anidación y de ámbito hogareño de todas las especies para delimitar de manera más precisa aspectos el tipo de vegetación que potencialmente usan, además de incorporar información de áreas de ausencia, para afinar los modelos.

Albores-Barajas Yuri V.¹, Aguirre-Muñoz Alfonso¹, Félix-Lizárraga María¹, Íñigo-Elias Eduardo², Hernández-Mendoza Cristal¹, Fabila-Blanco Alejandra¹, Méndez-Sánchez Federico¹, Berlanga-García Humberto³, Montesinos-Bellato Silvestre¹

¹Grupo de Ecología y Conservación de Islas, A.C. Ensenada BC 22800 México. ²Cornell Lab of Ornithology Ithaca NY 14850 USA. ³CONABIO México, D.F. DF 14010 México.
yuri.albores@islas.org.mx

Restoration of seabird colonies in the Mexican Pacific islands off Baja California

We present the results of the second year of systematic seabird monitoring on the Baja California Pacific islands. Fieldwork activities were carried out on Coronado, Todos Santos, San Martín, San Jerónimo, Natividad, San Roque and Asunción islands. This is the first time all these islands are monitored simultaneously, giving us a better understanding of the seabird populations at a regional scale. We implemented social attraction methods to increase the breeding populations of several seabird species: Brandt's Cormorants, Double-crested Cormorants, Cassin's Auklets, Heermann's Gull and Elegant Tern. Results are so far encouraging. However, for the social attraction methods to be effective and offer enduring results, we need to sustain them as a long-term effort. We are also conducting invasive vegetation control to increase the availability of seabird's habitat. To avoid burrows being trampled by people walking on San Jerónimo, we installed two wooden boardwalks. A complementary environmental education program has been launched in collaboration with local fishermen cooperatives and government agencies. This project of US-Mexico bi-national interest is supported by the Montrose Settlements and Luckenbach Restoration Plans, and is conducted in collaboration with the National Commission of Natural Protected Areas (CONANP), with the generous in-kind support from the Mexican Navy (SEMAR), and the local fishermen coops and communities.

Alcantara-Carbajal, Jose Luis¹; Salame-Mendez, Arturo²

¹Colegio de Postgraduados Montecillo, Texcoco MX 56230 México. ²UAM-Iztapalapa Cd. México DF 9340 jalcant@colpos.mx

Caracterización temporal del estrés fisiológico de dos especies de passeriformes de bosque templado en la Ciudad de México

La secreción de glucocorticoides (GC) es una respuesta instintiva de los vertebrados a situaciones de estrés, con consecuencias importantes sobre su comportamiento y condición energética. Existe evidencia creciente de una modulación estacional de estas hormonas en especies silvestres. El objeto del presente estudio fue ampliar dichos resultados mediante el

examen de la temporalidad de la liberación de GC en *Basileuterus belli* (BASBEL) y *Arremon virenticeps* (ARRVIR) de los bosques montanos mexicanos. Para tal fin, se monitorearon mensualmente (noviembre 2010 a abril 2013), en el Ajusco Medio, DF, las concentraciones de cortisol (CTL) y corticosterona (CTA) de 32 muestras de excremento por especie. Los datos agrupados por mes, independientemente del año, fueron comparados mediante áreas bajo la curva de respuesta, pruebas de t y regresiones. Aunque no hubo diferencias entre las dos especies en 1) los niveles promedio y abundancia de CTA o 2) la velocidad de cambio del CTL, sí las hubo en los niveles promedio ($p < 0.001$) y producción del CTL ($p = 0.02$) e incremento en el tiempo de CTA ($p = 0.04$). La comparación estación seca vs. lluviosa solo encontró diferencia en la velocidad de producción del CTL en BASBEL ($p = 0.03$). El análisis por estación del año mostró un leve incremento en los niveles de CTA durante la primavera-verano y otro hacia el invierno en ambas especies y en CTL de BASBEL (líneas polinómica de 3er orden); el CTL de ARRVIR se ajustó a una línea recta. Por lo tanto, aunque los niveles de CTL son mayores que los de CTA, ambos se comportan similarmente entre las especies; es decir, no hay diferencias significativas en sus niveles de estrés fisiológico, con una tendencia al aumento durante la temporada de reproducción y una más marcada a finales del año.

Allen, Michael. C.¹; **Tsipoura, Nellie**¹; Elbin, Susan²; Weseloh, D.V. Chip³

¹New Jersey Audubon, Bernardsville, NJ 7924 USA. ²New York City Audubon, New York, NY 10010 USA. ³Canadian Wildlife Service, Toronto, ON M3H 5T4 Canada.

michael.allen@njudubon.org

Great Egret roosting dynamics in suburban New York City

Outside of the nesting season, Great Egrets (*Ardea alba*) gather nightly in communal roosts away from the breeding colony, often near preferred foraging areas. These roosts vary in size from a few individuals to several hundred, and can persist for decades. However, relatively little is known about them, particularly in urban environments. In 2012-2013, we used a citizen science approach to locate and monitor non-breeding roosts in NE New Jersey and New York City (USA), near foraging areas of waders nesting in New York Harbor. Selected roosts were visited ca. every 1-2 weeks beginning in late summer to count egrets as they exited or entered roosts. Forty-five volunteers and staff found 13 roosts varying in size from 5 to 145 Great Egrets. Most were shared by at least one other species, e.g. Double-crested Cormorant and/or Snowy Egret. The minimum distance between roosts was 2.5 km. Roosting substrate was primarily live mid-sized trees, on islands ($n = 2$) or adjacent to water ($n = 10$); one occurred on an abandoned structure in a river. Ponds or lakes (mainly freshwater) were the most common associated water body ($n = 10$), while three roosts occurred on tidal waterways. At three roosts, peak numbers occurred from September to mid-October, and all roosts were empty by mid-November. Timing of peak occupancy varied considerably among roosts within a year (by up to ~6 weeks), and between years within a roost (by up to ~3 weeks). The only roost checked during spring was found to be active. Mean morning roost departure time was 7 minutes before sunrise (range = 19 to 2, $n = 5$), and showed a trend toward earlier departure nearer to low tide. Non-breeding roosts are an understudied component of waterbird biology with the potential to shed light on preferred foraging areas, population trends, and migratory dynamics.

Althouse, Melissa*

State University of New York, College of Environmental Science and Forestry, USA.

Maalthou@syr.edu

Effects of disturbance on staging Roseate Terns (*Sterna dougallii*) on the Cape Cod National Seashore

Despite ongoing management efforts at breeding colony sites, the U.S.A. federally-endangered Northwest Atlantic breeding population of roseate terns (*Sterna dougallii*) (ROST) has declined more than 20% since 2000. The results of a 20-year study of adult survival strongly suggested that post-fledging survival during the first year of life could be a major factor limiting population recovery and driving the decline, and that over 90% of the population stages in and around Cape Cod, MA in the fall. The purpose of this research is to (1) examine geographic and temporal variation in the use of staging sites at Cape Cod National Seashore (CCNS) by ROST, (2) quantify rates and causes of naturally-occurring and human-related disturbances, and (3) document effects that disturbances may have on the behavior of mixed species flocks of common terns (*S. hirundo*) (COTE) and ROST, and their use of CCNS staging areas. Preliminary results indicate that ROST flocks are subject to frequent flushing by human activity at most sites within the CCNS. Time-activity budgets differ widely between sites with and without anthropogenic disturbances. We will present a comparison of time-activity budgets among sites with varying disturbance levels, including reference sites outside of CCNS. These results will inform management actions that minimize and mitigate disturbance.

Anderson, Amanda¹; Guillen, George²; Heath, Susan³

¹University of Houston-Clear Lake, 2700 Bay Area Boulevard, Houston, TX 77058. andersona8720@uhcl.edu, ²Environmental Institute of Houston. University of Houston-Clear Lake, 2700 Bay Area Boulevard, Houston, TX 77058. Guillen@uhcl.edu, ³Gulf Coast Bird Observatory, 103 West Highway 332, Lake Jackson, TX 77566. sheath@gcbo.org

The effect of laughing gulls (*Leucophaeus atricilla*) on American Oystercatcher (*Haematopus palliatus*) reproductive success and parental behavior along the upper Texas Coast

American oystercatchers are coastal obligate species that are threatened by a suite of anthropogenic and biological factors. Oystercatchers exhibit low and variable reproductive success, so regional factors heavily influence their productivity. We studied the effects of laughing gulls on American oystercatcher reproductive success and parental behavior along the upper Texas Coast during 2013 and 2014 to quantify the effect of laughing gulls (gulls) as a regional threat to breeding oystercatchers. We examined whether the number of gulls and the presence or absence of nesting gulls negatively affected 1) daily nest and brood survival, 2) chick body condition, 3) and parental behavior during two reproductive periods. We used Program MARK to model daily survival and incorporated temporal variation and individual covariates. We calculated a scaled mass index to assess if gull presence explained variation in chick body condition, and conducted thirty minute focal observations on breeding pairs during the incubation and chick rearing periods. Daily nest and brood survival decreased in the presence of nesting gulls and as the number of gulls increased, but not all results were significant. Scaled mass index was significantly lower in the presence of nesting gulls and as the number of gulls increased. Pairs incubated significantly more when there was little gull activity on their territories. As the number of gulls increased, vigilant behaviors increased significantly during both reproductive periods. Chick care increased significantly in the presence

of nesting gulls. Pairs roosted significantly more when no nesting gulls were present. Gulls caused 47.2% of agonistic behaviors during incubation and 33.8% during chick rearing. We found that gull presence negatively affected productivity and adult behavior. Previous studies have documented interspecific interactions between oystercatcher and gulls species. Implementing gull control measures in Texas maybe a practical strategy that would benefit oystercatcher productivity.

Bautista Salazar, Lisbeth*; Pineda López, Rubén

Universidad Autónoma de Querétaro, Facultad de Ciencias Naturales, Av. de las Ciencias s/n Juriquilla, Querétaro, 76230. biol.lisbethbs@gmail.com

Avifauna urbana y rural en Bernal, Querétaro

La urbanización es uno de los factores que más modifican a las comunidades de aves. Sin embargo existen pocos estudios que documenten el efecto de zonas urbanas de tamaño reducido y de asentamientos humanos con poca o ninguna urbanización. En este trabajo se comparan las comunidades de una ciudad pequeña (4,000 habitantes), con las de un grupo de casas en un paisaje rural y de dos tipos de vegetación seminatural adyacentes a la Peña de Bernal, Querétaro. Durante los meses de marzo a junio de 2014 se muestrearon en cuatro ocasiones 44 puntos repartidos equitativamente en dichos ambientes. Se registraron 1448 individuos de 46 especies residentes. La eficiencia del muestreo fue de 85%. En el ambiente urbano se registraron 20 especies, en el rural 31, en el matorral crasicaule 27 y en la vegetación riparia 30. Los análisis de rarefacción mostraron diferencias de la riqueza de especies entre el ambiente urbano respecto a los ambientes rural, matorral y ripario. La composición de la avifauna del ambiente urbano es la que presenta mayores diferencias (Jaccard=0.40), mientras que la del ambiente rural es más similar a la de la matriz seminatural cuando sólo se considera la incidencia de las especies (Jaccard=0.56), pero es más similar al ambiente urbano al considerar la abundancia de las especies (Bray-Curtis=0.40). Esto sugiere que las ciudades de tamaño reducido afectan a las comunidades de aves de manera similar a lo observado para grandes urbes, que causan una reducción de la riqueza con un aumento de la abundancia, además muestra que en los asentamientos humanos rurales se mantiene la riqueza y en parte la composición de las especies, pero aumenta la abundancia de algunas de ellas.

Bedolla, Yuliana¹; Masello, Juan¹; Aguirre-Muñoz, Alfonso²; Lavaniegos, Bertha³; Quillfeldt, Petra³

¹Department of Animal Ecology and Systematics, Justus Liebig University Giessen Giessen 35392 Germany. ²Group of Ecology and Island Conservation Ensenada 22800 Mexico. ³Department of Biological Oceanography, CICESE Ensenada 22860 Mexico. Yuliana.Bedolla@allzool.bio.uni-giessen.de

Breeding success, chick provisioning and diet of the black storm-petrel *Oceanodroma melania*

Seabirds respond to changing conditions by adjusting parameters of their breeding biology. Chick provisioning patterns have been recognized as sensitive indicators of short-term changes

in foraging conditions. Storm-petrels are ideal monitors of ocean productivity, as they feed mostly on zooplankton which responds rapidly to environmental variability. We studied the breeding success, chick growth, chick provisioning and diet composition of black storm-petrels *Oceanodroma melania* at San Benito Archipelago, off the Pacific coast of Baja California, Mexico in the breeding seasons 2012 and 2013. During 2012, chicks were fed more frequently, received more food per night and adults visited the nest in shorter intervals. Consequently, chick growth differed significantly, with fledglings of higher body mass and larger wings being produced. These differences in chick provisioning between seasons were pronounced mainly during early and late chick rearing periods. Although feeding patterns differed, the timing of breeding and fledging, as well hatching and fledging success did not vary between years. In both seasons, adults carried out individual foraging trips of 1 to 5 days duration of which about 90% of the observations corresponded to trips of 1 to 2 days. During both years, black storm-petrels preyed mostly on euphausiids (67-94% of occurrence, 5 species) followed by fish (24-33% of occurrence, 1 species), and amphipods, decapods, copepods and cephalopods were found in minor proportion. Krill prey included warm and cold-water species in 2012 and only cold-water species in 2013. These results suggest local conditions were more favorable for prey availability/accessibility in 2012.

Bolaños, Raquel; Rodriguez-Estrella, Ricardo

CIBNOR La Paz, México BC 23040 México. progne9@hotmail.com

Efectos de fragmentación en ecología reproductiva, condición física y parásitos en *Bubo virginianus*

La fragmentación del hábitat tiene fuerte impacto sobre los ecosistemas, es una de las principales causas de pérdida de especies. Particularmente sensibles pueden ser aquellas que requieren grandes extensiones de territorio y que tienen baja densidad poblacional como los depredadores tope. La pérdida de especies genera un aumento en los niveles de parasitismo y patógenos, los cuales ejercen un efecto negativo en la salud y en el éxito reproductivo de sus hospederos. Las consecuencias de la fragmentación del hábitat en aves rapaces, consideradas como un grupo sensible, han sido poco estudiadas en zonas áridas. Es por eso que se eligió estudiar a *Bubo virginianus* especie de depredador tope nocturno en el desierto de Baja California Sur. El objetivo es evaluar y comparar los efectos de la fragmentación sobre la productividad, condición física y su relación con la prevalencia de parásitos y patógenos de este depredador *Bubo virginianus*. Se presentan resultados preliminares sobre productividad del año 2014, en que se encontraron 18 nidos activos en zona fragmentada y 7 en zona natural. El periodo reproductivo inició a finales de enero y culminó a finales de mayo. El tamaño medio de puesta de *B. virginianus* fue mayor en la zona fragmentada (2.5 ± 0.7) que en la zona natural (1.2 ± 0.4). La productividad de nidos exitosos fue también mayor en la zona fragmentada (2.2 ± 1.01 vs. 0.7 ± 0.7). Las estructuras de anidación en ambas zonas fueron preferentemente cardones. La tasa de eclosión se vio afectada en la zona natural, la causa del fracaso fue el abandono de los huevos. Aparentemente no existen diferencias en la relación de pollos volantones/huevos eclosionados en ambas zonas, pero sí en el éxito de las eclosiones en la zona natural. La fragmentación proporciona un ambiente más heterogéneo, lo que es probable que haya mayor disponibilidad de alimento favoreciendo el mayor número de parejas anidando.

Bracken, Rebecca*; Green M. Clay

Texas State University San Marcos TX 78666 USA. rdb120@txstate.edu

Nesting behavior of the Reddish Egret on Green Island, Texas

Although foraging behavior has previously been studied in the reddish egret (*Egretta rufescens*), little is known about nesting behaviors and time budgets during nesting. Activity engaging in specific behaviors may vary temporally in response to fluctuations in daily temperature changes and nest predation by other avian species. We tested this hypothesis by developing an ethogram of nesting reddish egret behavior on Green Island, TX based on video recordings of active nests. Behaviors observed include: incubating, alert, off nest and in view of the camera, and off nest and out of view of the camera. We compared the amount of time individuals engaged in each behavior between daytime and nighttime. Preliminary results suggest that there is no significant difference in the average amount of time spent in the behaviors between day and night. However, we note evidence that nesting reddish egrets do leave the nest unguarded for longer periods of time during the night. This could be in response to the lower temperatures at night, when heat is no longer a potential factor that could result in a failed nest. Similarly, grackles, a key nest predator, are generally less active at night, possibly explaining the increased amount of time the reddish egrets spend nest guarding during the day. We are currently increasing the sample size of our observations to more fully explore the relationship between daily changes in temperature and changes in nesting behaviors.

Brown, Stephen C.¹; Mizrahi, David²; Boldenow, Megan³; Bentzen, Rebecca⁴; Giroux, Marie-Andre⁵; Kwon, Eunbi⁶; Lank⁷, David; Lecomte, Nicolas⁵, Liebezeit, Joe⁸, Loverti, Vanessa⁹, Porter, Ron¹⁰, Rausch, Jennie¹¹, Sandercock, Brett⁶, Smith, Paul A.¹², Yezerinac, Stephen¹³, Lanctot, Richard B.¹⁴

¹Manomet Center for Conservation Sciences Manomet MA 02345 USA. ²New Jersey Audubon Society Cape May Court House NJ 08210 USA. ³University of Alaska Fairbanks Fairbanks AK 99775 USA. ⁴Wildlife Conservation Society Fairbanks AK 99709 USA. ⁵Université de Moncton Moncton NB E4K 1A6 Canada. ⁶Kansas State University Manhattan KS 66506 USA. ⁷Simon Fraser University Burnaby BC V5A 1S6 Canada. ⁸Audubon Society of Portland Portland OR 97210 USA. ⁹US Fish and Wildlife Service Portland OR 98604 USA. ¹⁰Delaware Bay Shorebird Project Ambler PA 19002 USA. ¹¹Environment Canada Yellowknife NT Canada. ¹²Environment Canada Ottawa ON K1A 0H3 Canada. ¹³Surrey BC V4N 6M5 Canada. ¹⁴US Fish and Wildlife Service Anchorage AK 99503 USA. sbrown@manomet.org

Determining migratory connectivity for Semipalmated Sandpipers

Semipalmated Sandpipers (SESA) were historically one of the most widespread and numerous shorebird species in the Western Hemisphere. However, the species appears to have experienced significant declines on core wintering areas in recent years, including Suriname, French Guiana, and Brazil, which supported 90% of all SESA known to occur in South America in the 1980s. Counts of SESA on breeding grounds have shown different results, with declines at some sites in the eastern arctic, and generally stable or increasing trends in the central and western arctic. These different survey results create a conservation challenge, because we need to respond to the apparent large decline in the wintering areas, while at the same time learning what caused it and how extensive it is across the species' range. In 2013, we deployed 194 light level geolocators to track migration routes of SESA from six sites in the Arctic

Shorebird Demographics Network spread across the species' breeding range, plus an additional 30 at one wintering site in Brazil. In 2014, we have so far recovered 41 units at breeding sites, with an average return rate of 22% across all sites, and no recoveries at the wintering site. Return rates were much lower in the eastern arctic breeding sites suggesting that overwinter mortality might be higher and/or site fidelity lower. Preliminary results confirmed an eastern arctic connection with northeastern South America. One bird tagged on Coats Island in Hudson Bay bypassed the traditional Bay of Fundy stopover site, but then wintered in the core wintering area in Brazil. In contrast, western arctic birds appear to be wintering in Mexico and northwestern South America, outside of the area where the dramatic decline has been observed. Understanding the migratory connectivity of these populations will help both identify the origins of declines and ensure the effectiveness of future targeted conservation efforts.

Brzorad, John N.¹; Kays, Roland²; Maccarone, Alan D.³; Schweitzer, Sara⁴

¹Lenoir-Rhyne University, Hickory, NC 28601 USA. ²North Carolina Museum of Natural History, Raleigh, NC 27601 USA. ³Friends University, Wichita, KS 67213 USA. ⁴North Carolina DENR, New Bern, NC 28562 USA john.brzorad@lr.edu

Local and hemispheric movements of Great Egrets

We present findings obtained from six free-ranging adult Great Egrets (*Ardea alba*), and two fledgling young-of-the-year who were captured from March-June 2013 in North Carolina and Kansas, fitted with GPS/GSM transmitters, and followed on the computer website Movebank. The technology and software recorded 223,860 locations ($\bar{x}=27,982 \pm 19,224$ S.D. locations/per bird). Here, we describe local movements during the breeding and non-breeding periods, and during the Fall and Spring migrations. During the breeding season, home ranges used by the five breeding birds ranged from 1.8 to 48.1 km², while the actual areas used while foraging ranged from 0.06 to 3.4 km². Four autumnal and two vernal migrations were characterized for four breeding birds. Nearly all migrations occurred at night, and the total distance flown ranged from 922 to 3104 km. One journey, a 59-hr, non-stop autumnal migration, was undertaken by a bird that departed Massachusetts, and then flew over the Atlantic to Jupiter, FL. Other Great Egrets migrated to Cuba, Mexico and Columbia. Prior to this study, we knew little about migration distances or destinations for Great Egrets. In addition, accelerometers on the transmitter allowed for the identification specific activities such as incubation, rest/sleep, flight, and ambulation. Overall dynamic body acceleration (ODBA), a unit-less surrogate for energy use, matches bird activity.

Brzorad, John N.¹; **Maccarone, Alan D.**²; Stone, Heather M.²

¹ Lenoir-Rhyne University Hickory NC 28601 USA. ²Friends University Wichita KS 67204 USA. brzoradj@lru.edu

A telemetry-based study of Great Egret (*Ardea alba*) nest-attendance patterns, and food-provisioning rates

The breeding season is a demanding period in an adult bird's annual cycle because it must balance energy gains with the competing demands of reproduction and self-maintenance. To

better understand how this balance is reached, nest-attendance patterns, food-provisioning rates, and foraging patterns were studied in radio-tagged Great Egrets (*Ardea alba*) breeding in a mixed-species colony in Wichita, Kansas from 2011-2013. A total of 777 records of feeding sites yielded travel times, flight velocities, and flight distances. Prey-capture rates, capture efficiencies, prey sizes and aggressive interactions were recorded at rivers, ponds, and weirs. Food-provisioning intervals (Mean = 196 + 18 min; Range = 30-2044 min) differed among radio-tagged birds and among years. Round-trip distances to feeding sites in 2011 (16.3 + 17.8 km) and 2012 (16.0 + 7.0 km) were similar but both were longer than those in 2013 (11.1 + 3.3 km). Flight distances to feeding sites also differed among birds and increased with breeding stage. Strike rates and capture rates differed by year but not by microhabitat (rivers, ponds, weirs), while capture efficiency differed among these microhabitats. Fish captured at weirs averaged 6 times heavier than those caught at rivers or in ponds. Aggression rates at weirs were 5-10 times greater than at ponds and rivers. Distances to foraging sites were combined with published values for flight energetics to estimate flight costs, and prey-capture rates were combined with caloric values of fish to estimate energy gain for each bird.

Burger, Joanna¹; Gochfeld, Michael²

¹Rutgers University Piscataway NJ 8854 USA. ²Rutgers EOHSI Piscataway NJ 8854 USA
burger@biology.rutgers.edu

Temporal trends in mercury, lead, cadmium and other heavy metals in eggs of common terns (*Sterna hirundo*)

Despite mounting evidence of mercury accumulation in ecosystems, and effects on birds in the field and the laboratory, there are few data on long-term trends in mercury or other metal levels in birds from the U.S. Seabirds are excellent bioindicators of exposure because they are long-lived, feed at high trophic levels, are often abundant and widespread, and integrate levels over time and space. We measured levels of mercury, lead, and cadmium in eggs of Common Terns (*Sterna hirundo*) from Barnegat Bay, New Jersey from 1971 to 2013, and levels of selenium, chromium, arsenic, and manganese from 1992 to 2013. We test the null hypotheses that there were no temporal trends in metals levels during these periods. The eggs of Common Terns showed a significant decline in lead and cadmium, with little change in mercury. Lead and cadmium declined by an order of magnitude. Mercury was highest in the 1970s, was variable in the 1980s and 1990s, and reached another high in the mid-2000s, although it declined slightly thereafter. Selenium and chromium showed no consistent trend, but they are both essential trace elements. Within the Bay, over a distance of about 80 km, there were locational differences for mercury, selenium and chromium.

Cárdenas, Melinda*¹; Mellink, Eric²; Riojas-López³, Mónica E.

¹Prog. Maestría en Ciencias de la Vida, Centro de Invest. Cient. y de Educación Sup. de Ensenada, B.C Ensenada BC, 22860 México. ²Depto. Biología de la Cons., Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada BC, 22860 México.

³Departamento de Ecología, CUCBA, Universidad de Guadalajara, Zapopan JA, 45221 México.

melindacardenas@hotmail.com

Efecto de tamaño de parche y árboles en las aves en huertas de nopal tunero en los Llanos de Ojuelos

Uno de los agrosistemas más típicos en los Llanos de Ojuelos son las huertas de nopal tunero. Estas son utilizadas por al menos 69 especies de aves de las 123 potenciales reportadas para la región. Estos hábitats, por su condición perenne y estructura vertical compleja, ofrecen refugio y alimento para las aves a lo largo del año. Al igual que en otros hábitats hipotetizamos que el tamaño de parche y la presencia de elementos arborescentes dentro de la huerta afectarán la composición de las comunidades de aves. Con el fin de determinar el papel de estos dos factores sobre riqueza y abundancia de aves en las huertas de nopal tunero realizamos un estudio en 12 huertas: 6 en parches grandes de cultivo de nopal y 6 en parches pequeños, teniendo en cada caso 3 huertas con árboles y 3 sin ellos. En cada sitio se estableció una parcela de estudio de 1 ha, que se muestreo durante una tarde y una mañana 5 veces entre septiembre de 2013 y junio de 2014. Las aves se identificaron y contaron a lo largo de transectos dentro de las parcelas. De las 58 especies registradas, las más comunes fueron *Zenaida macroura*, *Sayornis saya*, *Thryomanes bewickii*, *Campylorhynchus brunneicapillus*, *Toxostoma curvirostre*, *Melospiza fusca*, *Spizella pallida* y *Haemorhous mexicanus*. Las huertas con árboles tuvieron una riqueza (7.73 ± 0.42) y diversidad alfa real (1.78 ± 0.07) significativamente mayores que las huertas sin árboles (5.1 ± 0.43 y 1.34 ± 0.08 , respectivamente; ANDEVA, $\alpha \leq 0.05$). El tamaño del parche no tuvo un efecto significativo sobre ninguna de las dos variables. Estos resultados coinciden con otros estudios en que es más importante la calidad del parche que su tamaño. Dado que ninguna de las aves comunes en huertas de nopal es reconocida como plaga por los agricultores tuneros, como medida de manejo para la conservación de aves, con base en este estudio sugerimos que se mantengan o establezcan elementos arborescentes dentro de las huertas.

Carlisle, Jay D.¹; Pollock, Jessica¹; War, Heidi E.¹; Smith, Fletcher².

¹Intermountain Bird Observatory/Boise State University, Boise ID, 83725 USA. ²Center for Conservation Biology, College of William & Mary and Virginia Commonwealth University, Williamsburg VA, 23188 USA. jaycarlisle@boisestate.edu

Using satellite telemetry to study long-billed curlews breeding in the intermountain west

Long-billed Curlew (*Numenius americanus*) populations have declined in portions of their breeding range. Though we can identify many breeding season threats that may be occurring, to achieve full life cycle conservation it's also critical to know where curlews spend the rest of their annual cycle and learn about potential threats elsewhere. In 2013 and 2014, we deployed satellite transmitters (Microwave Telemetry 9.5g & North Star 8.2g solar PTTs) on breeding adult curlews from multiple breeding populations spanning from southwestern Idaho to southwestern Montana and western Wyoming. The birds traveled through Nevada, Utah, and Arizona during migration, and have wintered in areas of Mexico and California. We will present movement details, compare results with prior data from other western states, consider threats to curlew populations, and discuss future objectives.

Catlin, Daniel H.¹; Fraser, James¹; Karpanty, Sarah¹; Cohen, Jonathan²; Hunt, Kelsi¹; Maddock, Sidney¹.

¹Virginia Polytechnic Institute and State University Blacksburg VA 24061 USA. ² State University of New York College of Environmental Science and Forestry Syracuse NY USA.
dcatlin@vt.edu

When heaven freezes over: oil spills and plover survival through the annual cycle

On 20 April 2010, the Deepwater Horizon oil rig exploded, pouring millions of barrels of oil into the Gulf of Mexico over the next several months. A massive undertaking to protect marshes, beaches, and coastal communities ensued. In addition to protection, many groups were tasked with quantifying damages to the varied resources potentially affected. We investigated the effect of oil exposure, cleanup activities, other disturbances, and of temperature on the survival and movement of piping plovers (*Charadrius melodus*) at multiple locations throughout the Gulf of Mexico from August 2010 to August 2011. We monitored over 400 individually marked plovers within and outside of the oil impact zone. Oiling rates outside of the impact zone were negligible, and rates were higher for birds that we captured than those that were merely resighted. We did not detect any effects of oiling on plovers, nor did the cleanup activities appear to have a negative effect on survival or movement. Plovers do not typically forage in the water, which may have reduced their exposure to oil, particularly after dispersants were used. Extreme cold temperatures in the Gulf, and particularly at a control site on the Atlantic Coast, increased mortality substantially, but movement rates were unaffected. There was some evidence that recreational disturbance negatively affected survival when coupled with low winter temperatures. Although we did not find a direct effect of the oil on plovers, we caution that research began after the spill had been largely contained and many plovers had arrived on the wintering grounds. Moreover, we were unable to examine any potential long-term effects of exposure. Our results do, however, suggest that during times of extreme weather, protections against severe disturbance could increase survival of plovers and perhaps other species as well.

Cavazos-Guadarrama, Alejandra; Escalante-Pliego, Patricia. acavazos@st.ib.unam.mx

Patrones de diversificación y relaciones filogenéticas entre los gorriones olivo del Género *Arremonops* (Aves, Emberezidae)

El género de gorriones *Arremonops* se conforma por cuatro especies cuya distribución abarca desde el Sur de Texas y hasta la región norte de Sudamérica, dos de las cuatro especies se distribuyen en México a lo largo de las vertientes del Golfo y Pacífico. Este es el primer estudio integral del género en cuanto a los eventos de diversificación y patrones de variación genética utilizando marcadores mitocondriales (COI y ND2), autosómicos (Fib5 y TGF) y un marcador ligado al sexo (MusK). Los resultados de los genes mitocondriales muestran que existe estructura filogeográfica en tres de las cuatro especies, en algunos casos la divergencia entre linajes es mayor al 2%, los linajes concuerdan con las subespecies morfológicas descritas. Los patrones de variación en las secuencias de ADN nuclear fueron en general congruentes con los resultados mitocondriales pero con una tasa menor de diversificación. Identificamos dos grandes eventos de divergencia entre filogrupos que se dieron en el Plioceno con subsecuentes separaciones ocurridas durante el Pleistoceno. De acuerdo a los resultados proponemos una reevaluación de la taxonomía del género completo.

Ceyca ,Juan P.*¹; Castillo-Guerrero, José A.¹; García-Hernández, Jaqueline²; Fernández, Guillermo³; Betancourt-Lozano, Miguel¹

¹Centro de Investigación en Alimentación y Desarrollo, AC-Unidad Mazatlán Mazatlán Si 82100 México. ²Centro de Investigación en Alimentación y Desarrollo, AC-Unidad Guaymas Guaymas So 85480 México. ³Unidad Académica Mazatlán, ICMYL-UNAM Mazatlán Si 82040 México. jpceyca@estudiantes.ciad.mx

Levels of mercury and cadmium in the eggs of eight seabird species from Sinaloa, northwest Mexico

We determined mercury and cadmium levels in the eggs of eight species of seabirds that nest in five coastal wetlands from Sinaloa, Northwest Mexico, during two breeding seasons (2012 and 2013): Blue-footed Booby (*Sula nebouxii*), Brown Booby (*S. leucogaster*), Double-crested Cormorant (*Phalacrocorax auritus*), Magnificent Frigatebird (*Fregata magnificens*), Brown Pelican (*Pelecanus occidentalis*), Royal Tern (*Thalasseus maximus*), Laughing Gull (*Leucophaeus atricilla*) and Heermann's Gull (*Larus heermanni*). In general, the highest mercury levels were observed in the fish-eating bird species (Brown Pelican, $3.8 \pm 0.3 \mu\text{g g}^{-1}$; Brown Booby, $2.1 \pm 0.2 \mu\text{g g}^{-1}$; Blue-footed Booby, $2.0 \pm 0.1 \mu\text{g g}^{-1}$; and Double-crested Cormorant, $1.9 \pm 0.1 \mu\text{g g}^{-1}$), while cadmium levels were higher in opportunistic species (Heermann's Gull, $2.8 \pm 0.9 \mu\text{g g}^{-1}$; and Laughing Gull, $2.3 \pm 0.3 \mu\text{g g}^{-1}$). However, levels of the two heavy metals were significantly different between breeding seasons and nest sites. The interspecific differences in mercury and cadmium levels were attributed to the food preferences and foraging ecology of each species. The temporal and spatial patterns were explained with the interannual variability in the sea surface temperature that can be related to regional upwelling conditions. Both mercury and cadmium levels in the eggs were within the range associated with adverse effects in reproduction and survival of some seabirds in this study. The heavy metals levels presented here highlight the usefulness of the eggs of these seabird species as biomonitors in coastal wetlands from Northwest Mexico.

Chablé-Santos, Juan; Chumba-Segura, Lizbeth; Sélem-Salas, Celia

Universidad Autónoma de Yucatán Mérida YU 97000 México jcsantos@uady.mx

Distribución y abundancia de dos especies endémicas de México en la península de Yucatán

El colibrí cola hendida (*Doricha eliza*) y la matraca yucateca (*Campylorhynchus yucatanicus*) son dos especies endémicas de México, ambas nombradas en la Normatividad Mexicana como especies en Peligro de extinción. En la Península de Yucatán, estas especies están altamente asociadas a la vegetación de matorral costero. Ante la elevada presión que existe en la costa de Yucatán, por parte del desarrollo urbano, es que se realizó este estudio para ubicar en época reciente la distribución y abundancia de ambas especies, así como la relación de su abundancia con variables físicas del matorral costero, variables de la comunidad vegetal, así como con las siete especies vegetales que resultaron con mayor Valor de Importancia Relativa en la zona de estudio. El trabajo se desarrolló de enero a mayo de 2011, efectuando muestreos en 27 sitios dispuestos a lo largo de los 345 Se realizaron recorridos en transectos de 1,000 m lineales considerando un ancho de banda de 15 m a cada lado. La presencia del colibrí cola hendida *D. eliza* se verificó en el 85% de los sitios de muestreo. Su abundancia decreció conforme fue mayor la altura del matorral costero e incrementó a mayor riqueza de matorral. También, presentó tendencia al incremento cuando mayor fue la diversidad del matorral y a decrecer conforme incrementó la altura de *S. americanum*. En cuanto a *C. yucatanicus*, esta

especie solo se verificó en el 44% de los sitios de muestreo. Notable fue su ausencia en los sitios ubicados en la costa Este. Se observó que su abundancia disminuyó conforme mayor fue la perturbación del matorral, así como un incremento de su abundancia cuando las especies vegetales *S. americanum* y *Q. incana* presentaron mayor Valor de Importancia Relativa, en particular de la cobertura y densidad de la primera especie y la densidad de *Q. incana*. Así como cuando mayor fue la altura de *Agave angustifolia*. Se registró tendencia al incremento en abundancia cuando mayor es la diversidad del matorral.

Chapa-Vargas, Leonardo¹; Martínez-Sánchez, Javier I.¹; Torres-Jiménez, Gilberto²; Monzalvo-Santos, Karina³.

¹Institute for Scientific and Technological Research of San Luis Potosí San Luis Potosí Sa 78216 México. ²Tampadhum A.C. San Luis Potosí SL 78049 México. ³Universidad Autónoma de San Luis Potosí, 78216 México. Ichapa@ipicyt.edu.mx

Información, situación y acciones de conservación del Águila Real en San Luis Potosí

La conservación de especies vulnerables puede requerir esfuerzos conjuntos en amplias áreas geográficas. El Águila Real (*Aquila chrysaetos*) se encuentra en la NOM-059-SEMARNAT, su distribución en México es amplia, y su abundancia es baja. Varios estados han conjuntado esfuerzos para realizar el monitoreo de sus poblaciones e implementar acciones de conservación. En San Luis Potosí se llevaron a cabo monitoreos de Águila Real a partir de 2000, registrándose ocho nidos con actividad reciente. Entre 2008 y 2009, cuatro nidos y varios avistamientos fueron obtenidos, y a partir de 2012 se llevaron a cabo monitoreos sistemáticos que acumularon 12 registros de individuos adultos y juveniles, y cinco territorios reproductivos ocupados, en los cuales se corroboró la presencia de la especie para un total de once nidos incluyendo a los ocupados y no ocupados. En 2013, no se registró actividad reproductiva a pesar de los esfuerzos intensos de monitoreo, pero en 2014, al menos uno de los nidos produjo un volantón. Además, se cuenta con información referente a la posible existencia de tres territorios reproductivos adicionales. También se colaboró con dependencias del gobierno federal que atendieron amenazas a la especie en la entidad incluyendo un cambio de uso de suelo ilegal y una manifestación de impacto ambiental que pretendía establecer un sitio de explotación minera en las inmediaciones de un territorio reproductivo.

Chastant, Jennifer E.; Gawlick, Dale, E.

Department of Biological Sciences, Florida Atlantic University, 777 Glades Road. Boca Raton, FL 33431 jchastan@fau.edu

Great Egret stress response to prey availability in a managed lake ecosystem

The restoration of wetlands in South Florida is based on the premise that hydrologic patterns, fish populations, and wading birds are tightly linked, but not necessarily in a direct linear fashion. Hormones regulate an animal's response to environmental disturbances and can affect the way in which hydrologic patterns affect reproductive success and survival. We determined how differing levels of food availability affected the stress levels of Great Egret (*Ardea alba*) chicks at Lake Okeechobee, Florida. Our hypothesis was that stress levels would be inversely related to food availability. Stress was measured using the cellular protein chaperone Heat

Shock Protein 60 (HSP60). Lake levels were lower, and prey density was higher, in 2011 than in 2012 (January lake stage 3.8 m and 4.1 m, respectively; mean prey density was 165 ± 21.09 SE prey/m² and 87 ± 6.99 SE prey/m², respectively). We measured levels of HSP60 in the red blood cells of 68 nestlings. Stress levels were lower in 2011 than in 2012 (HSP60 = 3.3 ± 0.51 SE ng/mL in 2011; HSP60 = 31.96 ± 4.75 SE ng/mL in 2012), supporting our hypothesis. Results suggest prey availability may not have been a limiting factor for wading bird nesting in 2011, despite the low lake levels.

Clark, Mark; Grieves, Timothy; Reed, Wendy

North Dakota State University argo ND 58108-6050 USA m.e.clark@ndsu.edu

Use of PTT tags to quantify variation in migration of Franklin's gull

We have observed seasonal variation in several aspects of reproductive output in Franklin's gull (*Leucophaeus pipixcan*). For instance, egg size, chick condition, chick growth and chick survival all vary seasonally in Franklin's gull colonies in North Dakota, even though nest initiation occurs over a narrow (approximately three week) time frame. Adult condition also varies across the nest initiation period, and Franklin's gull arrival dates in North Dakota have declined at one colony site. However, it is not known how arrival date or arrival condition relates to nest initiation date or seasonal variation in reproductive output in Franklin's gull. In fact, information on site fidelity, migration speed, overwintering sites and other migration data that may relate to variation in reproduction is lacking in Franklin's gull. We successfully trapped and outfitted breeding Franklin's gull adults with PTT transmitters that provide locational information on a 48-hour cycle to monitor early, mid- and late-season nest initiators from the 2014 to the 2015 breeding season. All of the tagged birds have been successfully monitored to this point in their migration.

Cohen, Jonathan Barry¹; Hecht, Anne²; Robinson, Kelly F.³; Erik, Osnas E.⁴; Tyre, Andrew J.⁵; Brinker, David⁶; Davis, Christina⁷; Hake, Mary⁸; Johnson, Luanne⁹; King, Erin¹⁰; Kocek, Alison R.¹; Maslo, Brooke¹¹; Melvin, Scott¹²; Pover, Todd¹³; Zitske, Laura¹⁴; Brewer, Donna C.¹⁵; Johnson, Fred¹⁶.

¹SUNY ESF Syracuse NY 13210 USA. ²U.S. Fish and Wildlife Service Sudbury MA 1776 USA.

³NY Cooperative Fish and Wildlife Research Unit, Cornell University Ithaca NY 14853 USA.

⁴Patuxent Wildlife Research Center Laurel MD 20708 USA. ⁵University of Nebraska-Lincoln Lincoln NE 68588 USA. ⁶Maryland Dept. Natural Resources Catonsville MD 21228 USA. ⁷New Jersey Division of Fish and Wildlife Woodbine NJ 8270 USA. ⁸National Park Service Wellfleet MA 2667 USA. ⁹Biodiversity Works Edgartown MA 2539 USA. ¹⁰U.S. Fish and Wildlife Service Charlestown RI 2813 USA. ¹¹Rutgers University New Brunswick NJ 8901 USA. ¹²Mass Division of Fisheries and Wildlife W. Boylston MA 1583 USA. ¹³Conserve Wildlife Foundation of New Jersey Woodbine NJ 8270 USA. ¹⁴Maine Audubon Society Falmouth ME 4105 USA. ¹⁵U.S Fish and Wildlife Service Shepherdstown WV 25443 USA. ¹⁶SE Ecological Science Center-USGS Gainesville FL 32653 USA. jcohen14@esf.edu

Balancing Demographic Benefits and Risks of Using Predator Exlosures on U.S. Atlantic Coast Piping Plover

Every year, shorebird biologists and beach managers decide whether to use exclosures to reduce nest predation of approximately 1,500 pairs of U.S. Atlantic Coast piping plovers (*Charadrius melodus*). There is ongoing debate over how effectively predator exclosures increase productivity, as well as their potential negative effects on adult survival. We performed a decision analysis with the goal of maximizing piping plover population growth rates by providing local biologists with a decision framework to determine, on a yearly, site-, and nest-specific basis, when to erect predator exclosures. A key uncertainty was the degree to which abandonment of exclosed nests represents mortality of one or more adults. Our analysis was based on several published matrix population projection models, modified to explicitly include nest fate (successful, abandoned, other), renesting probability, and nest fate-dependent adult mortality. We estimated probabilities of nest fates using a mixed multinomial logistic-exposure model with site-year combination as the random effect and data on 343 nests from 28 sites, 2009-2012. When unexclosed hatching success was average or low, exclosure use benefited population growth rate regardless of fledging success. However, when hatching success was low, the population declined regardless of exclosure use. When unexclosed hatching success was high, exclosure use made little difference to the population growth rate. The benefit gained from exclosures decreased when fledging success was low. The population declined regardless of exclosure use and nest success if average fledging success was low. The value of information was very low, indicating that addressing the uncertainties in our model would have little benefit for population growth rate, based on our limited dataset. Future development will include using a dataset with more sites and years, and nest- and site-specific ecological and management covariates.

Conliffe, Sabrina S.; Fraser, Gail S.

York University Toronto On M6H 3M3 Canada sskonliffe@gmail.com

The impacts of raccoons on nesting Black-crowned Night-herons, Toronto, ON, Canada

Raccoons (*Procyon lotor*) are found in urban, rural and wilderness areas throughout North America. They are omnivores that feed on a diverse amount of foods with a diet consisting extensively of bird eggs. Where overlap occurs, raccoons can have a significant impact on the reproductive success of colonial waterbirds, such as Black-crowned Night-herons (*Nycticorax nycticorax*). Night-herons nesting at Tommy Thompson Park, Toronto, ON represent a significant proportion of Ontario's population. We assess the impact of raccoons on heron nest productivity and evaluate the effectiveness of predator guards from 2010 to 2014. In 4 of the 5 years we used an experimental approach to assess the effectiveness of predator guards (metal wrapped around tree trunks) with a treatment (guard) and control (either foil or nothing) approach. In 2010, we used 33 & 66 cm long guards and from 2011-2014 we used 91 cm guards. In 2010 there was no significant difference between the treatment and control for nest productivity (number of nests that fledged chicks out of the total number of nests followed; $p = 0.13$). In 2011, nests in foil-only trees had significantly lower productivity compared to those with 91cm guards ($p < 0.0001$) whereas in 2013, trees with nothing added spatially paired with 91 cm guard trees showed no difference in nest productivity ($p = 0.5$). Nesting data from 2014 are still being collected. Preliminary conclusions suggest that 91 cm guards are not 100% effective at deterring raccoons, but are useful for trees which have no access from adjacent structures. In areas where raccoons are present, using 91 cm (or longer) predator guards is still recommended as they are a relatively low cost, low effort approach to reducing the impacts of raccoon predation.

Craig, Elizabeth C.¹; King, Tommy²; Elbin, Susan³; Sparks, Jed¹; Curtis, Paul¹

¹Cornell University Ithaca NY 14853 USA. ²USDA Mississippi State MS 39762 USA. ³NYC Audubon New York NY 10010 USA. ecc79@cornell.edu

Seasonal interactions play a limited role in cormorant life history

Studies of migratory animals are highly skewed towards observations during the breeding season. This bias has left a large gap in our understanding of factors influencing fitness beyond the breeding grounds. We examined this issue by exploring the relationship between winter foraging, and summer body condition and reproductive output, in a migratory waterbird, the Double-crested Cormorant (*Phalacrocorax auritus*). Using a novel tri-isotope approach ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$, and $\delta^{34}\text{S}$), we identified habitat types (aquaculture, marine, or natural freshwater) where adult cormorants primarily foraged during winter. We measured the isotopic values of these elements in feathers grown during the winter (nuptial crests) in both wintering and breeding birds. Winter samples were collected from birds captured on aquaculture ponds, marine habitats, and natural freshwater habitats in Mississippi and Alabama from 2010 to 2012. Breeding season samples were collected at colonies on Lake Champlain in 2010 and 2013. Body condition and reproductive output were observed while capturing birds at their nests. In 2010, we found that winter foraging habitat correlated with body condition ($p=0.04$), but this effect was not observed in 2013. Furthermore, there was no significant correlation between winter foraging habitat and reproductive output. However, we found that reproductive output of females correlated with their body condition ($p=0.03$), showing that our metrics were biologically meaningful. We therefore concluded that winter foraging habitat did not meaningfully influence reproductive output in this system. Our findings provide little support for the importance of seasonal interactions in the life history of this migratory species.

González, Carlos Cruz¹; Ceballos, Gerardo¹; Herrada, Alejandro Meléndez²

¹Instituto de Ecología, Universidad Nacional Autónoma de México, México, DF Ciudad de México, 4510 México. ²Laboratorio de Ecología y Conservación de Fauna Silvestre, Universidad Autónoma Metropolitana, Xoch. Ciudad de México, 4960 México. carloscg722@hotmail.com

Patrones globales de distribución de rapaces diurnas, implicaciones para su conservación.

Las aves rapaces son fundamentales en la dinámica de los ecosistemas al regular las poblaciones de sus presas, son indicadoras de calidad del ambiente, controlan plagas de cultivos y las aves carroñeras son importantes al reciclar materia muerta y evitar la propagación de enfermedades. Los objetivos de este estudio fueron evaluar los patrones de distribución de las rapaces diurnas del mundo usando los mapas de distribución de las 312 especies consideradas por IUCN y BirdLife, e identificar las áreas prioritarias para su conservación. Se evaluaron la riqueza de especies, categorías de riesgo, tendencias poblacionales, endemismos y distribución restringida ($>50,000 \text{ km}^2$). La tendencia poblacional de 171 especies se encuentra a la baja, 92 con tendencia estable, 43 a la alta y seis con tendencia desconocida. De las 11 especies de rapaces diurnas en peligro crítico de extinción, sólo *Buteo ridgwayi*, *Gymnogyps californianus* y *Leptodon forbesi* se encuentran en América, mientras que cinco son buitres, los cuales han disminuido sus poblaciones globales en más del 90% en los últimos 20

años. El 15.7% de las especies (49), son consideradas de distribución restringida y el 14.4% (45) endémicas a un país. México está considerado dentro de las áreas prioritarias para la conservación de las rapaces por tener la ruta migratoria más importante del mundo; así mismo, países como Malasia e Indonesia al contar con el mayor número de especies endémicas (10 cada uno), la región Asiática Indo-Malaya y los archipiélagos del Pacífico por contener la mayoría de las especies de distribución restringida y en peligro de extinción. El Continente Australiano y Madagascar son regiones de gran importancia al concentrar también un número importante de endemismos.

Cruz-López, Medardo¹; Fernández, Guillermo²; Küpper, Clemens³

¹Posgrado en Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México México DF 4510 México. ²Unidad Académica Mazatlán, Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, Apartado Postal 811, Mazatlán, Sinaloa, C.P. 82040, México. ³Department of Animal and Plant Sciences, University of Sheffield Sheffield S10 2TN UK tod472@gmail.com

Local survival of Snowy plover (*Charadrius nivosus*) in a reproductive population in México

Knowing local survival estimates is necessary for the conservation of populations of threatened birds. The Snowy Plover (*Charadrius nivosus*) is shorebird species that has severe population declines. We used capture-recapture techniques to estimate local survival of adults breeding in Ceuta Bay, Sinaloa, Mexico. Based on the captures of 516 adults during 8 breeding seasons, the model that best explained local survival (Φ) was one that included time since marking, with after of the first capture with the interaction sex and time, and time-dependence in encounter rates (P). Φ was lower for both sexes after of the first capture event than for the second capture event. In both cases females had higher Φ than males. After the first capture event Φ decreased with time for both sexes. After of second capture event Φ had annual variation without a specific pattern. On the other hand, P had annual variations without a defined pattern. The decrease of Φ after of the first capture event with respect to time might be associated to marking of transient individuals and to the fact that changes in the habitat quality may have a greater impact in these newly banded individuals. We had reports of individuals marked in Ceuta that breed in other populations. Our apparent survival estimates are similar to those reported for other populations of Snowy Plovers, but we found that females had higher Φ than males. It is possible that males in Ceuta could show higher parental care than females, which could make them more susceptible to predation or have lower body condition. This study is the first for Snowy Plovers in Mexico. Our results will help understand the viability of Snowy plover populations in their ranges of distribution.

Custer, Christine M.¹; Custer, Thomas W.¹; Goldberg, Diana²

¹USGS La Crosse WI, 54603 USA. ²USGS Madison WI 53701 USA. ccuster@usgs.gov

Using an aquatic passerine to assess contaminated sediments and clean up: Lincoln Park Case Study

Tree swallows (*Tachycineta bicolor*) are a small aquatic passerine whose diet is mainly the aerial stage of benthic aquatic insects. Because of this, they can be used to assess the bioavailability of chemicals in contaminated sediments. Lincoln Park in the Milwaukee Estuary, USA, Area of Concern (AOC) was dredged in 2011 to remove sediments contaminated with polychlorinated biphenyls (PCBs) and other organic contaminants. As part of the Great Lakes Restoration Initiative (GLRI) project "Birds as Indicators of Contaminant Exposure and Effects", data were collected before and after the sediment removal action. Accumulation rate (μg of a contaminant accumulated each day) was significantly reduced after dredging (mean = 0.1 μg PCBs/day, maximum rate = 0.2 μg PCBs/day) compared to the rate before dredging (mean = 0.3 μg PCBs/day, maximum rate = 0.8 μg PCBs/day). Additionally, the variation in accumulation rate was less post-dredging compared to pre-dredging. Accumulation rate provided a more targeted assessment than did either PCB concentration in eggs or nestlings because sources of variation could be better controlled when using accumulation rate. Accumulation rates post dredging at Lincoln Park were similar to reference areas in the upper Midwest region of the U.S., and considerably less than rates in other highly PCB-contaminated locations such as the Housatonic River or New Bedford Harbor, MA. These data provided information and insights on using tree swallows as a biological indicator to assess remediation effectiveness.

De Dios-Arcos Cecilia¹, Badillo-Alemán Maribel², Arceo-Carranza Danie²; Chiapa-Carrara, Xavier²

¹Posgrado en Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México. Circuito Exterior s/n, Ciudad Universitaria, Distrito Federal, 04510, México. ²Unidad Académica Sisal, Facultad de Ciencias, Universidad Nacional Autónoma de México. Puerto de Abrigo s/n, Sisal, Yucatán, 97356, México.

Uso de recursos tróficos por un gremio de aves piscívoras en la costa de Yucatán

Existen especies que utilizan los mismos recursos disponibles en un determinado lugar y cumplen roles ecológicos similares. Estas agrupaciones suelen llamarse gremios que se caracterizan por las semejanzas alimentarias de sus integrantes y entre los más estudiados se encuentran los de las aves, quienes pueden presentarse en gran cantidad en los humedales, ecosistemas sumamente productivos. Esta investigación se enfocó en un gremio de aves acuáticas que anida conjuntamente en un islote en la costa norte de Yucatán formado por *Phalacrocorax brasilianus*, *Egretta rufescens*, *E. thula*, *Ardea alba*, *Cochlearius cochlearius* y *Platalea ajaja*. Se realizaron muestreos durante la temporada de reproducción de estas aves, entre noviembre de 2012 y febrero de 2013; se obtuvieron muestras del bolo alimentario de las crías de cada especie, las presas fueron identificadas hasta nivel de especie, cuando fue posible, para determinar el espectro trófico del gremio y de cada especie y su traslape trófico. Se encontró que, en conjunto, estas aves consumen ocho familias, 13 géneros y 17 especies de peces. Poeciliidae y Cyprinodontidae fueron las familias de peces que mayor contribución tuvieron en la dieta de las aves. El espectro trófico más amplio correspondió a *P. brasilianus* cuya dieta es similar a las de *E. rufescens* y *C. cochlearius*; estas últimas son especies que presentan el mayor traslape trófico. La alta similitud y traslape del nicho trófico puede ser indicativo de la abundancia de los recursos ícticos por lo que no representan una limitante para la coexistencia de las especies en el sistema de humedales de la costa Norte de Yucatán.

De Gortari-Ludlow, Natalia^{*1}; Chapa-Vargas, Leonardo¹; Salgado-Ortiz, Javier²; Flores-Rivas, Joel D.¹

¹Instituto Potosino de Investigación Científica y Tecnológica A.C. San Luis Potosí SL 78216 México. ²Universidad Michoacana de San Nicolás de Hidalgo Morelia Mi 58030 Mexico. natalia.degortari@ipicyt.edu.mx

Ocupación de hábitat por tres aves acuáticas: tipo de hábitat vs composición de paisaje

Se estudió la ocupación del hábitat para tres especies de aves acuáticas; *Cistothorus palustris*, *Fulica americana* y *Charadrius vociferus* en un sistema de humedales altamente perturbado por agricultura en la meseta de San Luis Potosí. El principal objetivo fue evaluar simultáneamente los efectos sobre los patrones de ocupación de hábitat para estas especies a dos escalas espaciales, 1) a escala local en respuesta al tipo de hábitat (agricultura vs. hábitat de agua remanente), y 2) a escala regional en función de la composición del paisaje (porcentaje de agricultura dentro de 10 kilómetros en los sitios muestreados). Los muestreos se realizaron entre Junio-Septiembre de 2012 y Enero-Febrero de 2013. Mediante modelos de ocupación de hábitat se estimó la magnitud de los efectos sobre los patrones de ocupación (Psi). Identificamos que los patrones de ocupación varían de acuerdo a la vulnerabilidad de las especies. *C. palustris* es la especie más vulnerable y su ocupación incrementó en el hábitat acuático con el incremento en el porcentaje de agricultura en ambas temporadas (lluvias y secas), pero no en el hábitat agrícola. *F. americana*, tiene sensibilidad intermedia y es un obligado acuático. En la temporada de lluvias, su ocupación aumentó con el porcentaje de agricultura en ambos hábitats, mientras que en las secas, sólo aumentó en el hábitat acuático. *C. vociferus* es un forrajero oportunista y la especie menos vulnerable. En temporada de lluvias su ocupación, mostró interacciones entre la escala local y la de paisaje, con aumentos y disminuciones en la ocupación de hábitat en función del aumento de agricultura en los hábitats acuático y agrícola, respectivamente. Finalmente, en las secas, el porcentaje agrícola tuvo un efecto positivo únicamente en la ocupación del hábitat acuático, pero no en la agricultura.

De la Cruz, José M.

Pinar del Río, Cuba delacruz@mhn.vega.inf.cu

Nests and nesting of Fregatabirds (*Fregata magnificens*) at Guanahacabibes National Park, Cuba

Aquatic birds and their nesting habits have been poorly studied in western Cuba. The present work had as primary objective to characterize the nesting structures of a *Fregata magnificens* and *Phaalacrocorax auritus* colony, at Los Pájaros Cays, Guanahacabibes National Park, in the most western part of Cuba. Thirty-two nests of *F. magnificens* and 24 of *P. auritus* were located, all with similar construction and structure. The location, measurement and content was determined using a metric tape, binoculars and by direct observation, respectively. The results show great homogeneity in the size and overall structure of the nests, and we found breeding individuals at different development stage. The distance between nests of *F. magnificens* was variable, and all of them were located in the exterior edge of the Rizophora mangle forest and without physical obstacles keeping the birds without access to the forest. *P. auritus* nested at 3,9 m of height above the sea level and the great majority of the individuals were covered. Other

eight bird species were observed in the area, with *Nyctanassa violacea* being the most common.

De León-Girón, Gonzalo¹; Rodríguez-Estrella, Ricardo²; Ruiz- Campos Gorgonio³

¹CIBNOR Ensenada BC 22880 México. ²CIBNOR La Paz BC 23096 México. ³UABC Ensenada BC 22890 México. gdleon@cibnor.mx

Ecología reproductiva, dieta y uso de hábitat del Águila real (*Aquila chrysaetos*) en Baja California

The golden eagle (*Aquila chrysaetos*) is considered a top predator and a key species in stabilizing the trophic networks, requires large areas for nesting and hunting their prey, and is also sensitive to changes in land use by human activity. In Mexico there are breeding populations primarily in Durango, Zacatecas, Jalisco, San Luis Potosi, Chihuahua, Nuevo Leon, Coahuila, Guanajuato and Baja California. This proposal aims to address these issues in the breeding population of Baja California. This work will form part of a national project approved by CONABIO to develop a comprehensive strategy for monitoring populations of golden eagle at breeding sites throughout its range in Mexico, a project led by CIBNOR but in collaboration with other institutions. Objective: To determine the abundance, reproductive ecology, habitat use and diet of the population of golden eagle (*Aquila chrysaetos*) in Baja California, Mexico. Method: Determination of abundance and population structure; Location of active nests; Monitoring of nests for estimating productivity and diet; estimated home range and movements; Determination of threats. Between 2013 and 2014, 37 sightings in 19 localities in Baja California, including 16 adults and 18 juveniles have been tracked. Preliminarily, the analysis of the animal preys showed the hare (*Lepus californica*), rabbit (*Sylvilagus audobonii*), squirrels (*Spermophilus becheyii*) californiana quail (*Callipepla californica*) and rattlesnake (*Crotalus viridis*). It was observed that adult eagle nesting season has short rounds near the nest, with a maximum distance of 9 km, these tours increase with the growth of the eaglet recording a maximum distance of 78 km. Urban and suburban development is the main threat to golden eagles, followed by agriculture and mining.

De León-Girón Gonzalo¹; Rodríguez-Estrella Ricardo²; Ruiz- Campos Gorgonio³

¹CIBNOR Ensenada BC 22880 México. ²CIBNOR La Paz BC 23096 México. ³UABC Ensenada BC 22890 México gdleon@cibnor.mx

Situación actual del Águila Real (*Aquila Chrysaetos L.*) en Baja California, México

El águila real (*Aquila chrysaetos*) es considerado un depredador tope y una especie importante en la estabilización de las redes tróficas, que requiere amplias áreas para anidación y caza de sus presas, siendo además sensible a cambios en el uso de suelo por la actividad humana. Para Baja California solamente se tenían avistamientos puntuales, ocasionales. La presente propuesta forma parte de un proyecto nacional aprobado CONABIO a fin de elaborar una estrategia integral de monitoreo de las poblaciones de águila real en sitios de reproducción en toda su distribución en México. Actualmente se han registrado entre 2013 a 2014, 37 avistamientos en 19 localidades dentro de Baja California, de los cuales 16 son adultos y 18 juveniles. Por tipo de vegetación, el mayor número de registros de águila real ocurrió en el matorral costero (19), chaparral (8), bosque de coníferas (7) y matorral desértico micrófilo (3). A

través de un acuerdo que se hizo con la CONANP y USFWS para el monitoreo de águilas reales por medio de transmisores satelitales en territorio mexicano, se han documentado desplazamientos diarios de un águila adulta los meses de Febrero a Agosto, con distancias mínimas de 9 km y máximas de 78 km. Las amenazas más importantes para la población en el estado son el desarrollo urbano y suburbano, seguidas del crecimiento agrícola y la minería en la parte central y noroeste de Baja California. Se discute su situación y las amenazas que tiene para su conservación.

Del Lama, Silvia Nassif ¹; do Nascimento, Joao Luiz Xavier ²

¹Federal University of Sao Carlos, Sao Carlos SP 13565 905 Brazil. ²Centro Nacional de Pesquisa e Conservacao de Aves Silvestres, Cabedelo PB 58108 012 Brazil dsdl@ufscar.br

Band-recovery data of Wood stork pointed Southern Brazil and Northern Argentina as wintering area

No systematized research has been developed to determine where are the wintering regions of the Wood stork (*Mycteria americana*) that reproduces in colonies in Brazil. Conservation of migration birds implies in location of these wintering sites. We addressed that issue by analyzing banding data from 1984 to 2007, provided by the Centro Nacional de Pesquisa para Conservacao das Aves Silvestres (CEMAVE, ICMBio, Brazil). The following information was considered: band number; band date; band site (Brazilian: latitude and longitude), and recovery date and recovery site (Brazilian state or Argentinean provincia, latitude and longitude). Results are relative to 2543 nestlings, banded in colonies that were established in three regions of Brazil: northern (99), southwestern (46) and Center-western regions (2399). Reproductive cycles in these regions range from July to October. Recoveries (17) data were relative to four adults and 13 juveniles banded Wood stork. The bulk of Wood stork recoveries in Brazil and Argentina occurred during the austral summer (60%), between October and March, and the remaining during period between May and September. Recovery rates of Wood stork banded in Brazilian regions ranged from 0.0000 to 0.0101. Band-recovery data confirm the hypothesis that birds migrated in the South direction to spend their wintering station in southern Brazil and northern Argentina. Ring-recovery data are still among the most spatially accurate sources of information on migratory movement and connectivity. Wintering areas that receive population that breeds in Brazil deserve attention since this species has endangered status in other regions of the American continent where the habitat was drastically modified. As wintering species' ranges cross geopolitical boundaries, management plans developed should be included both countries and to adopt preventive procedures in order to avoid habitat destruction and to preserve these populations.

Del Lama, Silvia Nassif ¹; Souza, Silvia Nassif¹; Mino, Carolina Isabel ¹; Moralez-Silva, Emmanuel¹; Correa Rodrigues, Vera Lucia Cortico ²

¹Federal University of Sao Carlos, Sao Carlos SP 13565 905 Brazil. ²Superintendencia de Controle de Endemias Mogi Guacu SP 13845 206 Brazil dsdl@ufscar.br

Blood-sucking bugs method applied to incubating adults in a tree-nesting colony of Cattle Egret

The collection of blood samples from incubating adults is vital to genetic studies on colonially breeding birds. However, this task is hindered by the fact that adults generally abandon the nest after disturbance by researchers. To overcome this obstacle, the Neotropical hematophagous insect *Panstrongylus megistus* (Triatominae) was placed inside fake eggs to obtain blood from incubating adults in a tree-nesting colony of the Cattle Egret (*Bubulcus ibis*). Disease-free *P. megistus* larvae previously starved for 15 days were contained within mimetic fiberglass eggs and placed in 17 nests (3 to 6 trials per nest; 20 to 30 min per trial). Blood collection was successful in 70% of trials (3 to 6 samples per nest; 69 total samples). Reluctance on the part of adult Cattle Egrets to accept the fake eggs occurred only in one nest. Tests were done in nests of two ardeid species with success: Great Egret and Snowy Egret. DNA was extracted from Cattle Egret blood samples, molecularly sexed and genotyped at six species-specific polymorphic microsatellite loci. The present results validate the use of *P. megistus* in fake eggs for the successful blood sampling from incubating male and female adults in a breeding colony of egrets. The application of this less stressful technique can be very useful for researchers studying genetics and other aspects of tree-nesting colonial waterbirds.

DeRose-Wilson, Audrey; Fraser, James; Catlin, Daniel H; Karpanty, Sarah

¹Virginia Tech Blacksburg VA 24060 USA aderose@vt.edu

Piping plover population response to habitat created by Hurricane Sandy on New York barrier islands

The importance of natural overwashes and inlets and bay side intertidal sand flats habitats to piping plovers (*Charadrius melodus*) has been demonstrated previously, but it is unknown how long a breach needs to be open for bayside habitat to develop and provide benefits to piping plovers. Recent storm-created habitat on Fire Island and Westhampton Island, New York provided an opportunity to refine our understanding of the time frame and the manner in which piping plover habitat develops. We monitored about 15 individually marked piping plover pairs and their chicks on a 17.5 km stretch of Fire Island and Westhampton Island, New York, in 2013 and 2014. Potentially suitable nesting habitat included natural overwashes, overwashes with engineered dunes, and beaches. Hatch success in 2013 was 58%, but chick survival was only 14%. Inadequate protection of foraging habitat from recreational activities likely contributed to chick mortality. In 2014, hatch success was 53% and 63% of chicks survived to fledging. Unlike previous studies of piping plovers following habitat creation events, our population did not increase in the second year post-habitat creation. Local and regional low productivity in 2013 and lower than expected site fidelity for adults banded in 2013 may explain the lack of increase in piping plover pairs in 2014.

Diamond, Tony

University of New Brunswick Fredericton NB E6B 2E9 Canada diamond@unb.ca

Conflicting signals of ecosystem change at a seabird community on a bioregional boundary

Recent trends of increasing surface temperatures in the Gulf of Maine and Bay of Fundy are expected to favour warm-water seabirds at the expense of cold-water species. Machias Seal Island, at the interface between the cold Bay of Fundy and the warmer Gulf of Maine, is

experiencing unexpected increases in abundance of two of the three species of auk breeding in the region. Warming temperatures at the sea surface may give misleading predictions of effects on deep-diving seabirds, whose prey distribution is also influenced by conditions well below the surface. Of three species of auk nesting at Machias Seal Island, the population of Puffins (*Fratercula arctica*) has been stable over the last 15 years while Razorbills (*Alca torda*) have increased 67% since 2001; Common Murres *Uria aalge* colonised in 2003 and continue to expand. Burgeoning populations of cold-water auks are not predicted by increasing sea surface temperatures. Recent tracking data show that breeding Puffins and Razorbills feed in both Gulf of Maine and Bay of Fundy waters. Diet data show no significant increase in prey typical of warmer waters. The lack of expected signals of a rapidly-changing climate is discussed in relation to evidence of a significant shift in inflow and outflow of Shelf and Labrador Current water into the region between 2000 and 2004. This change likely reflects increased melting of arctic ice, especially Greenland glaciers, pushing more deep cold water into the Bay of Fundy; in this way, I argue that the recent increase in cold-water auks is in fact entirely consistent with expectations of a rapidly-warming climate in the NW Atlantic.

Divoky, George

Friends of Cooper Island Seattle WA 98112 USA divoky@cooperisland.org

Living in a melting Arctic: A Pleistocene seabird struggles in the emerging Anthropocene

The western Arctic population of Mandt's Black Guillemot (*Cephus grylle mandtii*) occupied an unglaciated region of the Arctic Basin during the Last Glacial Maximum, causing it to become one of the few resident arctic seabirds. Adapted to feeding on prey associated with sea ice and near-freezing waters, primarily Arctic Cod (*Boreogadus saida*), the recent rapid decline of summer pack ice and concurrent increases in ocean temperatures have decreased the seasonal extent and quality of the guillemot's preferred marine habitat. A colony of Black Guillemots studied annually at Cooper Island in arctic Alaska since 1975 first benefitted from recent atmospheric warming as a reductions in the annual period of snow cover increased seasonal access to nest cavities allowing a population increase and range expansion in the 1970s and 1980s. Continued warming reduced sea ice and increased sea surface temperatures (SST) adjacent to the colony, with a decline in colony size and breeding success since the 1990s. In the last decade availability of Arctic Cod has frequently been reduced during chick provisioning, with parents turning to lower quality demersal fish, primarily sculpin. Decreased availability to Arctic Cod has resulted in annual and seasonal decreases in chick growth rates and fledging mass and increased nestling mortality. Arctic Cod is the primary forage fish in arctic marine ecosystems and the observations from Cooper Island indicate recent melting and warming of the Arctic Ocean are likely disrupting marine ecosystems throughout the Arctic Basin. Summer arctic sea ice is predicted to disappear completely in coming decades and, while that may benefit subarctic species, pack ice obligates, like Mandt's Black Guillemot, will be challenged to survive in an ice-free Arctic.

DuBois, Dominique¹; Ledwon, Mateusz²; Szczys, Patricia¹

¹Eastern Connecticut State University Windham CT 6226 USA. ²Polish Academy of Sciences Krakow 31-016 Poland duboisdo@my.easternct.edu

Genetic mating system of the marsh-nesting Whiskered Tern

Natural selection favors strong pair bonds and strategies to avoid cuckoldry in species requiring high parental investment in rearing offspring. However, extra-pair paternity has been widely documented in avian species exhibiting social monogamy. Twenty-two families of Whiskered Terns (*Chlidonias hybrida*) breeding in inland marshes of Southeastern Poland were genotyped at six microsatellite loci to determine the genetic consequences of alternative reproductive strategies. Preliminary results from 13 families (n=26 adults, 29 chicks) indicate 14% of chicks mismatch their social mothers and 10% mismatch their social fathers at 2 or more loci. Our initial findings complement a recent study of Whiskered Terns reporting 8% and 5% respectively but contrast with those of Black Tern (*Chlidonias niger*) who exhibit absolute genetic monogamy. These findings suggest further study will enhance our understanding of the ecological and evolutionary factors that influence the frequency of extra-pair mating in marsh-nesting species with biparental care.

Durkin, Maureen M.*; Cohen, Jonathan B.

SUNY College of Environmental Science and Forestry Syracuse NY 13210 USA
mmdurkin@syr.edu

Demographic consequences of road mortality to Snowy Plovers at Gulf Islands National Seashore, FL

Gulf Islands National Seashore holds up to 20% of Florida's breeding state-threatened Snowy Plover (*Charadrius nivosus*). Despite this substantial population, little is known about productivity and survival of Snowy Plovers in this area. Further, 14 miles of public roadway bisect the site- directly through plover nesting and foraging habitat. While shorebird road mortality has been an issue of concern for many years, data has been non-systematically collected in the past, and the effects of detection rate and scavenging on counts are unknown. To accurately estimate the number of plovers killed, we did systematic surveys in 2013-2014, and used mark-recapture methods to calculate detection probability, persistence rates, and true number of carcasses present during the study. We also monitored nests and broods of breeding Snowy Plovers, in addition to radiotagging chicks to determine causes of mortality. Preliminary results indicate that at least 17% of chicks and 10% of adults were killed by vehicle collisions at one site in 2014, and 14% of fledglings were at another. At least 2 adult mortalities resulted in subsequent nest abandonment by the bird's mate, and 3 abandonments near the road were unexplained, with adults disappearing during incubation. Further, radiotelemetry led to the discovery of a chick that died off-road from injuries likely caused by a vehicle, raising the possibility that more plovers are killed by vehicles than can be counted using road surveys. In 2013, correcting observed avian mortalities for detection and persistence increased our estimate by 36%, so we expect that plover mortality estimates for 2014 will also increase. These losses, coupled with low apparent nest (0.28-0.39) and chick (0.12) survival, indicate that road mortality may have a substantial impact on plovers at this site. Prior non-systematic counts of carcasses likely underestimated road mortalities, illustrating the importance of correcting for detection and persistence.

Elbin, Susan B.¹; Craig, Elizabeth C.²

¹NYC Audubon New York NY 10010 USA. ²Cornell University Ithaca NY 14853 USA
selbin@Nycaudubon.org

Creating an Über Urban Common Tern Colony in New York City

The Common Tern (*Sterna hirundo*) is a colonial seabird with a circumpolar distribution. Common over parts of its range, it is number 7 in National Audubon's list of Common Birds in Decline and a priority species for the Atlantic Flyway program. In New York, Common Terns are a state-threatened species. Although conservation efforts and environmental regulations have brought this species back from the brink of extinction, population monitoring and habitat management are needed to maintain current breeding colonies. One major threat at the colony is space limitation: both from habitat destruction and from competition with other nesting waterbirds. Here we describe an enhanced nesting habitat created on 1 of 3 abandoned piers at Governor's Island in the New York Harbor, USA. Common Terns were already present at the site in small numbers. In 2008 a colony of approximately 75 adults was recorded, growing slowly to an estimated 88 birds in 2009. In 2013 we used ground counts and found 150 nests. In 2014 we were restricted in our survey and restoration work to one pier (Lima). In 2013 that pier supported a high count of 10 nests. After habitat manipulations in 2014, the number of nests increased by 300% (n= 32). This paper describes how we increased nesting space by adding crushed oyster shell to the existing area.

Escalante-Avilés, Israel¹; Selem-Salas, Celia Isela; Gonzáles-Herrera, Linda Rosana¹; Huchán Herrera, José²

¹UADY, Mérida, YU, 97217, México. ²INAH, YU, 97217, México. israel_esav@live.com

Estructura de la comunidad de aves de la zona arqueológica de Uxmal, Yucatán, México

Las aves juegan un papel importante, ya que a través de sus diferentes roles ecológicos ayudan a mantener un equilibrio natural en los ecosistemas contribuyendo a la recuperación y restauración de las selvas. La Península de Yucatán alberga una gran diversidad de especies de aves, desde residentes y endémicas hasta las migratorias, que pasan el invierno en dichas selvas. Existen numerosos estudios avifaunísticos dentro de las Áreas Naturales Protegidas (ANP's), sin embargo la Reserva Biocultural del Puuc, decretada en el 2011 como reserva estatal, no cuenta con estudios de este tipo. Dicha ANP abarca diferentes asentamientos mayas, dentro de los cuales se encuentra la zona arqueológica de Uxmal. Por lo que el objetivo de este trabajo fue estimar la abundancia y diversidad de aves en la zona arqueológica. Para lo anterior, se utilizaron dos métodos: transecto en banda y captura mediante redes de niebla, durante dos días por seis meses. Como resultado se registraron 84 especies pertenecientes a 31 familias y 15 órdenes, siendo la familia Tyrannidae la mejor representada con 13 especies. Los gremios tróficos representados fueron: insectívoros, carroñeros, rapaces, frugívoros, nectarívoros, herbívoros y semilleros. De las especies registradas, 71 fueron residentes, 13 Migratorias y dos transitorias. Cabe destacar la presencia de cinco especies endémicas de la Provincia biótica, y cinco especies sujetas a protección especial, se acuerdo con la NOM-059-SEMARNAT-2010. El listado de aves reportado es el primero para la zona arqueológica, donde se muestra una elevada riqueza de especies, a pesar de la fuerte influencia antropogénica que presenta. Los resultados resaltan la importancia de la conservación de las zonas arqueológicas como sitios que influyen en la conservación de la biodiversidad de la avifauna yucateca.

Esquivel-Bobadilla, Sarai*; Rodríguez-Estrella, Ricardo; García de León, Francisco Javier.

CIBNOR, La Paz, BC, 23096, México. sesquivel@cibnor.mx

Filogeografía del pájaro carpintero de gila (*Melanerpes uropygialis*) en el noroeste de México

Diversos trabajos filogeográficos en el noroeste de México sugieren como hipótesis explicativa predominante de la distribución espacial de linajes de la fauna el principio de vicarianza, proponiendo la existencia de canales marinos. Sin embargo, la evidencia geológica de tales eventos es escasa. Por otro lado, no se le ha dado mucha importancia a los cambios climáticos ocurridos durante el Pleistoceno y a la heterogeneidad ambiental, los cuales podrían ser factores moldeadores importantes de la distribución de las especies. De esta manera, el pájaro carpintero de Gila resulta ser buen candidato para revisar y confrontar las hipótesis sobre dichos eventos a través del uso de marcadores mitocondriales, ya que es una especie característica de desiertos, teniendo una distribución a lo largo de la PBC, así como en la parte continental de México. Los resultados preliminares muestran 3 filogrupos, el primero incluye las localidades de BCS, el segundo, localidades de BC, Isla Tiburón y Chihuahua, y el tercero a las de Sinaloa. Para el filogrupo dos, se sugiere que la zona de las grandes islas en el Golfo de California ha servido como un puente, permitiéndole a esta especie cruzar el mar a través de las islas de la región. Es posible que durante la última glaciación cuando el nivel del mar bajó más de 120 metros permitiendo que la PBC y el continente se conectaran, se pudiera facilitar la dispersión de esta ave hacia la Península. La separación del filogrupo de BCS sugiere la existencia del canal medio peninsular de estudios previos, pero no hay evidencia geológica actual que lo sustente. Una explicación alternativa, podría ser que la región central de la Península en la cual se encuentra el desierto de Vizcaíno, la cual es una región con condiciones ecológicas extremas sirva como una barrera. Lo anterior tendrá que ser confirmado al secuenciar un mayor número de individuos, así como precisar los tiempos de divergencia mediante el uso de un reloj molecular.

Estay Stange, Andrés Eduardo¹, Rodríguez-Estrella, Ricardo² Bautista Ortega, Ricardo³.

¹Doctorado en Ciencias Biológicas, Universidad Autónoma de Tlaxcala, . ²Centro de Investigaciones Biológicas del Noroeste, S. C. ³Centro Tlaxcala Biología de la Conducta, Universidad Autónoma de Tlaxcala. andresestay@hotmail.com

Patrones de distribución y abundancia de rapaces nocturnas en los volcanes malinche e iztaccíhuatl.

La destrucción y la alteración de los hábitats naturales es en la actualidad la causa más frecuente del declive de las poblaciones de aves a escala mundial. Debido a los cambios en los ecosistemas, provocados por las actividades humanas, y a la necesidad de conservar la diversidad biológica para preservar la funcionalidad de los ecosistemas, es importante desarrollar estudios de diversas especies de aves rapaces, sometidas a diferentes alteraciones y condiciones de hábitat para evaluar la variedad de respuestas de los depredadores de primer nivel a las actividades humanas. En este estudio se presentan los resultados preliminares de presencia y abundancia de aves rapaces nocturnas en el Parque Nacional La Malinche (PNLM) y en el Parque Nacional Iztaccíhuatl-Popocatepetl (PNIP), en 2013 y 2014. Mediante reproducción de reclamos en puntos en dos tipos de ambiente, con actividad humana y conservado, se registraron 7 especies de rapaces nocturnas en el PNLM y 6 en el PNIP, con un

total de 195 individuos (60 PNIP y 135 PNLM). En los sitios conservados se registró la mayor diversidad en uno de los parques (PNLM, $H' = 0.91$ perturbado y $H' = 1.55$ conservado) (PNIP, $H' = 1.38$ perturbado y $H' = 1.39$ conservado). Las rapaces nocturnas en el PNLM fueron más abundantes en sitios conservados (49.5%) que en sitios perturbados (13.8%). En el PNIP, su abundancia fue también mayor en sitios conservados (41.6%) que en sitios perturbados (22.32%). Se discuten los resultados obtenidos entre zonas perturbadas por actividades humanas y las zonas con vegetación nativa.

Estrada, Christian G.; Rodríguez-Estrella, Ricardo

CIBNOR, Sevilla, AN, 41010, Spain. crissestrada2005@hotmail.com

Raptors as poor indicators in the baja California peninsula desert

Predators have been considered good surrogates of biodiversity. Raptors as predators have been proposed and used as biodiversity surrogates. This assumption is based in the general idea of concordance between two taxonomic groups that show similar spatial/temporal structure, with the aim of using one of these groups as a surrogate group. If a surrogate group is determined theoretical inferences can be done and conservation strategies can also be established. Assemblage concordance measures the level of relationship between the compositional patterns represented by two groups of organisms. In this study, we evaluated the effect of spatial and environmental variability on the levels of assemblage concordance between top order predator e.g. raptors as surrogate species and vascular plants, reptiles, birds and mammals as target species, and also the potential causes for assemblage concordance and the degree to which surrogate assemblage can predict another in the southern section of the Baja California peninsula. We used a data set collected at an array of sampling points for our four biological assemblages. The levels of assemblage concordance varied for all cross-taxon comparisons. We discuss on the main mechanisms that may better explain assemblage concordance patterns. We used Mantel tests to evaluate the levels of community concordance and co-correspondence analysis to evaluate the performance of one taxonomic group in predicting the structures of other communities. We found that concordance between raptors and birds was due to similar responses to environmental gradients, whereas other patterns of assemblage concordance were likely generated by interactions among groups. However, the levels of predictability were low and no particular taxonomic group significantly predicted all other groups. The low and variable levels of assemblage concordance suggest raptors are not good biodiversity surrogates in this desert ecosystem.

Favela-Mesta, J^{1*}; Orona-Espino A¹, Estrada-Rodriguez J. L¹.

¹Centro de Estudios Ecológicos. Facultad de Ciencias Biológicas. Universidad Juárez del Estado de Durango. Avenida Universidad s/n Fraccionamiento Filadelfia. Apartado postal 146, Gómez Palacio, Durango, México. C.P. 35010. jfavela28@hotmail.com

Aspectos poblacionales de rapaces diurnas en el Cañón de Fernández, Lerdo, Durango, México

En este estudio se evaluaron los aspectos poblacionales de las rapaces diurnas, como lo son la densidad, abundancia, diversidad, distribución, estacionalidad, estatus de conservación y amenazas potenciales en el Parque Estatal Cañón de Fernández, en Lerdo Dgo. El trabajo se

realizó por medio de transectos de ancho variable (*Martella et al. 2012*). En el cual se obtuvieron un total de 416 registros del total de ellos se identificaron en 13 especies de aves rapaces, 6 de las cuales se encuentran en alguna categoría de Riesgo según la NOM-059-SEMARNAT-2010. Las especies que fueron identificadas son *Cathartes aura*, *Coragyps atratus*, *Pandion haliaetus*, *Falco columbarius*, *Falco sparverius*, *Accipiter striatus*, *Accipiter cooperii*, *Buteo lineatus*, *Buteo nitidus*, *Buteo jamaicensis*, *Buteogallus anthracinus*, *Parabuteo unicinctus* y *Buteo albonotatus*. Así mismo se obtuvo por el índice de diversidad de Margalef, una diversidad 1.99 especies en el área, lo cual indica que es una zona con baja diversidad de rapaces. Otoño resultó ser la estación con mayor número de especies, con un total de 11, seguida de invierno la cual registró 7 especies. En cuanto a la cantidad de registros totales, invierno fue el mejor con un total de 316, lo cual indica que en ese periodo se congregan en la zona muchos individuos en busca de refugio y alimento. El alto grado de heterogeneidad en el paisaje, debido a cambios antropogénicos, son determinantes en la estructura de la comunidad de rapaces, en su diversidad, abundancia y distribución. Se identificó la problemática de estas aves, y se proponen estrategias para su conservación, como el mantenimiento de sitios como este, lo cual resulta fundamental, en la conservación de aves, ya que las especies hacen uso de ellos en sus rutas migratorias.

Felton, Shilo K¹; Simons, Theodore R²; Pollock, Kenneth H., Addison, Lindsay H.⁴

¹NC Cooperative Fish & Wildlife Research Unit, Dept of Applied Ecology, North Carolina State Univ, Raleigh, NC, 27695, USA. ²USGS, NC Coop Fish & Wildlife Research Unit, Dept of Applied Ecology, North Carolina State Univ. Raleigh, NC, 27695, USA. ³Department of Applied Ecology, North Carolina State University, Raleigh, NC, 27965, USA. ⁴Audubon North Carolina, Wilmington, NC, 28411, USA. skfelton@ncsu.edu

Harnessing a collaborative database for demographic modeling of American Oystercatchers

The American Oystercatcher Working Group has developed an online banding-resight database through which members of the Working Group and the general public can submit banding and resight information via a standardized form. At the time of this analysis, the database contained banding records for 3656 American Oystercatchers and 31774 resight records from Massachusetts, New Jersey, Virginia, North Carolina, South Carolina, Texas, Georgia, and Florida. In a representative analysis we present a multistate population model from resight data of breeding oystercatchers on the three main islands of Cape Hatteras National Seashore from 2002-2011. We ranked models examining the effects of time and breeding location on survival and transition probabilities between islands using AIC. The top model indicated minimal effect of breeding site on the population. Most transitions reflected birds moving from initial breeding sites on Bodie Island to Hatteras Island. This indicates that territories on Bodie Island may be less desirable than those on Hatteras Island. Developing larger-scale population models from this database is problematic because resight data are often opportunistic and survey effort is unknown. We hope to develop new approaches to utilizing this database that will help us adjust resight data for variations in survey effort and detection probability. These include designed resight surveys of breeding birds and replicated counts on winter roosts.

Ferrer Sánchez, Yarelys¹; Rodríguez-Estrella, Ricardo¹; Martínez Morales, Miguel A.².

¹ CIBNOR, LA PAZ, BC, 23096, MÉXICO. ²ECOSUR, CAMPECHE, 24500, MÉXICO.
yferrersanchez@gmail.com

Hábitat de anidación de *Buteogallus gundlachii* en Cuba: implicaciones para su conservación.

Aunque Cuba tiene regulaciones estrictas sobre la cacería de fauna silvestre y un sistema de Áreas protegidas, especies endémicas como *Buteogallus gundlachii* enfrentan fuertes amenazas por actividades como el turismo. Por otro lado, la información sobre la ecología de esta especie rapaz limita el alcance de los planes de conservación. En este estudio se caracterizan parámetros reproductivos y el patrón de selección del sitio de anidación de *B. gundlachii* en parte del archipiélago Jardines del Rey, Cuba, durante 2012-13. Con la información de 27 nidos y matriz del paisaje alrededor de ellos se modelaron las diferencias entre nidos y puntos aleatorios. Además, se modela el área de anidación potencial de la especie que fue superpuesta con los límites de áreas protegidas (AP) y datos de uso de suelo para identificar sitios prioritarios para el monitoreo y posibles extensiones de AP. De los 33 territorios, se tuvo un éxito de eclosión de 0.6 y en promedio 1 volantón/pareja. Las parejas seleccionaron sitios de anidación en manglares abiertos con grandes áreas de bosques y vegetación costera en los alrededores y menor humedad en paisajes menos diversos con respecto a puntos aleatorios. Las áreas con alta probabilidad de presencia de nidos correspondieron al 2% de la predicción y el mayor porcentaje correspondió a áreas con baja probabilidad o ausencia (86%), con 33% de los nidos bajo protección y 27% cercanos/dentro de zonas de alto riesgo. Se identificaron y recomendaron dos extensiones de AP y sitios prioritarios en función del área con alta probabilidad de presencia. El desarrollo turístico y el consistente cambio de hábitat es la principal preocupación para la permanencia de la especie si la cobertura de vegetación costera, bosques y manglares decrece.

Ferrer Sánchez, Yarelys, Rodríguez-Estrella, Ricardo.

¹Cibnor, La Paz, Bc, 23096, México. yferrersanchez@gmail.com

Use of ecological niche modelling for habitat characterization of endemic raptors in Cuba.

Tropical raptors are of main concern because of the scarce and unevenly distributed information, limiting the scope of the conservation plans. We used an ecological niche model to generate geographic distribution maps of the endemic Gundlach's hawk and Cuban black-hawk in the central region of Cuba. Also, we used the layer of protected areas network to make habitat characterization and species conservation suggestions. The spatial distribution of the Gundlach's hawk and the Cuban black-hawk covered 828.4 km² and 649 km² respectively, accounting for 15 and 12% of the total area with suitable conditions. Gundlach's hawk distribution was fragmented, mainly depending of the forest distribution. Cuban black-hawk distribution was narrow, near the coastline, mainly concentrated in the cays. Forest compactness ratio and land use accounted for more than 50% of the relative contribution to the Gundlach's hawk model. Distance to coastline and urban zones accounted for more than 60% of the relative contribution in Cuban black-hawk model. Forests and mangrove represent the 62% and 49% of the Gundlach's hawk and Cuban black-hawk predictions respectively. The 71% of the forest area in the region is represented in the potential distribution of the Gundlach's hawk. Mangrove area (45%) occupies the 49% of the Cuban black hawk distribution. Urban

zones were the best represented modified area in both distributions. Six protected areas preserved 50% and 92% of the Gundlach's hawk and Cuban black-hawk distribution. Nevertheless, only one and three were effective, covering 27% and 30% of its overall distribution respectively. The consistent habitat changes are of main concern if area of mangroves and forests decrease.

Fitzsimmons, Owen N¹; Newstead, David ¹; Hardegree, Beau².

¹Coastal Bend Bays and Estuaries Program, Corpus Christi, TX, 78401, USA. ²US Fish and Wildlife Service, Corpus Christi, TX, 78411, USA owen@cbbep.org

Black Skimmer status and threats in Texas: Current population management and monitoring strategies.

Data from an annual, statewide survey conducted since the early 1970's by the Texas Colonial Waterbird Society indicates that the number of breeding pairs of Black Skimmers (*Rynchops niger*) in Texas has declined approximately 70% over the past 20 years. We have monitored reproductive success of Black Skimmers in a portion of the Laguna Madre in Texas since 2007, finding an average fledging rate of 0.15 per nest. We present these data and outline how management strategies in Texas are adjusting concurrently with changes in human demographics, habitat, and predation, and we discuss other potential current and future threats. We also present first-year results of a skimmer colony monitoring effort, initiated in 2014, using game cameras to document the frequency and type of disruptive events at Black Skimmer colonies to better understand how such events may result in the observed colony failures and low reproductive rates. First-year results indicate that human disturbance may be negatively impacting skimmer colonies at a much greater rate than previously suspected.

Fraser, Jim¹; Newstead, David ¹; Wang, Wenjuan²; Barzen, Jeb³; Burnham, James⁴; Shen, Xiaoyuan².

¹ Virginia Tech, Department of Fish and Wildlife Conservation, Blacksburg, VA, 24061-0321, USA. ² Nanchang University, Center for Watershed Ecology, Nanchang, 330031, China, ³International Crane Foundation, Baraboo, 53913, USA. ⁴ University of Wisconsin, Madison, WI, 53703, USA. fraser@vt.edu

Poyang Lake: a waterbird conservation priority in eastern China.

Poyang Lake (29°08' N, 116°17'E) often is called the largest freshwater lake in China. In fact, the surface area varies from <800 km² to >3000 km². The lake's hydrology is complex, responding to inflows from the 5 largest rivers in Jiangxi Province, local rainfall, and the Yangtze River, but it is typified by high waters during the summer rainy season, and low waters in the winter. The drop in water level from summer to winter exposes up to 2000 km² of lake bottom including a vast inland delta. Extensive areas of shallow water exist most of the time. More than 0.5 million waterbirds of 125 species and 19 families have been counted there in winter. These counts were not corrected for re-sighting rate, turnover, or breeding birds, so the actual number of individual birds using the lake probably is much higher. Nineteen imperiled species (IUCN) have been recorded at the lake. With the degradation of other lakes throughout the central and

lower Yangtze River basin and rapid degradation of habitats on China's East Coast, the relative importance of Poyang Lake to waterbird conservation will increase. Activities that will alter the system's historic water and sediment dynamics also are increasing. These include widespread sand-dredging, conversion of seasonal wet meadows to industrialized agriculture, and the influence of the Three Gorges Dam on the bidirectional flow between the lake and the Yangtze River. Moreover there is a proposal under consideration to build a water control structure at the outlet of the lake which could have important impacts on lake levels, and consequently, on waterbird habitats. Additional studies of the relationship between water levels, foraging habitats, and waterbird populations, in the context of global climate change and shifting human use patterns, are urgently needed to facilitate consideration of waterbird conservation in land-use decision-making.

Friedrich, Meryl J.

Virginia Polytechnic Institute and State University Blacksburg VA 24061 USA
meryl2@vt.edu

The importance of site to mate choice: Mate and site fidelity in Piping Plovers

Each breeding season, seasonally monogamous birds can divorce or reunite with their previous year's mate, assuming the survival and return of both partners. We tested seven variables (male age, female age, male arrival date, female arrival date, difference in male and female arrival dates, breeding density, and former reproductive success) to determine which best explained the interyear reunion rate of a seasonally monogamous shorebird, Piping Plovers (*Charadrius melodus*), nesting on dynamic sandbars on the Missouri River, USA (2005-2012). Of 252 pairs in which both members returned to the breeding grounds the following year, only 20% reunited. Early arrival of males, and to a lesser degree females, was the main driver of reunion; age and breeding density were somewhat supported. Reproductive success was not a significant predictor of reunion, but in general, successful birds remained nearer to their previous nest site than unsuccessful birds, indicating an effect of reproductive success on dispersal distance. Males were highly site-loyal, which is typical of Charadriids. Because females dispersed farther than males, especially in response to nest failure, we concluded that they were the sex initiating divorce in order to improve their reproductive success. This could have been done through selection for higher quality mates or sites, though we did not find that females chose mates with a greater mass to body size ratio or habitats with more foraging area. Females did appear to be choosing sites, however, because when successful, widowed females remained just as near their former nest site as did reunited females, but unsuccessful widowed females moved farther, suggesting they were choosing a new mate or site based on their past breeding success. The high divorce rate we observed is similar to that of other species that inhabit ephemeral sites, where wide variation in habitat quality from year to year allows birds to reevaluate their choice of site.

Galindo-Espinosa, Daniel¹; Palacios, Eduardo²

¹Centro Interdisciplinario de Ciencias Marinas, Instituto Politécnico Nacional La Paz 23096 México. ²Centro de Investigación Científica y de Educación Superior de Ensenada La Paz 23050 México. dgalindoe@gmail.com

Population ecology of the Snowy Plover, *Charadrius nivosus*, in northwestern Baja California, Mexico

The Snowy Plover is a threatened species in Mexico. The breeding population of San Quintin Bay (SQB) is the largest of the Baja California Peninsula, which is part of the threatened distinct population segment of the USA. We are investigating the effect of natural and anthropogenic factors in the breeding success and winter survival of Snowy Plovers in salt flats, sandy beaches and saltworks of SQB. After recording one of the lowest population abundance in 2012 (128 adults), adult numbers remains stable for the 2013-2014 breeding seasons (~300 individuals). In 2012 97% of the nests were found in salt flats, while in the following seasons plovers also nested on beaches (2013: 29%, 2014: 16%) and salt flats (2013: 64%, 2014: 70%). Moderate predation rates and human disturbances in 2013 and 2014 accounted for a higher nesting success (~30%) comparing with 2012 (12%) when high predation rates and human disturbances were recorded. During the winters 2012-13 and 2013-14 the plover population in SQB (~600 individuals) was almost double that 2011-12 because of the arrival of plovers from USA populations. We found that most individuals changed their residence status and only 25% of the plovers are permanent residents in SQB. Overall, these results suggests that predation and human disturbances are negatively affecting the reproductive success of this population, and that SQB is important for the local resident population, but also for migratory populations from USA during winter.

García de la Puente Orozco José Emer¹, Cantú Juan Carlos²

¹Universidad Autónoma de Baja California Sur. Posgrado en Ciencias Marinas y Costeras La Paz BS 23080 México. ²Defenders of Wildlife de México, México DF 9890 México. capacitacionave@gmail.com

Aviturismo en México, el ejemplo de las estrategias para su desarrollo en Baja California Sur.

El ecoturismo a nivel mundial es uno de los principales generadores de divisas y se caracteriza por su compromiso con la conservación y el desarrollo de las comunidades propietarias del recurso. La actividad ecoturística de mayor auge y rentabilidad en la actualidad es el aviturismo, la cual consiste en la observación y correcta identificación de aves en su hábitat natural para lo cual el turista se desplaza de su sitio de origen a la localidad donde llevara a cabo la actividad. Cada día más países se benefician del aviturismo tal como es el caso de Costa Rica, Perú, Colombia, entre otros. El presente trabajo tuvo como objetivo analizar los factores que le otorgan a México un gran potencial para el desarrollo del aviturismo. Dentro de estos se destacaron 1-Su riqueza de avifauna (1096), 2-El alto número de endemismos (111 - 125 dependiendo del autor), 3-Su cercanía con los principales países emisores de avituristas (E.U.A. y Canadá) 4-Contar con los corredores migratorios Americanos, entre otros. Como caso de ejemplo específico Baja California Sur posee un total de 433 especies de aves lo cual sumado a su cercanía con Estados Unidos y su gran afluencia turística coloca al estado como idóneo para el desarrollo del aviturismo. En los últimos 4 años se efectuaron por parte de diferentes instancias una serie de esfuerzos y estrategias para implementar con éxito el aviturismo, tales como identificación de los sitios con mayor potencial, cursos de capacitación, elaboración de guías, programas de concientización e integración comunitaria, estrategias de difusión y rutas especializadas para la observación de aves. Todo esto con la finalidad de asegurar el éxito de la actividad aviturística en el estado.

Garza Herrera, Alfredo

Centro de Ecología Regional, A.C. Durango Du 34120 México ceracdgomx@yahoo.com.mx

Aves del Estado de Durango

Se sintetiza la información sobre riqueza, endemismo, situación de riesgo y estacionalidad de las aves de Durango en 4 décadas, a través de la revisión de diversos autores, así como de observaciones y publicaciones propias, incluyendo todos los ecosistemas del Estado y los registros de sitios de dos estados circunvecinos (a no más de 500 metros del límite estatal). Se utilizaron mapas de distribución predictiva de NatServe que predicen la distribución de las especies sobre las características ecológicas de los sitios. Se registran 426 especies, pertenecientes a 233 géneros, de 63 familias y 20 órdenes. Doscientas treinta y cuatro especies son residentes (54.9%), 128 son migratorias de invierno (30.0%), 24 migratorias de verano (5.6%), 38 son ocasionales (8.9%) y 6 son exóticas o reintroducidas. La Paloma euroasiática (*Streptopelia decaocto*) ha invadido en los últimos 10 años ampliamente el Estado. Se consideran 48 especies en riesgo (NOM-059-SEMARNAT-2010), es decir, el 11 % del total están en alguna categoría: 27 requieren protección especial, 15 están amenazadas y 6 están en peligro de extinción. Ciento cincuenta y dos son migratorias de invierno o de verano (siendo mayor el número de invernales). Diez especies son endémicas y 7 cuasi endémicas a México. Se visualiza la importancia de realizar inventarios en otras áreas de Durango, para identificar zonas que permitan y garanticen la conservación de las aves y sus hábitat. Se define que es necesario incorporar nuevas áreas a un sistema estatal de áreas naturales protegidas o a nivel federal (CONANP) por la importancia, tanto de la Sierra Madre Occidental como el Desierto Chihuahuense.

Garza Herrera, Alfredo

Centro de Ecología Regional, A.C. Durango Du 34120 México ceracdgomx@yahoo.com.mx

Condiciones ecológicas de dos Áreas Naturales Protegidas y su asociación con las rapaces diurnas.

Se evaluaron las condiciones ecológicas que delimitan la existencia de las rapaces del Parque Nacional Sierra de Órganos (Zacatecas) y la Reserva de la Biosfera La Michilía (Durango). Se determina la distribución, abundancia relativa y uso del hábitat de 18 especies de rapaces a través de monitoreo y análisis de sistemas de información geográfica, datos de campo y base de datos. El monitoreo se realiza a partir de la participación social (ejidos y propietarios de los predios incluidos en las áreas de muestreo), después de una capacitación adecuada, equipándolos y otorgándoles financiamiento para realizar la actividad. Se efectúa un monitoreo para detectar la abundancia, distribución y productividad de presas disponibles para el Águila Real y las rapaces asociadas a través de muestreos sistemáticos. Se identifican las zonas de conectividad y/o de importancia ecológica entre las dos áreas naturales protegidas y dentro de cada una, para definir las condiciones favorables para la ocurrencia de las especies, ubicando las zonas de riesgo y poder proponer acciones de mitigación para la protección de las especies. Se realizaron actividades de difusión sobre el conocimiento de las rapaces y del Águila Real a los productores y habitantes locales, para contribuir en la educación y conservación de las especies, así como reorientar las posibles malas prácticas por el uso de agroquímicos y sus consecuencias para el ambiente y las especies de interés.

Garza-Torres, Héctor Arturo¹; Rodríguez-Ruíz, Erick Rubén²; López-Hernández, Martha³; Banda-Valdez, Alfonso⁴

¹Instituto de Ecología Aplicada, Universidad Autónoma de Tamaulipas. Avenida División del Golfo 356, Victoria TA 87140 México. ²Instituto Tecnológico de Cd. Victoria; Subsecretaría de Medio Ambiente, Gobierno del Estado de Tamaulipas Victoria TA 87083 México. ³CONANP Gómez Farías TA 87010 México. ⁴Subsecretaría de Medio Ambiente, Gobierno del Estado de Tamaulipas. Torre Bicentenario s/n, Piso 6, Victoria TA 87083 México. hagarza@uat.edu.mx

La guacamaya verde (*Ara militaris*) en la Reserva de la biosfera El Cielo y su área de influencia

La guacamaya verde (*Ara militaris*) es residente neotropical, su distribución es fragmentada abarcando desde el norte México hasta Argentina. La cual se considera como vulnerable a nivel global. En el noreste de México, cuenta con poblaciones aisladas y poco conocidas, nosotros documentamos información biológica, de abundancia y biogeográfica de *A. militaris* en la Reserva de la Biosfera "El Cielo" y su área de influencia, se realizaron 262 muestreos, contando un total de 5863 individuos durante los años 2013 y 2014, en 104 localidades, del cual el 30% presentó valores nulos, y el resto de las localidades presentaron desde 2 a 1186 individuos, con un promedio de 59.93 individuos por localidad. En el municipio de Jaumave, se registró la mayor concentración de guacamayas con un total de 389 individuos el 30 de diciembre del 2013. La mayoría de los registros se presentaron dentro de la poligonal de "El Cielo". Sin embargo, la distribución de dicha especie durante el otoño-invierno comprende un área mayor. Los movimientos latitudinales que realizan las poblaciones de *A. militaris* corresponden a regionales (San Luis Potosí, Tamaulipas y Nuevo León) y elevacional en "El Cielo" que ocurren durante la temporada de otoño-invierno, hacia la búsqueda de sitios de alimentación en las tierras bajas, hacia la vertiente este de la Sierra Madre Oriental. Respecto a los sitios de anidación se ubicaron siete localidades, que corresponden a paredes rocosas, ubicadas entre los 500 a 1740 m snm, en el bosque mesófilo de montaña, bosque de galería, bosque tropical caducifolio y bosque de pino-encino, desde una pareja a 25 parejas activas. Además se registró la depredación de un polluelo por parte de un cuervo común (*Corvus corax*). Nuestros datos confirman que Tamaulipas concentra las poblaciones más grandes de esta especie, además en esta entidad la especie se encuentra utiliza las comunidades rurales como sitios de alimentación.

González Olvera; Merit¹; Martínez Maya; José Juan²; Suzán Aspíri; Gerardo³; Osorio Beristain; Marcela⁴

¹Facultad de Medicina Veterinaria y Zootecnia, UNAM, Tulancingo, Hidalgo. 43648 México; ²Departamento de Medicina Preventiva y Salud Pública, Facultad de Medicina Veterinaria y Zootecnia. UNAM. ³Departamento de Animales de Laboratorio y Fauna Silvestre, Facultad de Medicina Veterinaria y Zootecnia. UNAM. ⁴Centro de Investigación en Biodiversidad y Conservación (CIByC) Universidad Autónoma del Estado de Morelos. merruso@hotmail.com

Presencia de hemoparásitos en aves silvestres del municipio de Tepalcingo en la Sierra de Huautla, Morelos.

México tiene una gran diversidad de aves, pero la información acerca de hemoparásitos en ellas es escasa. Los hemoparásitos son organismos que viven en la sangre del hospedador

durante al menos una etapa de su desarrollo. El objetivo de este trabajo fue identificar hemoparásitos en aves silvestres de la Sierra de Huautla, Morelos, México. Se realizó un muestreo no probabilístico en tres zonas definidas de mayor a menor grado de conservación como: conservada, perturbada y agrícola; durante 2 temporadas: secas y lluvias (Marzo y Julio del 2013). Las aves se capturaron utilizando redes de niebla, y se obtuvo sangre por corte de uña o por punción de la vena braquial y posteriormente se dejaron en libertad. Con la sangre se realizaron tres frotis de capa fina, por ave. En total se capturaron 142 aves de 24 géneros y 33 especies. La captura fue estadísticamente mayor en lluvias que en secas ($p > 0.05$). La frecuencia de hemoparásitos encontrados en ambos periodos fue de 28.2% para *Haemoproteus* spp, 2.1% para *Plasmodium* spp y 4.9% para microfilarias, (en total 28.8% de individuos infectados). No se encontraron diferencias estadísticas en las hemoparasitosis por temporada de captura, ni por grado de conservación ($p > 0.05$). La intensidad de infección de eritrocitos encontrada fue: 26 aves con una infección baja ($< 0.1\%$), 13, media, (0.1-0.5%) y una con alta ($> 0.5\%$). Es necesario realizar más investigaciones para determinar la presencia de hemoparásitos y los efectos en las aves silvestres, ya que pueden perjudicar a los individuos y a las poblaciones; además, algunos pueden representar un riesgo para la salud pública o la de los animales domésticos.

González-Herrera, Rosana¹; Chablé-Santos, Juan¹; Aguilar-Cordero, Wilian¹

¹Universidad Autónoma de Yucatán Mérida YU 97000 México rosanagh9@gmail.com

Aves silvestres comercializadas en la ciudad de Mérida, Yucatán

El objetivo de este trabajo fue identificar las especies de aves silvestres que son comercializadas así como aquellas que son aprovechadas en la zona urbana en la ciudad de Mérida. Metodología: el trabajo se realizó en dos etapas: 1) Disponibilidad comercial y 2) Aceptación. Etapa 1: para el registro de especies, se realizaron visitas en dos mercados de la ciudad de Mérida, el Mercado Lucas de Gálvez (LG) y el Mercado de San Roque (RQ). Para LG fueron 22 ocasiones en las que se obtuvo información y para RQ fueron 17. Se registraron precios y frecuencias de venta. Etapa 2. Se realizaron recorridos en el área urbana de la ciudad de Mérida, abarcando 150 manzanas o bloques, anotando las especies observadas en los recorridos. Resultados: Etapa 1: En total se verificaron 28 especies incluidas en 6 órdenes y 14 familias taxonómicas. Veintiuna especies fueron residentes, 8 visitantes de invierno y una transitoria. Las familias mejor representadas fueron Cardinalidae con 7 especies, Icteridae con 4 y Psittacidae con 3. Para LG se verificaron 25 especies, 6 de ellas como exclusivas y en RQ fueron 21 con 2 exclusivas. Las especies con mayor frecuencia de venta para ambos mercados fueron *Cardinalis cardinalis*, *Passerina ciris*, *Spinus psaltria*, *Passerina cyanea*, *Sporophila torqueola*, *Tiaris olivaceus* y *Volatinia jacarina*. De acuerdo con la Normatividad Mexicana, 4 especies se encuentran bajo Protección especial. También se verificaron 3 especies endémicas de la Provincia Biótica de la Península de Yucatán. Etapa 2: Se registró la presencia de aves silvestres en 102 de las 150 de las manzanas censadas. Fueron 19 las especies verificadas, siendo *C. cardinalis*, *Amazona albifrons*, *P. cyanea* y *S. psaltria* las que presentaron mayor frecuencia aparición con el 48%, 38%, 28% y 23% respectivamente, así como las más abundantes. Con estos resultados se determina que las especies más comercializadas tanto en la oferta como en la demanda son *C. cardinalis*, *P. cyanea* y *S. psaltria*.

González, Rubio Sanvicente Cristina; Rodríguez-Estrella, Ricardo; García De León, Francisco Javier

Centro De Investigaciones Biológicas Del Noroeste La Paz BC 23096 México
cgrs83@gmail.com

Filogeografía y genética de poblaciones del colibrí de Xantus de la Península de Baja California

Los estudios sobre patrones filogeográficos de poblaciones naturales ofrecen una visión sobre los procesos que influyen en la divergencia de linajes en una región en particular. Sin embargo, identificar los procesos que causan estructura filogeográfica no es siempre claro, por lo que es necesario utilizar información histórica para explicar patrones recientes. Con el fin de dilucidar la influencia de procesos ecológicos o geológicos sobre la estructura genética y filogeografía de la única especie de colibrí endémica de la Península de Baja California (PBC), *Hylocharis xantusii*, se analizaron secuencias mitocondriales de tres genes concatenados (Cytb, COI y ND2; 1,750 pb en total) en 80 individuos. Los análisis filogenéticos y de genética de poblaciones, mostraron una marcada estructura filogeográfica, separando el norte y el sur de la distribución de *H. xantusii*. Ambas áreas comparten haplotipos ancestrales, y de acuerdo a los tiempos de divergencia estimados, los haplotipos distribuidos en la región norte comenzaron a divergir de la región sur, dentro de los últimos 700,000 años, sugiriendo al menos dos áreas de refugio. Aunque aparentemente no existan barreras geográficas entre las poblaciones de *H. xantusii*, su distribución no es continua, y está relacionada a la cobertura vegetal y distribución espacial de los ambientes de oasis. Estos resultados señalan un escenario de aislamiento poblacional, resultando en una estructura filogeográfica reciente, como resultado de las fluctuaciones climáticas que han influido en la PBC.

Gonzalez-Alfonso, Alieny; Jimenez-Reyes, Ariam; Acosta-Cruz, Martín; Mugica-Valdés, Lourdes; García-Lau Ianela

¹Facultad de Biología, Universidad de La Habana Plaza de la Revolución LH 10400 Cuba
aglez@fbio.uh.cu

Estado poblacional de la Garza Rojiza (*Egretta rufescens*) en Cuba

La Garza Rojiza (*Egretta rufescens*) es la única garza con algún grado de amenaza en la región Neotropical. Dentro de su rango de distribución en el Caribe insular, Cuba podría constituir un sitio importante para su conservación. A partir de observaciones de campo y bibliografía, se documenta la frecuencia de ocurrencia, abundancia y variación longitudinal por morfo en humedales cubanos típicos para la especie. La Garza Rojiza estuvo presente en 62 de las 70 áreas consideradas (89% de ocurrencia). La abundancia promedio de Garza Rojiza en Cuba, teniendo en cuenta únicamente los valores máximos fue de $35,6 \pm 48,0$ individuos/conteo. Al realizar el análisis de la abundancia promedio por localidad se encontró que los sitios más importantes fueron las lagunas de: La Zanja ($65,9 \pm 36,6$), Cagüey ($29,5 \pm 27,9$), Mampostán ($22,4 \pm 10,6$) y Las Salinas ($21,3 \pm 19,0$). Los valores máximos de Garza Rojiza registrados en estos cuatro humedales superaron los 50 individuos. Incluso, en las localidades de La Zanja y Las Salinas los valores máximos superaron los 90 individuos. En total se registraron 155 parejas nidificantes distribuidas en trece áreas de cría. Respecto de la nidificación, se registró la mayor cantidad de nidos en Cayo Fogoncito y Cayo Kiko (27), seguido por Birama y Cayo

Las Palmas (19) y Río Máximo y Cayo Romano (15). La proporción del morfo rojo fue 0,60 para Cuba (N = 15), detectándose una disminución en esta proporción hacia las áreas más orientales. Aún cuando los resultados podrían estar subestimando el tamaño poblacional de la Garza Rojiza en Cuba, éstos sugieren que los humedales cubanos son igualmente importantes a los del área insular históricamente considerada como clave para la conservación de la especie en la región caribeña de las Bahamas.

Gonzalez-Alfonso, Alieny¹; Acosta-Cruz, Martín¹; Mugica-Valdés, Lourdes¹; Jiménez-Reyes, Ariam¹; García-Lau, Lanela¹; Castro-Álvarez, Rodolfo²; López-Salcedo, Manuel³

¹Facultad de Biología, Universidad de La Habana Plaza de la Revolución LH 10400 Cuba.

²Empresa Nacional para la protección de la Flora y la Fauna Sur de los Palacios PR 10400

Cuba. ³Empresa Nacional para la protección de la Flora y la Fauna Las Tunas LT 10400 Cuba. aglez@fbio.uh.cu

Dinámica temporal de las poblaciones de Garza Rojiza (*Egretta rufescens*) en tres humedales cubanos

La Garza Rojiza (*Egretta rufescens*) resalta entre las garzas neotropicales por sus particularidades ecológicas y las amenazas actualmente que enfrenta. Uno de los aspectos más llamativos está relacionado con su plumaje polimórfico (morfo oscuro y claro). Aunque aún se desconocen los mecanismos evolutivos que contribuyen a mantener el fenotipo polimórfico, se conoce que la proporción por morfo varía longitudinalmente a lo largo del gradiente de distribución de la especie. A raíz de observaciones anecdóticas en Cuba y que indicaron la aparición de éste fenómeno en la especie, se realizó una caracterización sistemática de sus poblaciones en donde se evaluaron los efectivos poblacionales y la proporción por morfo. Para ello, se escogieron tres humedales de importancia para la especie distribuidos en la costa sur de Cuba (Maspotán, Las Salinas y Monte Cabaniguán). Se logró un seguimiento de la población durante los años 2012 y 2013. Los mayores valores poblacionales de la especie fueron encontrados en Monte Cabaniguán ($73,1 \pm 38,6$ individuos/conteo) seguidos de Maspotán ($16,8 \pm 5,1$ individuos/conteo) y Las Salinas ($16,3 \pm 10,3$ individuos/conteo). De los tres sitios, Maspotán fue la localidad donde los valores se mantuvieron constantes durante todo el año. Sin embargo, en Las Salinas los máximos poblacionales se encontraron en febrero (36), marzo (26) y mayo (17), mientras que en Monte Cabaniguán estuvieron entre noviembre (175), febrero (73) y marzo (92). Con respecto a la proporción por morfos, el mayor contraste se detectó en Monte Cabaniguán, siendo 92% de los individuos de morfo claro. En tanto, en Las Salinas la proporción de individuos claros fue de 59% y en Maspotán de 31%. Es probable que las características de dichos hábitat propicien las variaciones encontradas en los valores poblacionales y la proporción por morfo. No obstante resultan evidentes las marcadas diferencias en las proporciones de la Garza Rojiza en el occidente y oriente del país.

Green, M. Clay¹; Wilson, Troy²; Moore, Amanda A.¹

¹Texas State University San Marcos TX 78666 USA. ²US Fish and Wildlife Service Atlanta GA 30345 USA. claygreen@txstate.edu

Development of the database clearinghouse for the Reddish Egret Working Group

The Reddish Egret Working Group (REWG), initially formed in 2005, has developed the initial draft of the Reddish Egret Conservation Action Plan. Success of the Conservation Action Plan is highly dependent upon close working relationships and effective communications among the REWG members and its partners. Furthermore, the exchange of information including biological data (e.g. survey data) and status updates is essential to foster collaboration, coordinate efforts and encourage an invested interest from the REWG members and its partners. The development and implementation of a website and associated data clearinghouse are important and necessary stages in the coordination and implementation of conservation actions that promote the recovery of Reddish Egrets throughout their range. The overall objective of this project was to develop a cyber venue for dissemination and exchange of biological data collected on Reddish Egrets, which will advance the collective knowledge and capabilities of REWG members and partners to conserve the species. In this presentation, we will demonstrate the application of the database clearinghouse and discuss its utility and ways to improve upon dissemination and exchange of data among REWG members and shareholders.

Guzmán Arias Erika¹, Ortiz-Pulido Raúl¹

¹Laboratorio de Ecología de Poblaciones, CIB, UAEH, Km. 4.5 carretera Pachuca-Tulancingo Pachuca 13 42186 México. m.a.s._2@hotmail.com

Sub-red de interacciones colibrí-planta en el Parque Nacional los Mármoles, Hidalgo, México

El estudio de las interacciones mutualistas se apoya en la descripción de redes compuestas por muchas de especies interactuantes. Son pocos los estudios de redes de interacción colibrí-planta en México. En el Parque Nacional Los Mármoles la subred a nivel de paisaje se compone de seis especies de colibríes y 15 de plantas, que llevan a cabo 22 interacciones distintas. Un análisis preliminar por tipo de vegetación indica que el bosque de táscate cuenta con cinco especies de colibríes, cuatro de plantas y nueve interacciones; el bosque de encino tiene una especie de colibrí, tres especies de plantas y tres interacciones; y el bosque de pino, cuatro especies de colibríes, 10 de plantas y 12 interacciones. Las especies más importantes de colibríes por su grado de conexión a nivel de paisaje fueron *Hylocharis leucotis* (que tuvo 16 interacciones) y *Selasphorus platycercus* (11); en bosque de táscate fueron *S. platycercus* (11 interacciones) y *Archilocus colubris* (seis); y en bosque de encino y bosque de pino fue *H. leucotis* (tres y 10, respectivamente). Las especies más importantes de plantas a nivel de paisaje fueron *Salvia melissodora* (con 12 interacciones) y *S. mexicana* (11); en bosque de táscate *S. melissodora* (12 interacciones) y *S. mexicana* (11); en bosque de encino *Senecio aschenbornianus* (una interacción), *Salvia microphylla* var. *neurepia* (una) y *Bouvardia* sp. (una); y en bosque de pino *Lonicera mexicana* (cinco interacciones). Concluimos que *H. leucotis* y las especies de *Salvia* son especies clave en la zona, pues aparentemente mantienen el flujo de energía y materia en las subredes a nivel paisaje y tipo de vegetación.

Hackney, Amanda D

Audubon Texas, Texas City, TX 77590, USA ahackney@audubon.org

A History of the National Audubon Society & Reddish Egret (*Egretta rufescens*) on Green Island, Texas

Green Island, located in the Lower Laguna Madre is a major nesting site for Reddish Egret and was named a Priority Reddish Egret Nesting Colony site by the Gulf Coast Joint Venture in 2009. The National Audubon Society (NAS) has leased Green Island from the State of Texas since 1923 and manages the island as a sanctuary for colonial waterbirds. Since the 1920s, NAS has stationed a warden near or on Green Island each nesting season to protect the site and conduct surveys and management activities. We reviewed records from NAS (including warden and sanctuary reports), published literature and the Texas Colonial Waterbird Society (TCWS) survey database to compile information on the island's Reddish Egret population over time. Counts for the island from 1926-1936 compiled Green Island with other site totals for areas in the "Well's Bird Reservation," so a precise number for Green is unknown during those years. Fledged young are sporadically reported, and we calculated productivity percentages for years when possible. From 1922- 2013, the island and surrounding area has supported a high of 18,000 and a low of 8 Reddish Egret adults. Throughout the 1920s and 1930s the Well's Bird Reservation (including Green Island) regularly held 3,000 to 8,000 adults each year. TCWS surveys provided data from 1973-2013, during those years Green Island represented an average of 27.21% of all Reddish Egret breeding pairs counted on the Texas Coast. Much of this information has not been published widely on Green Island and could provide insight into early statewide populations.

Hamilton, Bayleigh L.¹; Renken, Rachel E.²; Maccarone, Alan D.²

¹Wichita High School East Wichita KS 67212 USA. ²Friends University Wichita KS 67204 USA.

A comparison of diurnal and nocturnal foraging behavior by Black-crowned Night-herons (*Nycticorax nycticorax*)

To better understand how time of day and light level affect foraging patterns and feeding success in a primarily nocturnal wading bird, observations were made in 2013 on Black-crowned Night-herons at an artificial weir located in the Little Arkansas River in Wichita, Kansas. Numbers of foraging birds at the weir were recorded using intervals of 1-h during both day and nighttime periods. Strike rates, capture rates, relocation rates, prey sizes, and rates of aggression were compared. A similar number of Black-crowned Night-herons used this site during the day and at night. Nor did mean strike rates, capture rates, or relocation rates differ between day and night. However, focal birds captured significantly larger fish during the day, when they also experienced rates of intra- and interspecific aggression three times higher. Since basic foraging patterns did not differ by time of day, it is likely that differences in the behavior, detection, and availability of prey account for the capture of larger fish during the day than at night. We have continued this study in 2014, and will report any differences between years. Thus far, it appears that diurnal foraging by Black-crowned Night-herons appears to be important in meeting increased energy demands during the breeding season.

Heath, Susan A.¹; Munters, Alexandra E.²; Koczur, Lianne M.³; Anderson, Amanda N.⁴

¹Gulf Coast Bird Observatory Lake Jackson TX 77566 USA. ² State University San Marcos TX, 78666 USA. ³Caeser Kleberg Wildlife Research Institute, Texas A&M University-Kingsville

Kingsville TX, 78363 USA. ⁴Environmental Institute of Houston, University of Houston-Clear Lake Houston TX, 77058 USA. sheath@gcbo.org

Factors influencing productivity in the Western Gulf population of American Oystercatchers

We monitored American Oystercatcher (*Haematopus palliatus*) pairs weekly from February through July for four nesting seasons (2011-2014) on the Upper Texas Coast. We found 303 nests of which 73 successfully produced at least one chick and 232 failed either at the egg stage or the pre-fledging stage. Overall productivity was .51 but productivity varied from a high of .78 in 2011 to a low of .21 in 2012. In order to capture nest fate we deployed Reconyx infrared motion activated cameras on 24 nests and outdoor security video cameras on 10 nests. Seventy-four nests had known causes of failure and 158 had unknown causes of failure. Known causes during the egg stage included over wash (n=40), mammalian (n=5), marsupial (n=1), avian (n=2), and reptilian (n=2) predation, apparent sterile eggs (n=16), researcher interference (n=2), and unknown (n=116). Known causes of pre-fledging chick mortality included starvation (n=1), over wash of nesting area (n=4), infection due to injury (n=1), and unknown (n=42). Weather events that drive high tides appear to be a major cause of nest failure but the number of unknown failures is confounding. We hypothesize that many unknowns are attributed to gull predation of eggs and chicks but an extensive camera study is needed to document more avian predation events.

Hernández-Alvarez, Adriana, Roberto Carmona, Nallely Arce, Victor Ayala-Perez, Joseph B. Buchanan, Lori J. Salzer, Pavel S. Tomkovich, James A. Johnson, Robert E. Gill, Brian J. McCaffery, James E. Lyons, Larry J. Niles; David Newstead.
Centro de Investigación Científica y de Educación Superior de Ensenada / Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur, México, 23084
ahdezalvarez13@gmail.com

Conectividad migratoria, abundancia y distribución de *Calidris canutus roselaari* en el Pacífico Americano.

El Playero rojizo (*Calidris canutus roselaari*) ocurre a lo largo de la costa del Pacífico de América. Respecto al estado de esta población y su distribución durante la temporada no reproductiva la información disponible es escasa, debido a su tamaño poblacional relativamente pequeño (estimado en 17,000 aves) y un conocimiento limitado de los sitios de invernación y paso importantes. Con base en reobservaciones de aves marcadas, evaluamos la conectividad migratoria de los Playeros rojizos en la costa del Pacífico. La conectividad más evidente se registró entre los playeros capturados y marcados en Guerrero Negro y Golfo de Santa Clara, México; y durante la migración de primavera entre estos dos sitios y dos humedales de Washington, EEUU. Recientemente reobservamos en Marismas Nacionales, Nayarit, un individuo anillado en Washington, por lo que el nivel de la conectividad entre estos sitios debe ser determinado con un esfuerzo mayor. Aves anilladas también se han observado en el delta del río Yukon y áreas de reproducción en el noroeste de Alaska. También revisamos literatura científica e información en línea (e.g. eBird) para compilar las observaciones de los Playeros rojizos (no anillados) en la costa del Pacífico. Se han registrado agregaciones relevantes (cientos o miles) de Playeros rojizos en la parte continental del noroeste de México; otros registros al sur de México, llegan hasta el sur de Chile, cerca del intervalo de distribución

invernal de la subespecie rufa. La información disponible sugiere la posibilidad de un área compartida durante la temporada no reproductiva entre ambas subespecies. Esfuerzos de conservación integrales requieren investigación adicional para identificar otros sitios de invernación y paso importantes para la subespecie.

Hernández-Colina, Arturo¹; Suzán Azpiri Gerardo¹; García Espinosa Gary²; Kemper Valverde Nicolás³.

Distrito Federal 09310 México 1.- Facultad de Medicina Veterinaria y Zootecnia, UNAM, Departamento de Etología, Fauna Silvestre y Animales de Laboratorio. 2.- Facultad de Medicina Veterinaria y Zootecnia, UNAM, Departamento de Aves. 3.- Centro de Ciencias Aplicadas y Desarrollo Tecnológico (CECADET), UNAM. taurendil9@hotmail.com

Las enfermedades de las aves acuáticas, su importancia y la creación de herramientas informáticas para atenderlas.

Los humedales son ecosistemas fundamentales que proveen diversos bienes y servicios, y las aves acuáticas son las que dependen de ellos. Estas aves son relevantes por sus funciones ecológicas y diversidad, pero son vulnerables a enfermedades infecciosas e intoxicaciones y han muerto desde miles a millones de individuos en una sola epidemia. Además, algunas enfermedades no las afectan directamente pero constituyen una amenaza importante para la salud de otras especies como las aves domésticas y el humano. El diagnóstico de estas enfermedades es difícil por la ausencia de evidencias concretas y la falta del personal necesario. Por otro lado, el avance de la tecnología ha sido exponencial y en los últimos años se han desarrollado muchas aplicaciones informáticas que facilitan la resolución de diversos problemas. Debido a la dificultad de diagnóstico y atención de las enfermedades en aves acuáticas, se decidió apoyarse en la tecnología. Por lo que se realizó un análisis semicuantitativo de los factores ecológicos que determinan la presencia de influenza aviar en las aves silvestres, con lo que se logró establecer una importancia relativa de cada especie para el estudio de esta enfermedad en México. En otro proyecto, se elaboró un sistema experto para apoyar el diagnóstico de las enfermedades que afectan más severamente a las aves acuáticas; las cuales fueron botulismo aviar, cólera aviar e intoxicación con plomo. Con base en un análisis epidemiológico y ecológico de estas enfermedades se desarrolló un software que le permite al usuario consultar una situación particular y obtener un diagnóstico presuntivo. De esta manera, actualmente se cuenta con herramientas confiables y eficientes que apoyan el estudio y diagnóstico de estas enfermedades, ayudando significativamente en la atención de contingencias y contribuyendo así a la conservación de las aves acuáticas y sus hábitats en México.

Hernández Noriega, Beatriz.

Oaxaca, 68725, México. adris_270791@hotmail.com

Riqueza de aves acuáticas en La Laguna De Guelatao, Oaxaca.

Oaxaca es la entidad más rica en especies de aves de México (Navarro et al., 2004). Nuestro objetivo fue identificar por primera vez las especies de aves acuáticas presentes en la laguna "encantada" localizada en la Sierra Norte de Oaxaca, así como su abundancia. Se identificaron tres especies migratorias: *Fulica americana* (n =14), *Tachybaptus dominicus* (n =1), y *Anas*

discors (n = 8). Tres especies residentes de razas domésticas: *Anas platyrhynchos* (n = 5), *Chen caerulescens* (n = 10) y *Cairina moschata* (n = 11) ésta última en peligro de extinción. Las especies encontradas se encuentran reportadas por Navarro et al., (2004), sin embargo, no hay datos específicos para la región de Guelatao. También se detectó un cambio en el número de crías de las especies domésticas, lo que podría estar relacionado con la presencia de depredadores y/o las condiciones climáticas. El presente trabajo confirma la importancia de este sitio para un reducido número de especies acuáticas migratorias lo que contribuye al conocimiento de la avifauna acuática del estado, y específicamente para Guelatao, región turística de México.

Hostetter, Nathan J¹; Simons, Theodore R¹; Schweitzer, Sara H²; Boettcher, Ruth³; Wilke, Alexandra⁴; Addison, Lindsay⁵; Swilling, William R⁶.

¹USGS-NC State University, Raleigh, NC, 27695, USA. ²NC Wildlife Resources Commission, New Bern, NC, 28562, USA. ³NC Wildlife Resources Commission, Painter, VA, 23420, USA. ⁴The Nature Conservancy of Virginia, Nassawadox, VA, 23413, USA. ⁵Audubon North Carolina, Wilmington, NC, 28411, USA. ⁶National Park Service, Manteo, NC, 27954, USA.
njhostet@ncsu.edu

Repeated count surveys help standardize multi-agency estimates of American Oystercatcher abundance

The extensive breeding range of many shorebird species can make the integration of survey data from multiple agencies problematic. We evaluated the effectiveness of standardized repeated count surveys conducted by multiple agencies to estimate the breeding pair abundance of American Oystercatcher (*Haematopus palliatus*) in the Southeastern United States. Breeding season surveys were coordinated among 8 different agencies and conducted at 96 plots across coastal North Carolina (93 plots) and the Eastern Shore of Virginia (3 plots). Plots were visited on 1 - 6 occasions during May - July, 2013. N-mixture models were used to estimate abundance and detection probability in relation to survey date, tide stage, plot size, plot location (coastal bay versus barrier island), and state. The estimated abundance of Oystercatchers in the surveyed area was 370 breeding territories (95% credible interval: 300 - 501) and 502 pairs (394 - 703), which was substantially higher than estimates that did not account for detection probability (maximum counts of 243 territories and 316 pairs). Detection probability was strongly influenced by a quadratic function of survey date, higher during the middle of the season (late - May to early - June; > 0.75) than earlier or later in the season (< 0.60). Detection probability was also higher during high tide, compared to low, rising, or falling tides. Abundance estimates from N-mixture models were validated at 13 plots by exhaustive productivity studies (2 - 5 surveys/wk). Intensive productivity studies identified 78 breeding pairs across 13 productivity plots, while N-mixture model abundance estimates from less intensive repeated surveys were 65 territories (55 - 106) and 76 pairs (62 - 127) for these same plots. Standardized replicated count surveys coordinated across multiple agencies provide tremendous potential to meet both agency level (e.g., state) and regional level (e.g., flyway) objectives in large-scale Oystercatcher monitoring programs.

Hunt, Kelsi L.; Catlin, Daniel H.; Fraser, James D.; Friedrich, Meryl J.; Karpanty, Sarah M.

Virginia Tech Department of Fish and Wildlife Conservation, Blacksburg VA, 24061 USA
hunt0382@vt.edu

When the levee breaks: Piping Plover demographic response to historic flooding on the Missouri River

For many shorebird species, quality and quantity of nesting and foraging habitat may affect population levels. On the Missouri River, piping plovers (*Charadrius melodus*) are limited by the amount of sandbar habitat available, which they use to nest and rear chicks. In 2004, the U.S. Army Corps of Engineers began constructing sandbars on the Missouri River, and from 2005-2010, we compared the effectiveness of these 'engineered' sandbars with that of 'natural' sandbars that occurred in the river by examining piping plover nest success, pre-fledge chick survival and adult survival. Engineered sandbars initially had relatively high nest success and chick survival; however, both decreased significantly over time. During the 2011 breeding season, a record-breaking flood covered virtually all sandbar habitat and resulted in increased adult mortality and complete reproductive failure. The flood also created an abundance of new sandbar habitat, and from 2012-2014 we compared the effectiveness of these 'post-flood' sandbars with the pre-flood engineered sandbars of the same age. We found that the post-flood sandbars performed better than pre-flood engineered sandbars. Both nest success and pre-fledge chick survival were higher on post-flood sandbars and, unlike engineered sandbars, did not decrease significantly in the first three years. Adult survival was also initially higher post-flood, but returned to pre-flood levels after the first year. On the Missouri River, it is likely that habitat quantity, rather than quality, is driving piping plover population numbers. The abundance of flood-created habitat resulted in lower nesting densities, and piping plovers on post-flood sandbars experienced relatively low levels of density-dependent predation and an abundance of foraging habitat. Our results will help managers identify, create, and preserve habitat for piping plovers, and other shorebird species in the future.

Huyvaert, Kathryn Patricia¹; Street, Phillip A.¹; Doherty, Paul F.¹; Awkerman, Jill A.²; Anderson, David J.³; Jimenez-Uzcatogui, Gustavo⁴

¹Colorado State University Fort Collins CO 80523 USA. ²Environmental Protection Agency Gulf Breeze FL 32561 USA. ³Wake Forest University Winston-Salem NC 27109 USA. ⁴Charles Darwin Foundation Santa Cruz Ecuador kate.huyvaert@colostate.edu

Survival and breeding probabilities of the critically endangered Waved Albatross

Bycatch in fisheries and extreme weather events influence survival and reproduction for a number of pelagic seabird species. These factors have been linked to recent declines in the breeding population of the critically endangered Waved Albatross (*Phoebastria irrorata*), a pelagic seabird whose breeding distribution is limited to Isla Española, Galápagos, Ecuador. We used a multi-state mark-recapture approach to estimate survival of pre-breeders and breeders as well as age-specific breeding probabilities from both historic and contemporary datasets. Mean annual survival probabilities were not different between the two datasets though we found evidence for a negative trend in adult survival over the last ten years. This trend suggests that a recent increase in fishing effort in the species' foraging zone could be linked to an increase in adult mortality. The majority of birds bred for the first time between the ages of 5 and 8. The probability of transitioning to and from a breeding to a non-breeding state varied across years and datasets. The probability of returning to a breeding state was negatively associated with sea surface temperature anomalies for birds in the historic dataset but this probability was positively associated with annual sea surface temperature for birds in the contemporary dataset. This contrast emphasizes the need for additional studies on foraging strategies, prey availability, and other factors linked to reproductive decisions in this species.

Ibarguchi, Gabriela

Arctic Institute of North America, University of Calgary, Calgary, AB, T2N 1N4, Canada.
gabriela.ibarguchi@ucalgary.ca

Mountain-building, refugia and hotspots of avian diversity

According to the 2012 Waterbird Population Estimates Summary Report from Wetlands International, and the IUCN Red List from 2012, 24% of the 871 globally recognised waterbird species are in the Globally Threatened or Near Threatened categories. While progress is being made in identifying critical habitat and diversity hotspots, on documenting the most pressing drivers of waterbird population declines, and on international dialogue and conservation efforts locally and world-wide, knowledge gaps remain about the ecology, natural history, and habitat needs of many species. While a key priority for waterbirds and for avian species in general has been the identification of species or population-specific attributes and trends, fewer studies have focused on documenting genetic diversity hotspots also. Genetic information can be invaluable for delineating management units, and to help guide conservation priorities, in particular if diversity losses may potentially reduce the resilience and adaptation potential of populations. While genetic surveys may not always be feasible, understanding the evolutionary history and biogeography of species may provide some insight to help identify key areas for conservation priority. Here the presence of long-term refugia is investigated with respect to their role as population and genetic diversity sources during recolonisation events. In particular, the role of mountain-building is examined in the creation of habitat heterogeneity and long-term refugia which may potentially harbour high lineage diversity. The utility of identifying such locations is examined as a way to aid the investigation of critical habitat and diversity hotspots for conservation priority.

Karpanty, Sarah M; Gieder, Katherina D.; Fraser, James D.; Catlin, Daniel H.; Zeigler, Sara
Virginia Tech, Blacksburg, Blacksburg, VA, 24061-0321, USA. karpanty@vt.edu

Quantifying the effects of sea-level rise and management decisions on piping plovers.

Barrier islands provide essential ecosystem services for human populations and support a number of imperiled wildlife species. These islands are extremely vulnerable to the effects of sea-level rise and storms, particularly because they are exposed to the open ocean and are low in elevation. Additionally, many barrier islands have been human-modified such that the natural responses of these islands to sea-level rise and storm surge has changed. Given that sea-level rise rates are projected to increase over the next century, and the importance of barrier islands for both humans and wildlife, there is an urgent need to develop a tool that can predict how sea-level rise will affect these islands in the future. We present three linked models that can be used to predict sea-level rise effects on barrier islands by linking the effects of sea-level rise and shoreline change to subsequent dynamic change in geomorphological features, including the effects of potential beach management actions, to changes in the probability of nest presence and absence for the federally-threatened Piping Plover (*Charadrius melodus*). We tested model predictions at Assateague Island in Maryland and Virginia using hindcasting techniques for the years 1999, 2002, and 2008, ultimately comparing predicted and actual nest locations for these

years. We then forecasted the effects of various combinations of sea-level rise rates and beach management strategies on a portion of the island for which data used to inform the model were most complete. Our findings indicate that modest sea-level rise rates may promote more nesting habitat at this location in the future and that certain management strategies, such as sand nourishment, may reduce this increase in nesting habitat by encouraging vegetation growth that would render nesting habitat unsuitable. We plan to test and to refine this linked model for other locations on Assateague Island and other barrier islands along the U.S. Atlantic Coast.

Shahid, B. Khan; Javed, Salim; Shakeel, Ahmed; Shah, Junid N.; Hammdi, Abdullah A.; Hammadi, Eissa Ali.

Environment Agency Abu Dhabi, Abu Dhabi, United Arab Emirates skhan@ead.ae

Breeding tern species in Abu Dhabi Emirate (UAE); current status and conservation challenges

Many offshore and near shore islands in the Abu Dhabi Emirate (United Arab Emirates) are particularly important for colonies of breeding tern species. Long term monitoring of four national priority tern species on nearly 30 islands has been undertaken annually since 2003. Counts for breeding pairs are conducted in summer during peak breeding season when birds are on nests. Lesser crested terns breed in large colonies, in addition to total counts, quadrat sampling is used to estimate the number of nests. Crested tern, White cheeked tern and Saunder's little tern breed in small scattered colonies and are counted while incubating. During 2014, Lesser crested tern was the most abundant tern species with 42251 pairs while Saunder's little tern with less than 80 pairs was the least abundant. The most widely distributed species was the White-cheeked tern, 8174 pairs were recorded from 23 sites while Crested Tern was recorded from a single site, it recovered after a decline of only 246 pairs in 2008 to 1128 pairs in 2014. Bridled tern was recorded from 22 sites having 17880 pairs. Species such as Lesser crested tern have benefited from on-site protection and have increased gradually by about 100% compared to numbers in 2003. Number of breeding pairs for the four tern species is stable, no statistically significant difference was observed over the years. Comparison of the current numbers with data collected in 1994-95 indicates changes in distribution due to loss of species from areas that witnessed large scale development. At present, many important breeding sites are under threat due to development and increased disturbance. Our data shows that more proactive conservation efforts are needed to protect important colonies of terns in Abu Dhabi, underlining the need for more protected areas.

Kiere, Lynna Marie; Drummond, Hugh

Lab. de Conducta Animal, UNAM México DF DF 4700 México lynnamariekiere@gmail.com

Booby extrapair behavior probability, but not intensity, decreases with sea surface temperature

Extrapair behavior (EPB) has been of great interest in birds for the past 30 years, with >100 studies on possible functions like good or compatible genes. However, little research has focused on the role of environmental factors in intra-population variation in EPB. The constrained female hypothesis proposes that restrictive conditions limit female participation in

EPB by increasing its potential costs (e.g. time, energy, risk of retaliation/abandonment by their social mates). We evaluated this hypothesis by examining the effect of Sea Surface Temperature (SST) variation due to El Niño on EP courtship and copulation by female blue-footed boobies at a monitored colony on Isla Isabel, Nayarit. High SST has shown strong negative effects throughout the reproductive cycle in boobies, likely due to decreased prey availability. We thus predicted that increasing SST would decrease the probability and frequency (courtships or copulations/hr) of female EPB. We recorded females' interactions with their social and EP males during courtship for 4 seasons with SST ranging from 3.2 degrees below to 2.2 degrees above normal. Unlike other studies, we were able to directly observe and quantify EPB rather than infer it from paternity tests. As SST increased, females were less likely to court and/or copulate with an EP male, consistent with the constrained female hypothesis. However, females that did engage in EPB did so with the same intensity regardless of SST. This may suggest that female boobies use the decision to participate in EPB at all, rather than changes in effort, to adjust their investment in EPB according to environmental conditions during the pre-laying period.

Kocek, Alison R.; Cohen, Jonathan

SUNY-ESF Syracuse NY 13210 USA. arkocek@syr.edu

Factors affecting Saltmarsh and Seaside Sparrow reproductive success in New York City, NY

Sea level rise and anthropogenic factors have accelerated tidal salt marsh loss along the eastern seaboard of the United States. Saltmarsh and seaside sparrows (*Ammodramus caudacutus*, *Ammodramus maritimus*), tidal marsh obligate-breeding species, have mirrored this decline. Marsh characteristics that support the reproductive success of these sparrows must be identified to inform marsh restoration plans that may benefit nesting populations of these sparrows. New York City has on-going salt marsh restoration projects which seek to support these imperiled birds. In 2012 and 2013 we surveyed 4 marshes in the NYC area with breeding saltmarsh and seaside sparrows. At each site, we performed twice-weekly grid-searches for nests as well as opportunistic nest searching using adult behavioral clues. Each nest was followed to completion and the fate of all individuals within the nest was monitored. Tidal influx within each nest was obtained by use of iButtons placed in the bottom of each nest and vegetation characteristics immediately surrounding each nest site were recorded. Using a logistic exposure nest survival model, we found that saltmarsh and seaside sparrow nest survival in NYC is affected by site, stage (chick versus egg), and vegetation variables. Explanations for the outcomes of these survival models and implications for restoration plans in New York City will be discussed.

Koczur, Lianne M.¹; Ballard, Bart M.²; Green, M. Clay³

¹Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville Kingsville TX 78363 USA. ²Texas A&M University-Kingsville Kingsville TX 78363 USA. ³Texas State University San Marcos TX 78666 USA. liannekoczur@gmail.com

Movements of adult Reddish Egrets marked with satellite transmitters in the Laguna Madre, Texas

Nearly half of the U.S. population of the Reddish Egret breeds in Texas, where the species is listed as threatened. Relatively little is known about Reddish Egrets, particularly their movement ecology. Thus, we attached satellite transmitters to 30 adults over the last 4 years to investigate large scale movement patterns. Reddish Egrets appeared to exhibit a partial migration strategy whereby ~ 60% of the marked population remained in Texas near the breeding site throughout the year and the others migrated south during winter. The length of migration varied, with some stopping in Tamaulipas, Mexico, and others moving farther to Oaxaca and Campeche, Mexico. The onset of the breeding season for resident and short-distance migrants generally occurred in late March, ~ 1 month earlier than long-distance migrants. Both residents and migrants exhibited fidelity (within ~1 km) to wintering sites. Additionally, we identified an important stopover site just north of Tampico, Mexico which 75% of all long-distance migrants used during migration. This study will provide much needed information on the ecology of the Reddish Egret and aid in management strategies throughout its range.

Koczur, Lianne M.¹; Munters, Alexandra E.²; Heath, Susan A.³; Ballard, Bart M.¹; Green, M. Clay²; Dinsmore, Stephen J.⁴; Hernández, Fidel¹

¹Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville Kingsville TX 78363 USA. ²Texas State University San Marcos TX 78666 USA. ³Gulf Coast Bird Observatory Lake Jackson TX 77566 USA. ⁴Iowa State University Ames IA 50011 USA
liannekoczur@gmail.com

Nest and brood survival of the American Oystercatcher on the western Gulf Coast

The American Oystercatcher (*Haematopus palliatus*) is listed as a Species of High Concern in the U.S. Shorebird Conservation Plan due to a small population size and threats during the annual cycle. Previous studies of the American Oystercatcher have focused on Atlantic Coast populations; however, little is known about the reproductive success of the western Gulf Coast population. The objective of this study was to determine nest and brood survival of American Oystercatchers in Texas. We monitored 337 nests and 121 broods on the Texas coast during 2011-2013. The top model for nest survival in Program MARK included a linear decline in survival across the nesting season and as nests aged. Survival also declined as island size and foraging habitat near the nest site increased. The probability of a nest surviving from mean initiation date to hatching was 0.384 (95% CI = 0.317, 0.451). The top model for brood survival included a linear decline across the season and an increase as broods aged. Brood survival also varied among years and coastal region. The probability of a brood surviving from mean hatch date to 35 days after hatch ranged from 0.397 (95% CI = 0.204, 0.578) in 2013 to 0.887 (95% CI = 0.673, 0.964) in 2011. This study provides extensive baseline data on the reproductive success of the American Oystercatcher along the western Gulf Coast.

Koczur, Lianne M.; Krainyk, Anastasia; Ballard, Bart M.

¹Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Kingsville TX, 78363 USA. liannekoczur@gmail.com

Reddish Egret roost-site selection

The Reddish Egret (*Egretta rufescens*) is North America's rarest and least studied heron. It is currently a species of concern according to the U.S. Fish and Wildlife Service and is listed as a threatened species in Texas. The United States population is estimated at ~2,000 breeding pairs, with ~900-950 pairs occurring in Texas. The paucity of information about habitat requirements of Reddish Egrets has focused on breeding and foraging, and therefore management efforts for this species may be lacking important information on the range of habitats necessary during all portions of the annual cycle. We attached GPS satellite transmitters to 22 adults that were breeding in the Laguna Madre, Texas to examine the roosting behavior and roost-site selection of Reddish Egrets. Preliminary results show that egrets exhibit site fidelity within and among-years. In the Laguna Madre of Texas, ~ 50% of roosting locations were located from 1 to 1.6 km from the mainland, and on unconsolidated sediment in shallow water. Determining the roosting behavior and roost-site selection of Reddish Egrets is a current data need by the Reddish Egret Recovery Group and will contribute to current conservation efforts for the species.

Ku-Peralta, Wiliam¹; Vargas-Soriano, Jesús¹; Redón-Von Osten², Jaime; Hinojosa-Garro, Demian¹; Vallarino Moncada, Adriana³

¹Centro de Desarrollo Sustentable y Aprovechamiento de la Vida Silvestre (CEDESU). Universidad Autónoma de Campeche. ²Instituto de Ecología, Pesquerías y Oceanografía del Golfo de México (EPOMEX). Universidad Autónoma de Campeche. ³El Colegio de la Frontera Sur (ECOSUR), Unidad Campeche.

Variación de la enzima Acetilcolinesterasa en relación con las épocas de aplicación de plaguicidas organofosforados en la Laguna Silvituc, Campeche.

Una de las actividades más importantes a nivel mundial es la agricultura, aunque su intensificación en los últimos años ha impactado de manera negativa al ambiente, debido al aumento en el uso de sustancias químicas para el control de plagas. Los biomarcadores son herramientas muy útiles para evaluar los daños causados por estas sustancias a la flora y fauna silvestres. Se colectaron muestras de sangre de 85 aves en diferentes épocas del año con el fin de cuantificar las actividades de la enzima Acetilcolinesterasa (AChE). La media de las actividades de la AChE fue de 303 ± 223 nM/min-mL de plasma, además se encontraron diferencias significativas (Hábitat: $F_{1,81} = 62.40$, $P = 0.0001$; época: $F_{1,81} = 2.31$, $P = 0.131$; hábitat*época: $F_{1,81} = 18.91$, $P < 0.0001$) en aves acuáticas (728nM/min-mL) y terrestres (504nM/min-mL) en la época de lluvias. Esto implica que las aves terrestres se ven afectadas en mayor grado por el uso de plaguicidas en la zona, debido a que el área en la que éstas forrajean es más amplia y la intoxicación se da de manera directa por ingestión o por medio de la piel. Los altos niveles de AChE encontrados en la época de lluvias pueden deberse a cambios en la alimentación entre temporadas. El uso de biomarcadores como la AChE es útil para el monitoreo y la evaluación de los ecosistemas, asimismo evitan mermas innecesarias en las poblaciones, por lo que es recomendable su utilización cuando los organismos en cuestión se encuentran bajo algún estatus de protección.

Zeng, L; Rotenberry, John; Zuk, Marlene; Pratt, Thane

University of California, Riverside, University of Minnesota, Twin Cities, University of Minnesota, Twin Cities, USGS Pacific Island Ecosystems Research Center (emeritus), Hawaii

Social behavior and cooperative breeding in a precocial species: Kalij Pheasants (*Lophura leucomelanos*) in Hawai'i

Cooperative breeding in birds occurs mostly in altricial species, in which the helpless hatchlings require extensive parental care. By contrast, cooperative breeding in precocial species is rare. We examined social behavior and documented cooperative breeding in Kalij Pheasants (*Lophura leucomelanos*) in an introduced population in Hawai'i, one of the few reported instances of cooperative breeding in Galliformes. From 2009 to 2011, the population averaged 28 groups; each social group contained one female and one to six males. All adults exhibited cooperative behavior including caring for chicks, agonistic behaviors against conspecific intruders, and vigilance against predators. Within each group, one male was dominant over the others and appeared to be the breeder. Age was the only factor found to determine within-group dominance, suggesting that subordinate males can eventually gain dominance and breeding status by staying in the group. Average population density was high, averaging 3.21 residents/ha (vs. about 0.3/ha under natural conditions). Adult sex ratio was biased toward male with an average of M:F = 2.10. Genetic sex identification of egg samples revealed unbiased primary and secondary sex ratios, suggesting that bias in adult sex ratio may be caused by differential survival between males and females. In 2011, we removed 12 out of 29 groups to create vacant breeding habitats. After removal, the subordinate male(s) in 6 out of 10 remaining groups with multiple males left their original group to establish a new group. The average males/group decreased from 2.17 (n=29) before removal to 1.36 (n=28) after removal. Subsequent to removal, 9 groups contained previously unidentified females, most of which were likely previous floaters. We conclude that habitat saturation contributed to promote cooperative breeding in this population.

López-Saut, Edgar G.; Véllez-Galván Rafael; Guzmán-Sandoval, Hever J.

Instituto Tecnológico del Valle del Guadiana, Durango, DG, 34027, México.
gusz_58@hotmail.com

Distribución potencial de rapaces en el Estado de Durango.

Las aves rapaces son buenos indicadores del ecosistema por estar al final de las cadenas tróficas, lo que las hace sensibles a la bioacumulación de contaminantes y a requerir una gran cantidad de presas para obtener su energía, por lo que al disminuir éstas disminuyen sus poblaciones. Durango es un estado que tiene la mayoría de los ecosistemas de México representados en las diversas regiones florísticas como son la región de los Llanos, la región de la Sierra y la región de los Valles por mencionar algunos. Sin embargo, al igual que en todo el país, los centros urbanos están en crecimiento, lo que genera contaminación, así como la necesidad de infraestructura y alimento. Ejemplo de estos desarrollos es la carretera Durango-Mazatlán, la cual atraviesa la Sierra Madre Occidental impactando el hábitat de diversas especies. Otros ejemplos son el desarrollo de proyectos de energías alternativas como son los parques eólicos y solares. Además el incremento de la ganadería y la agricultura que también deteriora los ecosistemas. Todos estos efectos se pueden monitorear siguiendo grupos bioindicadores como son las rapaces, sin embargo para poderlas usar, es necesario conocer más sobre su historia de vida en el estado. Actualmente no se cuenta con mapas de

distribución de las rapaces que puedan servir como base para evaluar el hábitat a partir de sus poblaciones. Por esta razón, el presente estudio tiene como objetivo generar mapas de distribución a partir de registros en bases de datos y datos de campo. A partir de estos mapas se realizarán validaciones de los mismos y se iniciará la evaluación del hábitat de las especies claves. En una etapa preliminar se registraron siete especies de rapaces, entre las que destacan *Buteo albicaudatus*, de la cual se encontraron pocos registros a nivel nacional y aún menos a nivel estatal, pero que en los muestreos en campo se registraron en varios puntos dentro del valle del Guadiana y en el municipio de Canatlán donde se observaron nidos.

López-Saut, Edgar G.; Verver-Galván, Rafael.

Instituto Tecnológico del Valle del Guadiana, Durango, DG, 34027, México.
gusz_58@hotmail.com

Assessment of waterbirds at Valle del Guadiana wetlands.

Victoria de Durango City is the capital of the state of Durango and it is in the Guadiana Valley. The city is near to the wetland of Málaga an important area for waterbirds and actually it is not under protection, although the Málaga could be a Ramsar Site because is important for waterfowl populations, it is not limited, that is why it could not be a protected area. Besides, in the valley there are many small temporal wetlands that are refuges for many waterbirds, but are under human pressures. The principal studies of waterfowls in the area were conducted by DUMAC in the Málaga, but there are not published data about these studies. The present study has the goal to generate information about the use of waterbirds like waders, waterfowls, shorebirds, rallidae and terrestrial birds that depend on wetlands, monitoring different wetlands in Guadiana Valley. We did three winter season from 2012-2013 to 2013-2014 at Malaga wetland and Refugio Salcido. We recorded 60 species, like Northern shovelers, Snow geese, coot and Northern pintail. We had recorded several White Pelican. Long billed curlew were recorded at all seasons at different areas, i.e. in huizache scrub were recorded 24 individuals landing in the area and feeding. The wetlands were under human pressure like cattle, fishing and irrigation for crop fields. These activities affect the waterbird population and it is important to continue with the monitoring and habitat assessment of the wetland in order to promote management programs for the conservation, for example, in the area there are Sandhill cranes in few numbers, but could be an umbrella species for Malaga wetlands.

Lafon, Alberto.

PROFAUNA, Chihuahua, CH, 31030, México. gusz_58@hotmail.com

Análisis prospectivo para la conservación del águila real en el estado de Chihuahua.

Con el objetivo de analizar la situación que guardan las poblaciones de Águila real (*Aquila chrysaetos*) en el estado de Chihuahua se integraron dos equipos de trabajo que durante las temporadas reproductivas de 2013 y 2014 realizaron recorridos de campo en las áreas de distribución histórica de la especie para determinar su presencia, condiciones del hábitat, caracterización de su reproducción y factores que la afectan. Lo anterior con el fin de proponer acciones tanto de estudio como de manejo para favorecer la conservación de la especie en esta entidad. Se sumaron un total de 34,200 kilómetros recorridos y 318 días técnicos durante los cuales se identificaron 19 áreas de distribución con 49 nidos (17 activos) que produjeron un

total de 14 volantones, la secuencia reproductiva varió desde posturas tempranas a fines del mes de marzo hasta tardías a principios del mes de junio. El número de huevos varió de 1 a 3 y solo en un caso hubo una sobrevivencia de 2 pollos hasta la etapa subadulto (volantones). Se observó un cambio o alternancia de nidos utilizados por las parejas reproductoras. Las condiciones del hábitat para la especie han variado por un cambio de uso de suelo hacia la agricultura disminuyendo con ello sus presas e incrementando el uso de agroquímicos que pueden afectar su reproducción. Para la producción ganadera se utilizan venenos para control de depredadores encontrando que causa bajas en águila real. Otros factores negativos que se observaron fueron la cacería ilegal, la venta de crías de águila real y la falta de cultura general. Se observa que existen áreas de oportunidad para favorecer tanto el conocimiento y la conservación de esta especie en donde el radioseguimiento y apoyos para búsqueda de ejemplares pueden apoyarla. La educación ambiental que permita dar a conocer la importancia ecológica, económica y ética del águila real es una actividad necesaria y urgente para promover su conservación.

Lamb, J. S.¹; Newstead, David²; Ballard, Bart³; Koczur, Lianne³; Green, M Clay⁴; Jodice, Patrick⁵

¹School of Agricultural, Forest, and Environmental Sciences, Clemson University Clemson SC, 29634 USA. ²Coastal Bend Bays and Estuaries Program Corpus Christi TX, 78401 USA.

³Department of Animal and Wildlife Sciences, Texas A&M University Kingsville TX, 78363 USA.

⁴Department of Biology, Texas State University San Marcos TX, 78666 USA. ⁵US Geological Survey South Carolina Cooperative Fish and Wildlife Research Unit Clemson SC, 29634 USA. jslamb@clemson.edu

A bridge between oceans: use of the Tehuantepec Isthmus by waterbirds during dispersal and migration

The Tehuantepec Isthmus, which spans portions of Veracruz and Oaxaca, Mexico, represents the shortest distance between the Gulf of Mexico and the Pacific Ocean. The isthmus has long been recognized as an important migratory corridor for landbirds; to date, however, few waterbird species have been documented using this region. Meanwhile, wind energy development poses a large and growing threat to migratory birds passing through the isthmus. We present information from recent tracking studies and band re-sightings of individual Brown Pelicans (n=3), Red Knots (n=5), and Reddish Egrets (n=3) captured in the Northern Gulf of Mexico that used the Tehuantepec region as either a movement corridor or migratory stopover. These uses vary by species, age, and time of year, indicating potential importance of the isthmus across a range of waterbird life histories and developmental stages. While the sample sizes of these studies are small, recently initiated tracking and banding studies may provide further insight into the importance of this region to waterbird populations in the Northern Gulf of Mexico.

Lange, Corey J.¹; Ballard, Bart M.¹; Collins, Daniel P.²; DeYoung, Randy W.¹

¹Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Kingsville TX, 78363 USA. ²United States Fish and Wildlife Service, Southwest Regional Office Albuquerque NM, 87103 USA. coreylange@gmail.com

Impacts of wind energy on wintering Redheads along the Lower Texas Coast.

During winter, the Laguna Madre along the lower Texas coast is home to nearly 80% of the world's redheads (*Aythya americana*). Freshwater ponds adjacent to the Laguna Madre provide an important and heavily used source of fresh water for redheads throughout winter. The development of wind energy has accelerated from concerns of fossil fuel dependency and global climate change. However, little is known about the impacts of wind energy on organisms and their habitats. A wind farm of 267 turbines, started in October 2008 and completed in April 2010, was developed on a private ranch along the western coast of the Laguna Madre, south of Baffin Bay. We conducted weekly aerial surveys to monitor coastal pond use by wintering redheads from mid-October through mid-March during 2000-2003 and 2012-2014. Prior to the wind farm construction, pond availability and Palmer Drought Severity Index within the wind farm was significantly correlated ($n = 16$, $r = 0.530$, $P = 0.035$). However, after the wind farm was constructed PDSI was no longer a good indicator of pond availability ($n = 6$, $R^2 = 0.592$, $P = 0.216$). The number of ponds available for redheads to use post-construction decreased by >50%, and the number of redheads detected on ponds within the wind farm decreased by 95% from pre to post wind farm construction. Redheads abundance on ponds across the entire study area increased by an average of 323% between pre and post-construction ($P = 0.019$). It appears that wind energy has impacted use of coastal ponds by redheads during winter. Future wind farm placement should consider coastal pond distribution and the dynamics of redhead use between coastal ponds and foraging areas in the Laguna Madre.

Lange, Corey J.¹; Ballard, Bart M.¹; Collins, Daniel P.²; Wilson, Barry C.³; James, J. Dale⁴

¹Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Kingsville TX, 78363 USA. ²United States Fish and Wildlife Service, Southwest Regional Office Albuquerque NM, 87103 USA. ³United States Fish and Wildlife Service, Gulf Coast Joint Venture Lafayette LA, 70506 USA. ⁴Ducks Unlimited, Inc. Ridgeland MS, 39157 USA. coreyjlange@gmail.com

Development favorability analysis for redheads along the lower Texas coast

An estimated 80 percent of the world's redheads (*Aythya americana*) winter in the Laguna Madre each year. Coastal ponds adjacent to the Laguna Madre provide an important source of freshwater for redheads, and the distribution and availability of these ponds can affect the use and foraging effects on shoalgrass within the Laguna Madre. We monitored redhead use of coastal ponds during winters of 2000-03, and 2012-14 to create a development favorability analysis for the lower Texas coast. We ranked coastal ponds for their importance for protection or enhancement based on 3 criteria, including the amount of foraging area within 10 km of each pond, an isolation metric for each pond, and the range of years each pond is inundated based on surface water extraction from LandSat imagery. Redheads used 156 coastal ponds throughout the study. Five ponds were included in the protection model and were also the highest ranked ponds in the enhancement model. These ponds, if enhanced to provide more permanent fresh water, would service the remainder of foraging habitat in the Laguna Madre. Our results highlight coastal ponds along the lower Texas coast having the greatest conservation value to redheads and can help guide conservation efforts in the face of increasing development in this region.

Lange, Corey J.¹; Ballard, Bart M.¹; Metzger, Kris L.²; Collins, Daniel P.²; DeYoung, Randy W.¹

¹Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Kingsville TX, 78363 USA. ²United States Fish and Wildlife Service, Southwest Regional Office Albuquerque NM, 87103 USA. coreyjlange@gmail.com

Modeling sea level rise using a SLAMM model and its effects on colonial waterbird islands

Many of the colonial waterbird islands along the lower Texas coast are < 2 meters above sea level, so the threat of rising sea levels could have large impacts on the distribution of available nesting sites for waterbird in this region. There are 25 colonial waterbird species that regularly breed on these islands, some of which, like the reddish egret and black skimmer, are species of concern. The size of these breeding colonies varies greatly, with some supporting thousands of individuals which can comprise the majority of the state's population for certain species. We developed a sea level rise model using different sea level rise scenarios to investigate the loss of current colonial islands due to inundation, the distribution and abundance of currently available islands, and the potential natural development of new colonial islands along the lower Texas coast relative to different sea level rise scenarios. This information can guide dredge spoil placement plans to increase elevation of existing islands to prevent inundation due to sea level rise, or mitigate loss of colonial islands by producing new islands in optimal areas.

Lee-Cruz, Larisa¹; Goodman, Simon J.²; Hamer, Keith C.¹

¹University of Leeds, Leeds United Kingdom lleecruz@gmail.com

Decline in Galapagos blue-footed boobies is not due to malarial parasites

The blue-footed booby (*Sula nebouxii*) is one of the most iconic species of the Galápagos archipelago; it is widespread in the tropical eastern Pacific Ocean, but the Galápagos subspecies (*S. n. excisa*) is genetically distinct. In the 1960s the Galápagos population was >10,000 breeding pairs and considered one of the largest for the species, but a recent study suggests it has declined more than 50% since then, due to poor breeding since about 1998 resulting in low recruitment to the adult population. Tourism and human immigration to the Galápagos pose a high risk of introducing novel pathogens to the islands which could have detrimental effects on native species. Malarial parasites can affect physiological condition and reproduction in birds, and have been found in several seabird species in the Galápagos. To evaluate if malarial parasites are implicated in the poor breeding of blue-footed boobies in the Galápagos we screened adult birds at six sites for *Haemoproteus* and *Plasmodium* using PCR and microscopy. At two focal sites we assessed if infection was related to measures of physiological condition, immune response and breeding success. We found no evidence of infection with *Plasmodium* but molecular screening indicated a high prevalence of *Haemoproteus*, ranging between 30% and 83% across sites. However, only a single sample examined microscopically indicated infection, probably with *Leucocytozoon*. Parasite infection had no apparent effect on the likelihood or timing of breeding, nor on chick growth or breeding success, and had only minor effects on adult body condition, lymphocyte count and chick provisioning rate. We conclude that poor breeding of the species in Galápagos is probably not related to parasite infection, but that other factors such as changes in the availability of their preferred prey might be responsible.

Loera Casillas, Juan; Contreras Martínez, Sarahy; Favela García, Fabiola; Cruz Rivera, Brenda Yaneth

Universidad de Guadalajara. Centro Universitario de la Costa Sur. juanloeraksillas@gmail.com

Observación de aves en senderos interpretativos en Ahuacapán Municipio de Autlán, Jalisco, México.

México es uno de los países en el que podemos encontrar una gran diversidad de aves. Esta variedad avifaunística está amenazada, por causa de problemas ambientales principalmente como: pérdida de hábitat y cacería. Debido a esto es importante establecer algunos lineamientos de conservación como es el uso de educación ambiental por medio de la observación e identificación de la avifauna en su ambiente. El objetivo de este trabajo fue identificar senderos interpretativos para establecer actividades de ecoturismo por medio de la observación de aves, como una herramienta para la conservación avifaunística. Entre los resultados, se registraron 151 especies de aves, con 112 especies residentes y 39 migratorias en siete senderos: en la lagunita en el que podemos ver aves acuáticas como: (*Tachybaptus dominicus*, *Anas discors*, *Adea herodias* y *Nyctanassa violácea*); los riegos: (*Forpus cyanopygius*, *Aratinga canicularis* y *Heliomaster constantii*); El cerrito: (*Selasphorus rufus*, *Cyanocorax sanblasianus* y *Peucaea humeralis*); el lambedero: (*Buteo jamaicensis* *Falco ruficularis* y *Picoides scalaris*); Las varas (*Phaethornis superciliosus*, *Oporornis tolmiei* y *Melospiza kieneri*); el arroyo (*Momotus mexicanus*, *Icteria virens* y *Passerina leclancherii*) y el nacimiento (*Myadestes occidentalis*, *Habia rubica* y *Passerina ciris*). Así también la visita de ocho grupos organizados con 68 personas 13 adultos y 55 niños, además de capacitación de tesis de la licenciatura en ingeniería en recursos naturales.

Loranca, Bravo Salvador Juan¹; Rodríguez- Estrella, Ricardo²; Bautista, Amando Ortega¹

¹Universidad Autónoma de Tlaxcala Tlaxcala 90070 México. ²Centro de Investigaciones Biológicas del Noroeste La Paz 23096 México. s_loranca@hotmail.com

Distribución y abundancia de rapaces diurnas en un gradiente altitudinal

Las rapaces son depredadores considerados como buenos indicadores de la calidad del hábitat porque son sensibles a la perturbación y contaminación antropogénica del ambiente. Las respuestas de las rapaces a distintos grados de transformación de los hábitats son variables, pero se sabe que una vez que rebasan el umbral de tolerancia, las poblaciones disminuyen y pueden extinguirse localmente. De ahí la importancia de conducir estudios con diferentes especies bajo distintas condiciones del hábitat para evaluar el gradiente de respuestas de los depredadores ante las actividades humanas. El objetivo de este estudio es determinar los patrones de distribución y abundancia espacial y temporal de rapaces diurnas sobre un gradiente altitudinal conformado por áreas naturales y con influencia de actividad humana en el Parque Nacional La Malinche (PNLM). En general, desde el otoño de 2011 al verano de 2013 se registraron 10 especies en 654 avistamientos. Mediante puntos fijos de observación se registraron 10 especies haciendo uso de los distintos tipos de vegetación y zonas con influencia de actividad humana con un total de 237 avistamientos. En los ambientes modificados por la actividad humana (paisajes urbano y cultivo) registramos la mayor abundancia y diversidad de especies (área modificada: 142 avistamientos, ocho especies, H de Shannon= 1.75; natural: 95 avistamientos, ocho especies y H = 1.28; t-student= 3.89, P<0.05). Nuestros resultados indican que las rapaces aparentemente se benefician de las zonas abiertas por la agricultura. Se ha

observado un incremento en la abundancia de rapaces en otoño e invierno, por lo que parece que el área es utilizada como sitio de paso o permanencia durante su migración invernal. Se discute sobre los resultados encontrados para las rapaces entre zonas humanizadas y naturales.

Luttazi, Cristin; Jedrey, Ellen; Parsons, Katharine C.

Mass Audubon Barnstable MA 2637 USA. cluttazi@massaudubon.org

Pre-migratory hatch year Roseate Terns use coastal habitats in southeastern Massachusetts, USA

The Northwest Atlantic Roseate Tern (*Sterna dougallii*) population is currently listed as "endangered" under US and Massachusetts Endangered Species Acts, and the Canada Species at Risk Act. During the last 13 years, the overall breeding population from New York to Nova Scotia has declined causing concern amongst biologists and conservationists. During the post-breeding dispersal period in late summer/early autumn each year, a majority of the Northwestern Atlantic Roseate Tern population moves to and stages on the outer beaches of Cape Cod and Nantucket, Massachusetts prior to migrating to South America. During this pre-migratory staging period, hatch year fledglings learn and practice foraging techniques in the company of a care-giving parent. Scientists from Mass Audubon's Coastal Waterbird Program and the United States Geological Survey have been part of an extensive effort to document the use of staging sites by post-breeding terns since 2007. In 2011, as part of an international cooperative study of this endangered species, a new banding scheme using 3-character plastic field-readable (PFR) colorbands was implemented at seven breeding colonies in the northeastern United States and Nova Scotia, Canada. In 2012, a total of 323 hatch year Roseate Terns were banded with PFR bands. Staff from the Coastal Waterbird Program, USGS and Canadian Wildlife Service, as well as a number of partners, conducted observations at 12 known staging sites on Cape Cod and Nantucket from 15 July through 17 September. A total of 1,259 hatch year terns were resighted, representing 242 (75%) of the 323 unique banded fledglings. Staff also observed 82 interactions between banded hatch year and adult terns. These observations included 67 unique hatch years begging at an adult. Information on tern use of specific sites and habitats will be used to assist in the development of protective management strategies for Roseate Terns on the post-breeding grounds.

Macario Fernández Popo¹, José Luis Servín Torres¹, Gerson Daniel Alducin Chavez¹, Axel Fuentes-Moreno².

1 Universidad Veracruzana, Facultad de Ciencias Biológicas y Agropecuarias, Campus Peñuela. Camino Peñuela- Amatlán de los Reyes. S/N., 1Instituto de Ecología, A.C. 2Centro de Estudios Geográficos Biológicos y Comunitarios, S. C., Calle Santa María No. 13, Infonavit San Román, Córdoba, Veracruz, México c.p. 94542. biol.fernandez92@gmail.com

Avifauna de San Rafael Piña: Primer listado para Zentla, Veracruz

Veracruz ocupa el segundo lugar a nivel nacional en aves con 719 especies, sin embargo algunas regiones han sido poco estudiadas ornitológicamente, este es el caso del municipio de

Zentla, el cual, dada su ubicación y hábitats presentes se consideró que podía tener una gran riqueza de especies, por ello se decidió registrar durante un año la avifauna de San Rafael Piña. El área de estudio se ubica en el centro occidente de Veracruz, en ella existen hábitats como: cafetales bajo sombra, selva mediana, cañaverales, potreros y cuerpos de agua. Se registró a 144 especies de 38 familias, siendo las mejor representadas Parulidae y Tyrannidae. El 63.2% fueron residentes, el 34.7% migratorias neotropicales y el 1.4% migratorias intertropicales. Se registró a tres especies fuera de su distribución conocida: *Amazona albifrons*, *Baeolophus atricristatus* y *Troglodytes musculus*. Se registró el 12% de la avifauna de México, el 20% de la de Veracruz y se obtuvo una riqueza prácticamente igual a la registrada para agroecosistemas cafetaleros del centro de Veracruz. De acuerdo a los índices calculados de Simpson (0.97) y Margaleg (17.64) la estación más diversa fue verano, mientras que según el índice de Shannon la primavera fue la más diversa (4.30). Al menos 50 especies migratorias utilizan el área, por lo que la región resalta como corredor biológico. Además 14 de las especies registradas, como *Ramphastos sulfuratus* y *Pionus senilis*, se encuentran protegidas por la NOM-059. Este trabajo constituye el primero que presenta un listado de aves para el municipio de Zentla y presenta como producto adicional un catálogo con fotografías tomadas en el sitio de muestreo el cual podrá ser una herramienta para difundir el conocimiento de las aves de la región y su importancia

Macías, Sergio

Querétaro QR 76805 México. sergio.macias00@gmail.com

Evaluación del estado de salud de la biota en una zona minera, utilizando aves como bioindicador

La actividad minera en el Estado de Querétaro tiene cientos de años de historia obteniendo diversos productos minerales y metálicos como el mercurio, el cual es un metal pesado no esencial, tóxico y persistente, la principal forma de extracción de mercurio es en forma de cinabrio (HgS) o sulfuro de mercurio este metal se puede combinar con otros compuestos para formar compuestos orgánicos como el metilmercurio (MeHg), el cual se forma principalmente en zonas aledañas a minas de mercurio y es transformado en compuesto orgánico por acción del suelo y de la actividad microbiana del suelo. El MeHg al estar en contacto con diversos organismos como mamíferos, peces y aves causa problemas de comportamiento, neuroquímico, hormonal y reproductivo a diferentes concentraciones. Las aves se han utilizado como bioindicadoras de contaminación en los medios naturales y urbanos en diferentes lugares debido a que se encuentran en algunos casos en el tope de las cadenas tróficas sufren procesos de bioacumulación y biomagnificación de contaminantes. Estas expresan la intoxicación presentada mercurio en plumas, huevos, sangre y diversos tejidos, siendo importante también la diferencia de sexos. Debido a que en la zona serrana de San Joaquín se han detectado altos niveles de mercurio en suelo, agua de lluvia, sedimentos y maíz nos damos a la tarea de realizar este estudio enfocandonos a las aves como bioindicadoras de contaminación de mercurio en la sierra queretana.

Martinez-Sarmiento, Celia A; Rodriguez-Estrella, Ricardo

Centro de Investigaciones Biológicas del Noroeste, La Paz, BC, 23206, México.
angie.sarmiento15@gmail.com

Ecología trófica de *Bubo virginianus* en una zona natural y una fragmentada del matorral desértico, BCS.

El cambio de uso de suelo para por ejemplo, la expansión agrícola, es una de las actividades humanas que afectan los ecosistemas provocando su fragmentación, proceso en que se originan fragmentos de distinto tamaño y ubicación, lo que genera cambios estructurales y funcionales tales como las interacciones tróficas. Uno de los grupos en los que es importante determinar los efectos de la fragmentación es el de las aves rapaces por ser depredadores tope que regulan las poblaciones animales. Varias especies de rapaces, son sensibles a la pérdida y fragmentación del hábitat. Sin embargo, se ha encontrado en otros estudios que la fragmentación no afecta sino inclusive beneficia a otras aves rapaces. En este estudio trabajamos con la dieta del tecolote cornudo (*Bubo virginianus*) en un sistema fragmentado que se contrastará con la dieta en el sistema natural continuo durante la época reproductiva. Para este búho no se ha estudiado el efecto de la fragmentación en su ecología. Nuestro estudio se realizó en el sistema fragmentado del desierto de Baja California Sur. A la fecha, se han analizado 94 egagrópilas (52 en área natural y 42 en área fragmentada) en las que se ha encontrado un total de 378 presas pertenecientes a 17 especies, de las que 10 especies pertenecen a maíferos, las demás a invertebrados y reptiles. La riqueza de las especies consumidas es similar en el área fragmentada y en la natural (17 y 16 especies, respectivamente). En el área fragmentada, de las 176 presas encontradas, 30.6% pertenecen a las especies de *Peromyscus*, el 36.9% a invertebrados, 10.8% a *Chaetodipus spinatus* y para lagomorfos y reptiles, (3.4% y 5.1%, respectivamente). En el área natural de las 202 presas encontradas 41% son invertebrados, 13.3% de *Peromyscus* spp, 9.9% *Neotoma bryanti*, reptiles 10.4% y el 9.4% para lagomorfos. Se discute el efecto de la fragmentación en la dieta del tecolote cornudo.

Martinez-Guerrero, José H¹; Pereda-Solis, Martin E¹; Levandoski, Gregory²; Panjabi, Arvind².

¹ Universidad Juárez del estado de Durango, Durango, DU, 34000, Mexico. ² Rocky Mountain Bird Obs., Fort Collins, CO, 80521, USA. che_hugo1@hotmail.com

Estructura de la vegetación de hábitat invernal de *Ammodramus bairdii*, en 8 regiones del Desierto Chihuahuense

El pastizal es el ecosistema más amenazado de la tierra, la expansión agrícola, urbanización, desarrollo energético, expansión de especies invasoras son causas diversas a las que se les atribuye este hecho (Hoeskstra et al., 2005). En consecuencia y desde hace algunas décadas, las aves de pastizal han disminuido sus poblaciones de manera continua (Sauer et al., 2011). Estos hechos toman importancia cuando el hábitat para diversas especies de aves pastizal-dependientes se fragmenta o se pierde (Brennan y Kuvlesky, 2005) y se convierte en factor crítico en la conservación de aves/hábitat, cuando esos cambios suceden tanto en tierras reproductivas como de invierno, al respecto Pool et al., (2014) comentan que el 88% de las especies de aves de pastizal se reproducen en las grandes planicies de Norteamérica y el 90% de ellas pasan el invierno en el Desierto Chihuahuense, dando una idea clara de la magnitud del problema. Este es el caso del gorrión de Baird (*Ammodramus bairdii*) que es una de las especies de aves de pastizal que mantiene una tendencia negativa (-3.4%) en su población (Sauer et al., 2011), de la cual no existe información suficiente de su estancia en tierras invernales, particularmente en México (Dechant et al., 2003). Durante el invierno del 2011, se analizó la estructura de la vegetación de ocho regiones del desierto Chihuahuense, mediante

el monitoreo de aves por transectos lineales, donde estuvo presente el gorrión de Baird, con diferentes densidades de población, los resultados indican que la estructura de la vegetación fue diferente (Kruskal-wallis $P= 0.05$) en todas las regiones donde las variables estudiadas fueron cobertura de pasto, suelo desnudo, cobertura de hierba, cobertura de arbusto, altura de pasto y altura de hierba. Lo anterior sugiere que estas variables no determinan la abundancia del ave en determinada área del desierto chihuahuense y las diferencias en la densidad deben explicarse mediante el análisis de otras variables no incluidas en el estudio.

Maturino-Rodriguez, Jesus A¹; Diaz-Hernandez, Cynthia E¹; Sandoval-Madriles, Teofila¹; Oliveros-Diaz, Blanca F¹; Carrasco-Viggers, Guadalupe¹; Posad-Gamero, Erika C¹.

¹Instituto Tecnológico Del Valle Del Guadiana, Durango, Du, 34371, Mexico. ² Rocky Mountain Bird Obs., Fort Collins, CO, 80521, USA. maturino_al@yahoo.com

Primera etapa del programa de monitoreo de aves en Sierra de Órganos, Zacatecas

El monitoreo de especies a largo plazo constituye una herramienta fundamental para la conservación de las especies, pues a través de ella es posible detectar cambios en las poblaciones de aves y su hábitat. El presente estudio se llevó a cabo en el área Natural Protegida en la categoría de Parque Nacional denominada Sierra de órganos, ubicada en el Estado de Zacatecas. Se empleó la metodología de puntos de conteo y transectos en los diferentes tipos de vegetación durante la temporada de primavera. La densidad estimada para el pastizal fue de 250.1 ind/km² (± 43.3), la especie más abundante fue *Melospiza fusca* (76.2 ind/km²) y entre las más raras estuvo *Tyrannus vociferans* (3.4 ind/km²). La densidad estimada para el bosque de pino fue de 306.8 ind/km² (± 93.9), la especie más abundante fue *Thryomanes bewickii* (23.8 ind/km²) y entre las menos abundantes se ubicó *Spizella atrogularis* (1.9 ind/km²). El área de pastizal tuvo un índice de diversidad de Shannon-Wiener (H') de 2.31, mientras que en el bosque de pino-encino $H'= 0.83$. Las densidades estimadas obtenidas en este estudio fueron estadísticamente diferentes ($p<0.01$) a las obtenidas en resultados de 2010, siendo menores en 2014. Por otro lado, derivado del presente trabajo se integraron como nuevos registros en el área dos especies: *Tyto alba* y *Agelaius phoeniceus*. De las rapaces nocturnas, *B. virginianus* y *T. alba* se estimó la misma abundancia relativa (0.5 ± 0.1) y, se encontraron solo en el bosque de Pinus-Quercus.

Mc Rae, Meagan J; Fraser, Gail S.

York University, Oshawa , ON, L1H 7K4, Canada. USA. mjm56@yorku.ca

Spatial and temporal changes in *Phalacrocorax auritus* advertising display through the nesting season

In an otherwise monomorphic species, the advertising display is the only visually differentiating identifier of the male double-crested cormorant (*Phalacrocorax auritus*). Advertising displays are initiated by these colonial nesting waterbirds soon after their arrival in their breeding grounds in the spring and continue well into the summer. Though there is some literature describing great cormorant (*Phalacrocorax carbo*) advertising display, research is lacking on double-crested cormorant (hereafter, cormorant) advertising. In this paper we explore the locational change of cormorant advertising displays in a tree-nesting colony over a breeding season at Tommy Thompson Park, Toronto Ontario, 2014. We hypothesized that males advertise in the highest quality locations available and that advertising sites change as the

season progresses. We found that all advertising males were adult birds and most advertising locations included existing nests positioned high and centrally in tall trees, regardless of the tree's condition. As the season progressed, males were seen advertising at what were presumably lower quality locations (no nest, peripheral branches, low relative to tree height). These findings suggest that advertising location and nest association change as the breeding season progresses. The number of advertising birds was bimodal with a peak in mid-April and a smaller peak in June. The fluctuations in the number of advertising birds seem to indicate that pair bonding peaks in mid-April and that the pressure of the shortening nesting season may initiate a second increase in the display rate in June. An individual's advertising display intensity may be altered when performed in close proximity to other advertising males or when lacking a nest. Observing the timing of this seasonal variation in advertising location, rate, and intensity could provide insights into colony dynamics including colony crowding and local population expansion.

Medina, Juan¹; Natasha Kerr²; Bonfield, Susan³

¹Environment for the Americas, Toluca, 50120 México. ²Environment for the Americas, Los Angeles Ca, USA. ³Environment for the Americas, Boulder Co, USA. jpmcbalam@gmail.com

International Migratory Bird Day, conservation through people involvement

Environment for the Americas (EFTA) provides information and education materials about birds, bird conservation, and bird education from Canada to South America. Our programs inspire people of all ages to get outdoors, learn about birds, and take part in their conservation. Bird educators, bird festival organizers, and birders find opportunities to connect ideas, create bird festivals, and offer education close to home or across borders. Known for our signature program, International Migratory Bird Day (IMBD), the signature program of EFTA, is the only international education program that highlights and celebrates the migration of nearly 350 species of migratory birds between nesting habitats in North America and non-breeding grounds in Latin America, Mexico, and the Caribbean. Each year IMBD explores a different aspect of migratory birds and their conservation.

Mellink, Eric¹; Riojas-López, Mónica E.²

¹Depto. Biología de la Cons., Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada BC, 22860 México. ²Departamento de Ecología, CUCBA, Universidad de Guadalajara, Zapopan JA, 45221 México. emellink@gmail.com

Impact of a sea connection on the ground nesting birds of Laguna Cuyutlán, Mexico

Until recently, Laguna Cuyutlán, western Mexico, provided important habitat for several ground nesting birds. In addition of Snowy and Wilson's Plovers and Least Tern that nested on salt flats and Clapper (or King) Rail that did so in marsh vegetation, Black-necked Stilt, Laughing Gull, Royal, Gull-billed and Forster's Terns and Black Skimmer nested on low mud islets with patches of saltwort in Vaso III (3rd water body). However, during 2014 nesting by the later group of

species largely failed. By 15/04, Gull-billed terns (36 adults, 10 nests), Royal Tern (300 nests), and Laughing Gull (60 adults and 8 large chicks, but no nests) had nested, and Black Skimmers (n=24) were present but not nesting. All the eggs of Gull-billed Tern and the majority of those of Royal Tern had been lost to inundation. On 12/06, only Laughing Gulls had re-nested and, again, lost most nests to inundation. On 12/07 some Laughing Gulls were nesting on the highest saltwort present. Gull-billed, Royal Terns and Black Skimmers were not seen in the area in June or July. In contrast, on 18/07/03, 12/05/04, and 23/04, 14/05 and 23/05/05, all with spring tide or within 8 days from it, nesting was widespread and there were no signs of complete islet inundation. On 21/07/05 and 21/06/10 the colonies were partially inundated, but in addition to spring tides there had been tropical storms. The June and July 2014 inundations happened under spring tides and heavy rainfall, but the April one was not preceded by rainfall. The current conditions derived probably from changes in Canal Tepalcates that connects the lagoon with the sea. By March 2012 it was widened from 100 to 300 m and dredged from clogged to 17 m deep. Before enlarging Canal Tepalcates the volume of water entering Vaso III during high Spring tides was limited, but after the modifications it is seemingly enough to cover the islets. For ground-nesting waterbirds, water entrance to Vaso III should be restricted, or islets should be raised artificially.

Moore, Dave

Canadian Wildlife Service, Environment Canada Burlington ON L7R 4A6 Canada
dave.moore@ec.gc.ca

Islands in a sea of green: monitoring waterbirds in Ontario's boreal forest region.

The boreal forest (BF) is Canada's most extensive biome, covering an area of 290 M ha (~67% of the area of the continental U.S.A.) and containing 1.5 M lakes. Our current knowledge of the distribution and abundance of waterbirds (WB) in the BF is limited and there is no methodology which adequately samples these birds in this habitat. Our objectives were to: (i) test survey methods for estimating WB abundance and distributions and (ii) develop habitat-based models for predicting these metrics. In 2011, we used a float plane to survey lakes in n.w. Ontario (study area: 6 M ha, 19,200 lakes), based on a stratified (by lake area and presence of islands and/or exposed rocks), random sampling design. In 2012, 8 additional large lakes were surveyed north of the 2011 study area. Overall, WBs were recorded at 30% of randomly-sampled lakes (n=581), and as predicted, tended to occupy larger lakes containing both islands and rocks. Nine species were recorded. Ring-billed Gulls (*Larus delawarensis*, n=3,353) and Common Terns (*Sterna hirundo*, n=1,895) occurred in larger colonies distributed on fewer randomly-selected lakes (3-5% each). Herring (*L. argentatus*, n=384) and Bonaparte's (*L. philadelphia*, n=189) gulls and Common Loons (*Gavia immer*, n=335) were found in smaller numbers over a wider area (8-10% of lakes each). Cormorants (*Phalacrocorax auritus*, n=150) and pelicans (*Pelecanus erythrorhynchos*, n=21) were restricted to a few lakes, while only a few herons (*Ardea herodias*, n=2) and cranes (*Grus canadensis*, n=4) were detected. A habitat-based survey framework shows promise: for example, during 2011, 99% of COTEs were found on 13 lakes; all were >500 ha and all but one contained both islands and rocks. Preliminary extrapolations suggest there may be a significant number of WBs dispersed throughout Ontario's BF. Models of abundance and distribution, based on lake attributes (area, shape, presence of islands/rocks) and water clarity indices will be presented.

Moore, Dave

Canadian Wildlife Service, Environment Canada Burlington ON L7R 4A6 Canada
dave.moore@ec.gc.ca

Population trends of Black Terns at coastal and inland wetlands in Ontario.

As part of a long-term population monitoring program, targeted surveys for Black Terns (*Chlidonias niger*) were conducted in Canadian Great Lakes coastal wetlands (2010; n=149, within 5 km of the Great Lakes shoreline). Additional 'inland' surveys were initiated in watersheds of the Rideau (2013, n=70 wetlands) and Trent (2014; n=40 wetlands to date) river systems, areas of relatively high historical occupancy (e.g. Ontario Breeding Bird Atlas, Great Lakes Marsh Monitoring Program). Similar rates of decline over the past decade were observed in the three study areas. For coastal wetlands, there was long-term decline: from 263 nests (50 sites) in 1989-91 to 208 nests (15 sites) in 2001 (-21%; -2.1%/yr); we observed a further decline to 79 nests (11 sites) in 2010 (-62%; -6.9%/yr). Overall, an estimated 70% of breeding pairs and 78% of nesting sites have been lost from coastal wetlands since 1990. Inland, on the Rideau River system, 185 individuals were recorded at 9 wetlands (nesting at 4 sites), representing a 58.3% decline (-7.3%/yr) in occupied sites from 2005 (n=12) to 2013 (n=5). Four additional occupied wetlands were recorded, but it was unclear whether these were newly colonized or were missed during previous survey efforts. Eighty-nine terns were recorded at 11 wetlands (nesting at 6 sites) on the Trent River system in 2014, an estimated decline of 60% (-6.6%/yr) since 2005. We will present models of site occupancy, based on wetland attributes (total area, wetland type, area of suitable habitat) and marshbird community structure, and compare the results of these targeted surveys with population trends derived from more generalized monitoring programs (Breeding Bird Survey, Great Lakes Marsh Monitoring Program).

Morales-Salazar Zamudio, Adrian¹; Monterrubio, Rico Tiberio César¹; Cancino Murillo, Ramón¹; Villaseñor Gómez, José Fernando².

¹Laboratorio de Vertebrados Terrestres Prioritarios de la Universidad Michoacana de San Nicolás de Hidalgo Morelia MN 58000 México. ²Laboratorio de Investigación en Ornitología de la Universidad Michoacana de San Nicolás de Hidalgo Morelia MN 58000 México.
adrianomorales@hotmail.com

Riqueza de aves rapaces diurnas (Accipitridae y Falconidae) en el estado de Michoacán, México.

Presentamos los resultados preliminares de un estudio que reúne los registros de rapaces diurnas disponibles para el estado de tres fuentes principales. La plataforma de la Global Biodiversity Information Facility (GBIF) dispone de 241 registros de 27 especies, que abarcan del año 1940 al 2012. A su vez, disponemos de registros de la Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO) con un total de 1,059 registros de 22 especies, que van del año 1863 a los más recientes en 2003. El Laboratorio de Vertebrados Terrestres Prioritarios contamos con registros recientes (2003 en adelante) en diversas regiones del estado, obtenidos con diversos métodos. Métodos de conteo suman un total de 453 registros de 17 especies. Nuestro catálogo fotográfico con registros de 17 especies. De aguililla pecho-rojo (*Buteo lineatus*) no reportada, tenemos registros fotográficos recientes (2011-2012) avistado en la región del bajo. El uso de cámaras-trampa nos ha permitido obtener 147 registros de 10 especies, algunos casos en estadios juveniles (i.e. *Buteo nitidus*),

el halcón-selvático de collar (*Micrastur semitorquatus*), la aguililla-negra mayor (*Buteogallus urubitinga*), entre otras. *Ictinia mississippiensis*, *B. regalis* y *B. lagopus*, no reportadas, GBIF reporta registros recientes (2004 en adelante). En suma, contamos con alrededor de 2,000 registros, históricos y recientes, de 32 especies de rapaces diurnas.

Moulton, Colleen Elizabeth¹; Wackenhut, Martha²

¹Idaho Department of Fish and Game Boise ID 83705 USA. ²Idaho Department of Fish and Game Pocatello ID 83204 USA. colleen.moulton@idfg.idaho.gov

Movement patterns of American White Pelicans originating from Idaho

To investigate movement patterns of American White Pelicans originating from Idaho colonies, we banded and patagial tagged 3,270 juvenile pelicans at the Minidoka National Wildlife Refuge and Blackfoot Reservoir nesting colonies in southern Idaho between 2007 and 2012. We received 341 band returns and tag sightings through July 2013, representing 229 known individuals. Ninety-eight percent of these encounters came from the United States, with the majority (52%) originating from the state of California. Thirty-nine percent of California encounters came from Orange County, with only one dead recovery from this county. The autumn (September-November) season represented approximately half of all encounters, with 77% of these observations coming from 1st Year birds. Pelicans that originated from the Blackfoot colony were more likely to be found east of the Continental Divide than birds from Minidoka, particularly during their first year. Adult pelicans (4+ years of age) were only detected east of the Continental Divide three times, and all encounters were within 80 km (50 miles) of the divide. Pelicans from both colonies used three apparent pathways during autumn migration, including one main pathway (south through Utah and Nevada) that was previously speculated, but unconfirmed, by previous studies. This project confirms a third migratory pathway for American White Pelicans in North America and supports prior conclusions that birds originating from western colonies rarely stray east of the Continental Divide as breeding-age adults.

Moulton, Colleen Elizabeth¹; Carlisle, Jay D.²; Cavallaro, Rob³

¹Idaho Department of Fish and Game Boise ID 83705 USA. ²Intermountain Bird Observatory Intermountain Bird Observatory/Boise State University Boise ID 83725 USA. ³Idaho Department of Fish and Game Idaho Falls ID USA colleen.moulton@idfg.idaho

Habitat use of foraging White-Faced Ibis (*Plegadis chihi*) in Eastern Idaho

White-faced ibis (*Plegadis chihi*) is a species of greatest conservation need in Idaho that breeds colonially and requires expansive marsh habitat for nesting. Of six ibis colonies in Idaho, two are within 25 kilometers of each other in the Upper Snake region of the state, and together, the colonies at Market Lake and Mud Lake Wildlife Management Areas contain upwards of 30,000 breeding ibis. As this species often uses agricultural habitats for resting and foraging, and the agricultural landscape in the region is rapidly changing, we designed a study to assess the current distribution and habitat associations of foraging ibis surrounding these two colonies. In 2012, we conducted field and driving route surveys, and collected incidental observations, within 22km of both colonies between late April and mid-July. We collected 210 observations of foraging ibis in the study area. Foraging group sizes ranged from just single birds to 700 birds.

We observed foraging birds predominantly in flooded agricultural fields (75%), but also in wetland habitats (11%), flooded edges of center-pivot fields (8%), sprinkler-irrigated fields (3%), and center-pivot fields (2%). Of 184 foraging observations in cultivated fields, alfalfa was the most common crop type used by observed foraging birds (38%). We also frequently observed foraging birds in barley/wheat (27%) and pasture/hay (18%). The spatial distribution of foraging observations differed between the two colonies. We recorded 80% of the foraging observations around Mud Lake within 12km of the colony. In contrast, approximately half of the foraging observations around the Market Lake colony were between 12km and 22km. We documented the majority (75%) of these observations south and southeast of the colony where flood irrigation was the predominant agricultural practice. The results from this study reveal the importance of flood-irrigated agricultural lands to white-faced ibis nesting in the Upper Snake region.

Muñoz-Padilla, Noé A¹; Riojas-López, Mónica E¹; Mellink Eric².

¹ Departamento de Ecología, Zapopan, JA, 45221, México. ² Departamento de Biología de la Conservación, CICESE, Ensenada, BC, 22860, México. surukua@gmail.com

Anidación de Aves en dos tipos de hábitat secundario en los Llanos de Ojuelos, México

En los Llanos de Ojuelos el cambio de uso de suelo por actividades agropecuaria ha generado una serie de hábitats secundarios, entre los que destacan por su extensión las huertas de nopal tunero y los matorrales secundarios. Los primeros son utilizados cuando menos por 69 especies de aves de las 123 potenciales reportadas para la región. De los segundos sabemos poco sobre las especies que los utilizan. Dada la disminución notable en la cobertura de vegetación primaria y con el propósito de profundizar sobre el valor de estos dos hábitats secundarios para la conservación de las aves de la región, de marzo a julio de 2014 realizamos un estudio para registrar las especies de aves anidantes en seis huertas y seis matorrales. Realizamos una búsqueda intensiva en una parcela útil de 1 ha por sitio. En la parcela registramos 39 nidos de nueve especies diferentes. Al incluir otras especies anidando fuera de ésta pero dentro del mismo tipo de hábitat, el total de nidos fue de 142 de 25 especies diferentes: ocho de ellas anidando tanto en matorral como en huerta; tres solo en huertas y 14 solo en matorrales. Las especies con mayor número de nidos fueron *Zenaida macroura* (31 en huertas; 38 en matorrales); *Toxostoma curvirostre* (5; 6); y *Melospiza fusca* (5; 6). Del total de nidos, el 53% produjeron cuando menos un pollo; en huertas fue 51% y en matorrales 54%. El número de nidos de *Z. macroura* que produjeron mínimo un pollo fue significativamente mayor en huertas (17 nidos) que en matorrales (11; $p=0.03$). *Toxostoma curvirostre* y *M. fusca* no tuvieron diferencias significativas en éxito de anidación entre hábitats ($p=0.08$ y 0.37 , respectivamente). Nuestros datos indican que ambos tipos de hábitats secundarios ofrecen condiciones para la reproducción exitosa de las especies que ahí anidan y que el éxito es comparable entre ellos.

Munters, Alexandra E.; Heath, Susan A.; Green, M. Clay

Wildlife Ecology Program, Department of Biology, Texas State University, San Marcos, TX 78666, USA, Gulf Coast Bird Observatory, Lake Jackson, TX 77566, US, Wildlife Ecology Program, Department of Biology, Texas State University, San Marcos, TX 78666, USA

American Oystercatcher Nest Site Selection on the Upper Texas Coast

The American Oystercatcher (*Haematopus palliatus*) is a shorebird species of high conservation concern that requires intertidal shellfish beds for breeding and wintering habitat. Considerable attention has been paid to obtaining site-specific productivity data and determining factors contributing to their reproductive success on the Atlantic coast; however little is known about populations along the Texas coast. One of the primary management strategies for the conservation of this species is to determine the most important habitats and food resources both spatially and temporary in the species' range. Therefore, we sought to determine factors influencing the nest site selection of American Oystercatchers in Texas. We surveyed breeding oystercatchers on the upper Texas coast and monitored 58 and 83 nests during 2011 and 2012, respectively. We investigated nest site selection at the landscape scale and used a geographic information system (GIS) to measure elevation, the percent shell, rock or sand substance within territories, and distance to nearest oyster reefs, beach access points, urban landcover and the intracoastal waterway. We used these relationships to parameterize a model that predicts the presence of oystercatcher nests on the Texas coast. The best-supported logistic regression model illustrated that oystercatchers prefer nesting closer to oyster reefs, urban landcover, and with more shell substrate ($w=0.44$). We found a relationship between oystercatcher nest site selection and habitat features, demonstrating that both land formations and urbanization influence oystercatcher nests. Our results suggest that landscape scale spatial analysis of the structure of coastal bays can inform land managers regarding projects aimed at restoring and developing dredge islands and oyster reefs in an effort to support and stabilize oystercatcher populations in rapidly changing coastal ecosystems.

Murphy, Sean P¹; Haig, Susan M¹; Matthews, John H²; Arismendi, Ivan³; Safeeq, Mohammad⁴.

¹ U.S. Geological Survey-Forest and Rangeland Ecosystem Science Center, Corvallis, OR, 97331, USA. ² Colorado Water Institute, Colorado State University, Fort Collins, CO, 80523, USA. ³ Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR, 97331, USA. ⁴ College of Earth, Ocean & Atmospheric Sciences, Oregon State University, Corvallis, OR, 97331, USA. smurphy@usgs.gov

Waterbird community responses to altered hydro-climatic habitat templates of the Great Basin

The Great Basin of North America (~440,000 km²) is a unique semi-arid system characterized by highly seasonal precipitation, and isolated, hydrologically dynamic wetlands. The scarcity and isolation of water makes this system critically important to several species of waterbirds throughout the annual cycle. We evaluated twentieth century trends across the Great Basin using gridded climate data and long-term streamflow records. Over this period of time, the Great Basin experienced widespread and regionally coherent trends toward a warmer, drier climate. Although the hydroperiod (seasonal pattern of water) was highly variable, no significant trends were detected. However, we demonstrate significant shifts toward a later onset of the hydroperiod (5, 25%, 50%, and 75% of the annual flow) over a more contemporary period of record (1980-2008). Conversely, the end of the hydroperiod (95% of the annual flow) is occurred earlier over the same time period. Next, we used data from the Breeding Bird Survey to examine the relationship of regional waterbird abundance and shifts in climate and hydrology. The majority of species had a significant relationship with spring precipitation and spring minimum temperature. Our preliminary results suggest that differential associations to shifts in climate may be explained by species-level traits such as life-history strategies and migratory connectivity. We highlight the complexities and challenges that natural resource managers may

face during the transition to future hydro-climatic conditions, and our results will serve as tools to guide development of novel, nonstationarity management practices.

Nell, Lucas A¹; Haig, Susan M¹; Frederick, Peter C.¹

¹ University of Florida, Gainesville, FL, 32611, USA. lucasnell@ufl.edu

Exploring benefits to Everglades alligators from wading bird nesting colonies

Benefits to protectors in protective nesting associations remain largely unexplored. Long-legged wading birds often choose nesting sites with American alligators (*Alligator mississippiensis*) residing below, presumably taking advantage of the protective moat alligator presence offers. Alligators may also benefit, via [i] food dropped from nests (e.g., chicks, regurgitant), [ii] greater prey abundance from a localized nutrient increase, [iii] predation on birds, and/or [iv] consumption of predators drawn to colonies. We estimated fallen-food benefits ([i] above) by quantifying: great egret (*Ardea alba*), white ibis (*Eudocimus albus*), and wood stork (*Mycteria americana*) dead chick mass (from a historic nest success dataset) and regurgitant dropped by great egrets (using throughfall traps). We compared these data to an alligator energy budget. Energy lost via regurgitant was non-trivial, but the chance of a fish dropping was low and highly variable. Wood storks lost the most dead-chick energy per nest, but white ibises lost the most total energy in our study area from 2001-2014. Our dead-chick energy model suggests that many colony alligators could derive large portions of their yearly food requirements from chicks in colonies. We also assessed the physiological conditions of female alligators in similar habitats with and without nesting colonies. Colony females had higher body conditions than non-colony females. No hematological markers were significantly different overall, but in 2013, colony females had lower corticosterone and higher ketones; this may implicate reproductive effects, but this hypothesis requires further research. Overall, our results indicate that wading bird nesting colonies benefit nearby alligators, and that chicks likely comprise much of these food benefits. This research highlights a facilitative interaction that, given the ecological importance of these species-groups, likely constitutes a keystone process in many wetland ecosystems.

Newstead, David¹ and Conway, Warren²

¹Coastal Bend Bays & Estuaries Program, Corpus Christi, TX

²Texas Tech University, Lubbock, TX

Ecology and status of Gull-billed tern, Least tern, and Snowy plover in the western Gulf of Mexico.

In the western Gulf of Mexico, Gull-billed Terns most frequently nest in association with Black Skimmers on small islands within the bay systems between barrier islands and the mainland. While the Black Skimmer population continues a significant downward trend over the past 40 years of the Texas Colonial Waterbird Survey, declines in Gull-billed Terns have been less severe. Interspecific interactions, and morphological differences may partially explain some of the considerable difference in the rates of decline based on nesting season surveys and focused observational data. Coastal-breeding Least Terns and Snowy Plovers are primarily confined to broad sand and mud flats nearly devoid of vegetation during the breeding season. These habitats are widely dispersed throughout much of the western Gulf of Mexico,

and there has been no repeated comprehensive survey effort indicating a significant decline. During nonbreeding periods, large numbers of both these species occur along the Texas coast and are probably composed largely of birds from inland breeding populations, which likely face a very different array of threats on breeding grounds. Population-specific studies are necessary for understanding whether rates of population change are applicable to an entire species or a population segment, which is fundamental for directing conservation effort where it is most necessary.

Ojeda, José A.

GUANAJUATO, GU, 36250, México. joseorranti@hotmail.com

Situación actual del Águila real en el Estado de Guanajuato

Desde el año de 1994 se han registrado águilas reales en el Estado de Guanajuato, más específicamente en la Sierra de Santa Rosa, casi no existen publicaciones de tales reportes a excepción de una tesis sobre aves de Santa Rosa, donde se menciona el avistamiento de un nido de águila real con polluelos en el año 2004, ese año es el último año en que se observa ese nido activo en la Sierra de Santa Rosa. Del año 2005 al 2010 siguen habiendo reportes de águila real principalmente por el Instituto de Ecología y la Fundación “Cuerpos de Conservación”, aunque no se realizan publicaciones.

Durante todo el año 2013 y 2014 se realizaron como parte de este proyecto, transectos mensuales en automóvil en dos zonas del Estado de Guanajuato donde se habían observado águilas reales anteriormente, estas zonas abarcan la Sierra de Santa Rosa, La Sierra de Lobos, Sierra del Cubo y Sierra de Codornices, principalmente. Se visitaron también los nidos históricos que se tenían registrados y se realizaron transectos a pie y búsqueda intensiva en otras zonas de las mismas sierras, para realizar la búsqueda de nuevos nidos. Durante los transectos realizados casi todos los meses hubieron avistamientos y registros fotográficos de águilas y en cuanto los nidos históricos ninguno estuvo activo durante el 2013 ni el 2014, pero se encontró un nido nuevo activo a principios de 2014 del cual lograron eclosionar 2 polluelos con un éxito hasta la etapa de volantones de un 100%. En las zonas estudiadas existen un gran número de amenazas para esta especie, entre las que destacan la realización de nuevas carreteras y las actividades forestales.

Oliveros-Díaz, Blanca Fabiola; Maturino-Rodríguez, Jesús Alberto; Carrasco-Viggers, Guadalupe.

Instituto Tecnológico Del Valle Del Guadiana, Durango, Dg, 34371, Mexico.
maturino_al@yahoo.com

Rapaces nocturnas en dos áreas naturales protegidas en Durango y Zacatecas.

En México han sido pocos los estudios que se han efectuado en la región neártica de México sobre la comunidad de rapaces nocturnas y su hábitat. El presente estudio se inició con la finalidad de tener conocimiento sobre este gremio de aves en dos áreas con protección, empleando la metodología de puntos de conteo y provocación auditiva. La primera área corresponde al Parque Nacional Sierra de órganos (PNSO) en el Estado de Zacatecas, mientras la segunda se ubica en el Parque Ecológico El Tecuín (PET) en el Estado de

Durango. La riqueza de especies registrada en el PNSO fue de dos, *Bubo virginianus* y *Tyto alba*. Esta última, además, ha sido incorporada como nuevo registro en el área. En el PET se registró una riqueza de tres especies, *B. virginianus*, *Megascops trichopsis* y *M. kennicottii*. La abundancia relativa (estimada como número de individuos por kilómetro recorrido) para *B. virginianus* fue mayor en PET (1.0 ± 0.5) que en PNSO (0.5 ± 0.1). En el caso de *M. trichopsis* y *M. kennicottii* tuvieron una abundancia relativa de $0.75 (\pm 0.25)$ y $0.25 (\pm 0.25)$, respectivamente. Para *T. alba* se estimó una abundancia relativa de $0.5 (\pm 0.1)$. En el PNSO la vegetación donde fueron detectadas las aves fue en el bosque de Pinus-Quercus, con *Pinus cembroides* y *Quercus eduardii* como especies dominantes. Mientras que en el PET fue en el bosque de Pinus, área con mayor cobertura y altura arbórea que en el PNSO. Un programa de monitoreo a largo plazo en estas y otras áreas de la Sierra Madre Occidental es prioritario para la conservación de este grupo de aves.

Peluc, Susana^{1,2*}; Peralta, Giovana²; Luczywo, Ayelen²; Diaz, Agustin²; Schaaf, Alejandro²

¹Instituto de Diversidad y Ecología Animal (IDEA) UNC - CONICET , ²Centro de Zoología Aplicada, FCEFyN - UNC. *speluc@efn.uncor.edu

Disponibilidad de alimento y riesgo de depredación moldean caracteres reproductivos en paseriformes

La tasa de depredación de nidada y la disponibilidad de alimento son dos importantes fuerzas selectivas en la evolución de historias de vida en aves, moldeando distintos caracteres. Aunque ambos factores generalmente co-varían en la naturaleza, e incluso tendrían efectos interactivos, son frecuentemente estudiados por separado. Utilizando como sistemas modelo dos especies paseriformes que varían respecto al tipo de nido y tasa de depredación de nidada (*Troglodytes aedon* y *Saltator aurantirrostris*), ponemos a prueba simultáneamente dos hipótesis clásicas propuestas para explicar las causas de divergencia en caracteres de historia de vida de aves, con un robusto diseño experimental. Veinticuatro nidos de cada especie fueron asignados al azar a uno de cuatro tratamientos en las inmediaciones del nido: Presencia de un depredador, suplemento alimenticio, depredador + suplemento alimenticio y control, durante los periodos de incubación y pichones. Se examinaron patrones de incubación, tasa de alimentación y tasa de crecimiento de pichones. Los resultados obtenidos sugieren que ninguno de los factores examinados por sí solo explicaría la variabilidad en todos los caracteres de historia de vida y comportamientos parentales, y sin embargo interactúan afectando de manera diferencial distintos caracteres de historia de vida en las especies estudiadas. Discutimos de qué manera estos dos poderosos factores ecológicos interactúan para moldear comportamientos reproductivos e inversión parental en especies paseriformes de zonas templadas del hemisferio Sur.

Pérez Hernández, Alina

Partido Comunista de Cuba (PCC) y Federación de Mujeres Cubanas
(FMC)alina@ecovida.vega.inf.cu

Aquatic birds associated to selected wetlands in the southern section of Guanahacabibes, Cuba

The Guanahacabibes Peninsula is one of the most significant regions of Cuba due to the conservation state of the natural communities; however, the region is lacking studies about aquatic bird assemblages. This study had as objectives: to determine the structure, composition and temporal variation of birds, associated to wetlands at the South of the Guanahacabibes peninsula territory. The Fixed Point Count (birds/hour) method was used by scanning every 30 min. The observations were made during winter, summer and autumn season residence time migration. All species observed were listed, the relative abundance in each counting point estimated, and the trophic composition of the assemblage was determined. The species richness was 56 and the most represented families were Ardeidae, Scolopacidae, Anatidae y Accipitridae. We found 18 trophic groups and the months with higher relative abundance matched with the lowest precipitation in the area (October and November, 2011 y 2012 and March 2013). The hydrologic features of the territory are limiting factors in the composition of bird assemblages and a temporal spatial compensation among individuals of the families Anatidae and Scolopacidae was found. The highest total relative abundance was encountered in the winter season residents (2116.03 birds/hour) and the bird species with greatest abundance were: *Anas discors*, *Eudocimus albus*, *Himantopus mexicanus* and *Fulica americana*.

Padilla Rangel, Hernaldo¹, Scott Morales, Laura²

¹GEOPROSPECT S.A. de C.V. Linares NL 67700 México. ²Laboratorio de Ecología, Facultad de Ciencias Forestales, Universidad Autónoma de Nuevo León Linares NL 67700 México. biolhpadilla@yahoo.com.mx

Avifauna de la Reserva Ecológica de Un Complejo Siderúrgico, como modelo de conservación.

En México, las Áreas Naturales Protegidas son herramientas fundamentales para la protección y conservación de su avifauna; las de carácter privado fortalecen esta función aumentando la superficie de espacios naturales bajo protección legal y manejo sustentable. El objetivo principal de esta investigación fue evaluar la Reserva Ecológica del Complejo Siderúrgico Ternium Pesquería (RECSTP) como modelo de conservación de la avifauna asociada al Matorral Espinoso Tamaulipeco en el Municipio de Pesquería, N.L. Se realizaron muestreos mensuales a través de puntos de conteo en el periodo de Marzo 2013-Febrero 2014. Se reportaron 3,094 detecciones y/o avistamientos con una N total de 4,792 individuos, se registraron 69 especies organizadas en 28 familias y 56 géneros, de las cuales 7 son sujetas a alguna categoría de riesgo. Las familias TYRANNIDAE y COLUMBIDAE son las mejor representadas con 7 especies. En conclusión la composición avifaunística no se ve afectada por la matriz industrial circundante a la reserva y conserva cierto grado de similitud con áreas de matorral semiconservado o pristino.

Palacios, Eduardo¹; Amador-Silva Santiago, Edgar²; Galindo-Espinosa, Daniel³

¹CICESE Unidad La Paz La Paz BC 23050 México. ²CIBNOR La Paz BC 23050 México.

³CICIMAR La Paz BC 23050 México. epalacio@cicese.mx

Populations, threats, and conservation of Snowy Plover, Least and Gull-billed Tern in Mexico

Snowy Plovers, Least Terns, and Gull-billed Terns nest on saltflats and sandy beaches in close proximity to each other along coastal northwest Mexico. All three species share the same threats: habitat loss and degradation, human disturbance and elevated predation. Listed as threatened in Mexico, the Snowy Plover is one of the least abundant shorebirds in North America and is decreasing in Mexico. Almost 80% of its total population in Mexico (2100 individuals) breeds at discrete places in coastal northwest Mexico. The Western Gull-billed Tern breeding population in Mexico seems to have remained stable from 2005 to 2014. Out of a total breeding population of 783 pairs, about 526 pairs (67%) breed in western Mexico in nine colonies. The California Least Tern breeding population has also remained stable for the last 20 years. In the Baja California peninsula, about 400 pairs nest in about 50 nesting sites distributed in 11 clusters of nesting sites along the Pacific coast. Nesting site abandonment by Gull-billed and Least Terns are either natural changes in nesting habitat suitability due to flooding, or because human disturbance such as the establishment of trailer parks, housing development, or heavy human use on the nesting site. On sandy beaches the rate of anthropic disturbances was higher than the rate of natural disturbances, both during breeding and winter season. Man-made habitat is an opportunity to provide additional nesting locations for terns. Management of priority areas, long term monitoring at important sites, and species legal protection are badly needed. The future of research and conservation of these three species will depend on international and inter-institutional coordination and cooperation.

Palestis, Brian; Burger, Joanna; Gochfeld, Michael.

¹ Wagner College, Staten Island, NY, 10301, USA. ² Rutgers University, Piscataway, NJ, USA.
bpalesti@wagner.edu

Population-wide decrease in the Common Terns of Barnegat Bay, New Jersey

The population of Common Terns (*Sterna hirundo*) nesting in Barnegat Bay, New Jersey, USA has been studied since the 1970's. In this region Common Terns nest mainly on small saltmarsh islands. After a decline in the number of individuals since the mid-1980's and number of colonies since the late 1970's, the population had been largely stable. However, recent years have been very poor, with complete or near-complete breeding failure at most colonies, and there has been a large decrease in the number of individuals and a slight decrease in the number of colonies. We present historical data from long-term monitoring across the bay. We also examine nest success and failure at particular colonies, focusing on 2012-2014, but with breeding failure extending back to 2010 or earlier at some colonies. Although productivity has varied between colonies and years, the population decline is bay-wide and cannot be explained by movements of terns from one site to another within the bay. Reasons for breeding failure vary but include losses to storm and tidal flooding, nest predation, predation on adults, variation in food availability, and perhaps human disturbance. With rising sea levels and predicted increases in storm frequency and intensity, the negative trends documented here are likely to continue.

Partida-Pérez, Alejandra¹, Ricardo Rodríguez-Estrella²

¹Maestría en Ciencias Biológicas, Universidad Autónoma de Tlaxcala. ²Centro de Investigaciones Biológicas del Noroeste, S. C. alexa_13204@hotmail.com

Ecología trófica y éxito reproductivo del halcón de Harris (*Parabuteo unicinctus*) en el desierto de Baja California Sur.

La fragmentación del hábitat es una de las causas más importantes en la disminución de hábitat de anidación de las aves, también modifica su éxito, su dieta y la disponibilidad de presas potenciales. El objetivo de esta investigación es evaluar el efecto de la fragmentación del matorral desértico de Baja California Sur en el éxito reproductivo y dieta del halcón Harris (*Parabuteo unicinctus*). Se dio seguimiento a la productividad y éxito reproductivo del halcón de Harris así como de su dieta en 2013 en un área fragmentada y natural, haciendo también evaluaciones de la disponibilidad de presas. Se monitorearon n=20 nidos en total, 11 en área natural y 9 en área fragmentada. El 90.9% de los nidos en área natural fueron exitosos mientras que en el área fragmentada 66.6% lo fueron. Los resultados del análisis de 317 egagrópilas muestran diferencias en la dieta entre las parejas con nidos en área natural y fragmentada, el grupo más consumido entre las dos áreas fueron los mamíferos con 78% y 68% respectivamente, en cuanto al aporte de biomasa encontramos que los lagomorfos fueron quienes más aportaron con 90% en área natural y 66% en área fragmentada. En cuanto a la disponibilidad de presas la zona natural tuvo una mayor densidad de lagomorfos por kilómetro cuadrado, cercano a 10 veces más, comparativamente con la zona fragmentada. Se discuten las implicaciones de estas diferencias en el éxito reproductivo.

Paul, Ann F.¹; Lorenz, Jerome J.²; Hodgson, Ann B.³

¹Audubon Florida Tampa FL 33619 USA. ²Audubon Florida Tavernier FL 33070 USA.

³Resource Designs Inc. Brooksville FL 34601 USA. apaul@audubon.org

Updates to the estimated breeding population of Reddish Egret (*Egretta rufescens*)

In 1991, R. Paul estimated the Florida breeding population of Reddish Egrets (*Egretta rufescens*) at 350-400 pairs (120 pairs north of Florida Bay and the Keys, and 230+ pairs in Florida Bay and the Keys). In 2006, Green, in consultation with regional experts, decreased the estimate to 250-300 nesting pairs (230 pairs north of Florida Bay and the Keys, and 17 pairs in Florida Bay and the Keys). In 2011, we estimated 260 breeding pairs (170 pairs north of Florida Bay and the Keys, plus 100 pairs in Florida Bay and the Keys). Previous regional surveys in Tampa Bay showed those sites accounted for 20%± of the 2006 statewide estimate; however, the number of pairs at the Alafia Bank Bird Sanctuary in Tampa Bay has declined 50% since 2006. Nesting continues to be absent from the panhandle of Florida but, in 2009, we observed a new northern nesting record on the Gulf of Mexico coast of peninsular Florida at the Bird Keys, Crystal Bay, Citrus County. We also include herein an unpublished report of nesting at Manbirtee Key, Manatee County, in 2012. To provide a contemporary update of the geographic extent of nesting and recent estimate of breeding pairs in advance of the statewide survey planned for 2015, we evaluated nesting sites known from previous surveys. We presently estimate 110 pairs north of Florida Bay and the Keys, and 65 pairs in Florida Bay and the Keys, a 33% decline in five years. In comparison to the 1989 Atlas, when Reddish Egrets were reported nesting at 24 sites in 7 coastal counties, they presently nest at 28 sites in 8 counties north of Monroe County and 13 sites in Monroe County, and we speculate they are absent from other coastal counties. Management constraints vary at each site and individualized protection prescriptions are necessary to promote reproductive success.

Petersen Michelle L.; Gawlik Dale E.

Florida Atlantic University Boca Raton FL 33431 USA. mpeter45@fau.edu

Great Egret and Wood Stork nest effort: Contrasting species in a changing landscape

The health and function of the Everglades ecosystem is assessed through the breeding success of charismatic megafauna such as wading birds. The key hypothesis underlying its restoration, the *Trophic Hypothesis*, states that hydrologic patterns, fish populations and wading birds are tightly linked. We developed six *a priori* hypotheses to test for environmental conditions that were most important for generating high nesting effort for Great Egrets (*Ardea alba*) and Wood Storks (*Mycteria americana*) from 1991-2009. Hypotheses were arranged along a gradient of globalized to localized representations of food availability. We constructed generalized linear models as functions of environmental parameters and assessed the level of support among competing models using an information-theoretic approach. High nest effort for Great Egrets was positively associated with high foraging density in the month of April. This pattern supports the *Foraging Distribution Hypothesis*, which suggests that nest effort is related to factors that produce large foraging aggregations of birds rather than being a simple function of hydrologic conditions. Wood Stork nest effort was negatively associated with the number of days water rises during the dry season. This supports the *Progressive Drydown Hypothesis*, which predicts nesting effort is highest when water levels continuously drop throughout the breeding season exposing a large amount of foraging habitat. These results support the current understanding that egrets are less constrained by water manipulations of the Everglades ecosystem, thus providing one mechanism to explain how they could thrive in a dynamic landscape.

Pialková, Radka

Department of Ecology, Faculty of Environmental Sciences, Czech University of Life Sciences Prague CZ 16521 Czech Republic. rpialkova@yahoo.com

Patterns of sex ratio variation and genetic mating system (extra-pair paternity and intraspecific brood parasitism in the Black-Headed Gull

Life-history theory predicts skewed offspring sex ratios in a range of situations in which the costs and benefits of producing the sexes differ. Variation of primary sex ratio was studied in 294 Black-headed Gull (*Larus ridibundus*) chicks in 133 nests. The primary sex ratio of the population did not depart from expected binomial distribution. For tests of factors potentially correlated with sex ratio was used GLMMs in SAS. Hatching sex ratio was negatively correlated with egg-laying sequence ($F_{2,157} = 5.81$, $p = 0.004$) and timing of breeding ($F_{1,118} = 4.92$, $p = 0.028$), but no correlation with egg volume ($F_{1,145} = 0.03$, $p = \text{NS}$) was observed. The data indicate that the adaptive allocation of sex by the female to specific eggs in clutch occurs. This study provided the evidence for adaptive sex allocation in Black-headed Gulls. Moreover, I investigated the genetic mating system of the Black-headed Gull *Larus ridibundus*, where, as in seabirds and most other long-lived and socially monogamous birds, extra-pair paternity (EPP) is typically rather infrequent. Parentage was determined using six microsatellite markers for 79 chicks from 30 broods. In this study population, I found evidence of allelic inconsistencies between putative parents and chicks in 43% of nests, resulting from both EPP and intraspecific brood parasitism (ISBP). Extra-pair paternity was detected in 33 % (10/30) of broods, and 20% (16/79) of all nestlings were sired by extra-pair males. Furthermore, 9% (7/79) of chicks out of 5 nests (17%) were not the offspring of either member of the pair, indicating ISBP. These findings

reveal a moderate rate of ISBP and a high rate of EPP compared with other related species, and shows that Black-headed Gulls successfully participate in extra-pair copulations.

Pialková, Radka¹

Department of Ecology, Faculty of Environmental Sciences, Czech University of Life Sciences Prague CZ 16521 Czech Republic. rpialkova@yahoo.com

Egg size, laying order and offspring sex in Common Pochard (*Aythya ferina*)

In sexually size dimorphic birds where the fitness return from male and female offspring differs, female may advantage offspring of the more beneficial sex according to the sex allocation theory. Females may affect performance of sons and daughters by differential allocation of resources to the eggs depending on their sex or by placing male and female eggs early or late in laying sequence. Here, we analyzed egg size variability in relation to embryo sex and laying order in the Common Pochard (*Aythya ferina*). We found that egg volume decreased with laying order for both sexes, however there were differences between male and female eggs, respectively. Female eggs decreased in size significantly faster than male eggs in laying sequence. Laying order was also found to interact with embryo sex. Eggs bearing female embryo were laid earlier in laying sequence than eggs bearing male embryo. There was no relationship between offspring sex and egg size, however we found positive correlation between egg size and female body-mass. We suggest that enhancing daughters in laying order of eggs and slower decrease of egg size for male eggs may represent female's ability of sex specific adjustment of offspring. Project was supported by European social fund in the Czech republic Postdok (ESF/MÅ MT CZ.1.07/2.3.00/30.0040)

Plasencia Vázquez, Alexis Herminio

El Colegio de la Frontera Sur (ECOSUR), San Francisco de Campeche
Campeche 24040 México alexpla79@gmail.com

Caracterización del área de distribución geográfica potencial de las especies de aves psitácidas de la Península de Yucatán, México.

La familia Psittacidae es una de las más amenazadas en México y los hábitats donde se distribuyen desaparecen. En este estudio se caracterizó la cobertura del suelo del área de distribución geográfica potencial de las ocho especies de psitácidos presentes en la Península de Yucatán. Se utilizó el algoritmo de Máxima Entropía (MaxEnt) y registros históricos de las especies. Para validar externamente los modelos se utilizaron registros de presencia y ausencia tomados en campo (2010-2012). Para caracterizar el área de distribución se utilizó la carta de uso de suelo y vegetación Serie IV de INEGI (2007-2010). Los modelos tuvieron un buen desempeño, de acuerdo a los valores del área bajo la curva (AUC), que oscilaron entre 0.88-0.95 con los datos de entrenamiento y entre 0.82-0.91 con los de prueba. Se localizó a la mayoría de las especies en los sitios donde los modelos predecían presencia. Más del 76% del área de distribución geográfica potencial de los psitácidos en la Península está ocupada por selva, excepto para *Amazona oratrix*. La selva mediana subperennifolia es la mejor representada en las áreas de distribución y de los usos de suelo el mejor representado es el pecuario. La especies más afectadas dentro de la Península son: *Amazona farinosa* y *A.*

oratrix. La Reserva de la Biosfera de Calakmul es la más importante para la protección de los psitácidos en la Península. El conocimiento de las características de las áreas de distribución es parte fundamental en el establecimiento de estrategias de conservación de los psitácidos.

Plasencia Vázquez, Alexis Herminio

El Colegio de la Frontera Sur (ECOSUR), San Francisco de Campeche
Campeche 24040 México alexpla79@gmail.com

Efectos de la interacción entre la fragmentación forestal, la cobertura vegetal y el uso del suelo sobre la distribución geográfica potencial de psitácidos en la Península de Yucatán

La pérdida, degradación y fragmentación de las áreas de selva están poniendo en riesgo la subsistencia de las poblaciones de psitácidos. En este estudio se determinó la influencia de la fragmentación, en función de la cobertura vegetal, los usos del suelo y la configuración espacial de los fragmentos, sobre los patrones de distribución geográfica potencial de las ocho especies de psitácidos presentes en la Península de Yucatán, México. Se utilizaron los mapas de distribución geográfica potencial publicados recientemente, obtenidos con el algoritmo de Máxima Entropía, y se incorporó para este estudio el mapa de probabilidad de distribución de cada especie. Se calcularon 15 métricas/variables que evalúan la fragmentación forestal, la configuración espacial de los fragmentos, la proporción ocupada por las formaciones vegetales y los usos del suelo en 100 parcelas de aproximadamente 29km² distribuidas al azar dentro de las áreas de presencia y ausencia predichas para cada especie. Además, se tuvo en cuenta la relación entre las variables ambientales y la probabilidad de distribución de las especies. Se empleó una regresión de mínimos cuadrados parciales para explorar los patrones entre las variables empleadas y los modelos de distribución potencial. Ninguna de las variables ambientales analizadas determina por sí sola la presencia/ausencia o la probabilidad de distribución de los loros en la Península. Se comprobó que para las ocho especies, ya sea para la presencia/ausencia o para la probabilidad de distribución, las variables explicativas más importantes son las de interacción entre tres variables, en especial la interacción entre el área total de selvas, la longitud total de bordes de fragmentos y la cantidad de selva mediana subperennifolia. La fragmentación del hábitat influye sobre la distribución geográfica potencial de estas especies en combinación con otros factores ambientales asociados a la misma, como son la proporción de las diferentes coberturas vegetales y los usos del suelo que se desarrollan en las áreas deforestadas.

Pruner, Raya

Florida Park Service Panama City FL 32408 USA. raya.pruner@dep.state.fl.us

Beaches heavily inhabited by ghost crabs and dune vegetation generates an increase in reproductive failure in Snowy Plovers

Despite a growing body of ghost crab (*Ocypode quadrata*) studies and concerns of increased crab predation of shorebird nests, there is limited knowledge of crab population biology or of their impact on imperiled shorebirds as a reproductive threat. Our research combined experimental crab density manipulation with quantitative comparisons between burrow densities and snowy plover (*Charadrius nivosus*) reproduction and observations of crab-plover interactions. We monitored 317 nests and 196 plover chicks from 117 successful nests in

Florida in 2011-2013. We monitored 42 nests with cameras to document crab-plover interactions. Plover nests assigned to treatment groups containing crab removal had a higher daily survival rate (DSR) and increased success with greater crab removal. Nest DSR was also influenced by manipulated crab activity, vegetative cover and site. Chick DSR was age dependent and influenced by site, manipulated crab activity, human density and vegetative cover. Crab capture-rate varied from 30-55% (328 captured) and was influenced by vegetative and shell cover. We measured 4734 burrows, observed a mean density of 0.084 m² and documented burrows around 97% of nests. Burrow density was correlated with seasonal occurrence, shell and vegetative cover and waterbody type. We concluded that crabs clearly impacted shorebird productivity, the threat of predation increased as burrow densities increased on nesting beaches and burrow density increases in association with dune vegetation encroachment and temperature. Direct removal or indirect (vegetation removal, allow overwash) management of crab populations may be necessary when nest/chick loss is excessively high.

Racine, Vincent; Fraser, Gail S.

Faculty of Environmental Studies, York University Toronto ON M3J 1P3 Canada
vincent.racine.vr@gmail.com

Evaluation of the reporting & response to small spills from offshore oil production projects

Chronic oil pollution is of significant conservation concern for seabirds. In cold water environments diving seabirds have been shown to be at risk from very small amounts of oil. The Grand Bank off Newfoundland and Labrador (NL) is an ecological hotspot for seabirds, an estimated 40 million annually use these waters. NL is also where migratory seabirds may encounter oil pollution from offshore oil extraction activities. We summarize Environment Canada's (EC) comments to three environmental assessments (1985, 1997, 2001) for offshore oil production projects in NL with respect to impacts on seabirds. We also analyze data (original reports submitted by the operators to the regulator) received through an Access to Information Request. The analysis includes: a) details on the substance and frequency of "small" (defined as < 50 bbls) spills; b) the type and quality of data reported to the regulator; c) the actions of the operators to small oil spills; and d) the influence of weather/time of day on the operators' ability to respond to small spills. EC expressed repeated concern about the impact of chronic oil pollution on seabirds. The causes and substances spilled varied substantially. The following are preliminary results. The typical response of operators to small spills was to identify the source, estimate the volume spilled and report the incident. Of the 406 small spills, 6 (1.5%) had boom deployed and 11 (2.7%) used a "mechanical dispersion" approach; in most cases a spill was allowed to dissipate with no intervention. While observations of spills were made, the reporting of the length it took to dissipate and whether seabirds were observed in the area was inconsistent. Our analysis of these reports suggests that independent, dedicated observers on platforms would increase consistent reporting within and among operators and would further our understanding of the frequency of oil encounters by seabirds in the vicinity of platforms.

Reinoso-Pérez, María T.; Canales-Delgadillo, Julio C.; Chapa-Vargas, L.; Argüello-Astorga, Gerardo R.; Riego-Ruiz, Lina R.

IPICYT, San Luis Potosí, SL, 78260, México. maria.reinoso@ipicyt.edu.mx

Prevalencia y diversidad de parásitos haemosporidios en aves del Altiplano Potosino.

Debido al auge que los trabajos sobre ecología, biología evolutiva y biología de la conservación han tenido en las últimas cuatro décadas, el estudio de los haemosporidios aviarios ha resurgido como una herramienta para entender la forma en que la pérdida y la fragmentación del hábitat y el cambio climático afectan a las poblaciones naturales de aves. Dado que el Altiplano Potosino forma parte de la ruta migratoria de las aves de Norteamérica es importante llevar a cabo estudios en esta zona que nos permitan conocer la riqueza específica de estos parásitos y las relaciones que estos tienen con las aves nativas y residentes. Se determinó la presencia de parásitos haemosporidios en tres especies de aves residentes por medio de microscopía y amplificación de un fragmento de citocromo b de los parásitos. Se estimó la prevalencia de infección en cada especie y se investigaron las posibles relaciones que ésta tiene con el deterioro al hábitat por el pastoreo y extracción de especies arbóreas así como con la distancia a cuerpos de agua. Se determinó que existe una alta carga parasitaria en dos de las tres especies bajo estudio. Se identificaron cuatro linajes de haemosporidios presentes en la zona con prevalencias cercanas al 50%. En los sitios con degradación baja y moderada la carga parasitaria fue mayor que en los sitios con alta calidad de hábitat, no se encontró una relación entre distancia a cuerpos de agua y carga parasitaria. La prevalencia y carga parasitaria no varió entre las dos especies con casos positivos. Dos de las secuencias obtenidas representan un linaje que no ha sido reportado hasta ahora.

Reinoso-Pérez, María T.; Canales-Delgadillo, Julio C.; Chapa-Vargas, L.; Argüello-Astorga, Gerardo R.; Riego-Ruiz, Lina R.

IPICYT, San Luis Potosí, SL, 78260, México. maria.reinoso@ipicyt.edu.mx

Diversidad y estructura genética poblacional de tres especies residentes del Altiplano Potosino

Entender los procesos ecológicos y evolutivos por los que atraviesan las especies es fundamental para lograr su conservación. La genética de poblaciones ha sido una herramienta para entender los procesos involucrados en la permanencia o reducción de la diversidad genética. En comparación con otros marcadores moleculares, los microsatélites presentan alto grado de polimorfismo, permiten hacer estudios comparativos entre especies o géneros de un mismo grupo. Aunque los microsatélites en aves son menos abundantes que en otros taxa, se han aislado suficientes marcadores microsatélites para estudios demográficos y de genética de poblaciones. Utilizando marcadores especie-específicos y multiespecie se determinó la diversidad y estructura genética de tres especies de aves residentes del Altiplano Potosino encontrando para una de ellas (*Haemorhous mexicanus*) altos niveles de endogamia y bajos niveles de diversidad genética. Mientras que para las otras dos (*Melospiza fusca* y *Campylorhynchus brunneicapillus*) los estimados de diversidad y endogamia estuvieron dentro de los niveles esperados para poblaciones en equilibrio. En la extensión espacial a la que se llevó a cabo este estudio (diámetro = 60 Km), ninguna de las especies mostró una estructura genética poblacional evidente sugiriendo que los individuos de cada especie pertenecen a una sola población, por lo que es necesario llevar a cabo estudios a mayores extensiones para realizar inferencias a cerca de distancias y niveles de deterioro del hábitat que pudieran afectar la estructura de las poblaciones.

Reiter, Matthew E.¹; Hickey, Catherine M.¹; Strum, Khara M.¹; Davidson, Pete²; Palacios, Eduardo³; Clay, Rob P⁴; Eusse, Diana⁵; Chu, Jim⁶.

¹Point Blue Conservation Science, Pescadero, CA, 94060, USA. ² Bird Studies Canada, Vancouver, Canada. ³ Centro de Investigación Científica y de Educación Superior de Ensenada, La Paz, Mexico. ⁴ Manomet Center for Conservation Science. ⁵ Asociación Calidris, Colombia. ⁶ US Forest Service, USA. mreiter@pointblue.org

The Migratory Shorebird Project: Connecting communities of the Americas through conservation science

The lack of broad-scale, hypothesis-driven monitoring of shorebirds limits our ability to manage their populations in the face of habitat loss and climate change. We have designed and implemented a 10-year multi-partner research and monitoring project for Dunlin (*Calidris alpina*) and Western Sandpiper (*Calidris mauri*) across their wintering range. The objectives of the Migratory Shorebird Project are to: (1) quantify spatial and temporal trends in distribution and abundance of Western Sandpipers and Dunlin at multiple scales across their non-breeding range; (2) measure the response of Dunlin and Western Sandpipers to management and conservation actions; (3) evaluate specific hypotheses about the factors influencing population changes, including habitat change, predators, and sea-level rise; and (4) raise awareness in communities about shorebird conservation and their connectivity to other communities along the Pacific coast of the Americas. We have established an international partnership and steering committee, developed standardized monitoring protocols and analytical framework to evaluate initial research hypotheses about the impacts and sources of habitat change, developed bilingual workshop and outreach materials, and collected and centralized data from 11 countries through the California Avian Data Center. Innovative informatics strategies are making the data from the Migratory Shorebird Project useful for resource managers, conservation practitioners, and decision-makers. The Migratory Shorebird Project provides a new vision for monitoring that is internationally coordinated, multi-scale, hypothesis-driven, and solution oriented in order to be most effective for the conservation of shorebirds. We present the project framework, initial results (2012 - 2014), and applications for conservation.

Riojas-López, Mónica E.¹; Mellink, Eric².

¹Departamento de Ecología, CUCBA, Universidad de Guadalajara, Zapopan JA, 45221 México. ²Depto. Biología de la Conservación, Centro de Invest. Científica y de Educación Superior de Ensenada, Ensenada BC, 22860 México. monica.riojas@gmail.com

Changes in the community of mangrove-nesters in the middle portion of Laguna Cuyutlán, Mexico

The Laguna Cuyutlán, the only large coastal wetland along a stretch of >1000 km the Pacific coast of southern Mexico, and a Mexican IBA, was touted in 1874 as "...a most fertile field for ornithological research..." by John Lewis Geiger. This remark did not stimulate ornithologists, and 140 years later we still know very little about the history and dynamics of its waterbirds. A 3-ha rocky outcrop in the 3rd basin of the lagoon, Mogote Prieto, covered by a patch of dry forest in the middle and fringed by mangroves, has supported large waterbird canopy colonies. In

2003 and 2005 the island had hundreds of nests of Neotropic Cormorants and Cattle Egrets, and tens of nests of Black-crowned Night-heron, Roseate Spoonbill, White Ibises, and of Tricolored, Snowy, and Great Egrets, and some nests of Little Blue Herons. Colonies remained roughly similar in 2010 and 2011. In 2014 Neotropic Cormorant nest numbers were similar, and Cattle Egrets were abundant in April, but not later. In this year Black-crowned Night-heron, Roseate Spoonbill, Snowy Egret and Little Blue Heron did not nest or did so in very small numbers, while Tricolored Egrets (88 pairs) moved to another site in the same basin; Great Egrets and White Ibises increased to hundreds of nests, and Wood Storks nested here for the first time. The paucity of data impedes full explanation of these changes. The most evident change in the area was the 2012 enlargement and deepening of Canal Tepalcates that connects the lagoon with the sea. As a result, water levels during the breeding season were much higher than previously. Deeper waters must have changed the value of the area for different wading species, but the relocation of the Tricolored Heron colony suggests that competition from Great Egret and/or White Ibis could have also played a role. Colonies at Mogote Prieto should be monitored and other mangroves in and near Laguna Cuyutlán should be surveyed.

Rivera-Rodríguez, Laura B.¹, Rodríguez-Estrella, Ricardo¹ lrivera07@gmail.com

¹ Centro de Investigaciones Biológicas del Noroeste, La Paz, BC 23096 México
estrella@cibnor.mx

Organochlorine pesticides in common ground dove (*Columbina passerine*) from Baja California Sur, México

We detected and measured organochlorine pesticide residues in serum samples from 136 wild common ground doves collected around field crops in Santo Domingo valley or remote natural vegetation areas of BCS (2001-2005). The concentration of all organochlorine pesticide was significantly higher in birds from field crops areas than in natural remote areas with the exception of one individual from natural remote areas which registered the highest concentration of p,p,DDD of all samples (346.86pg/ul). Analysis by year showed 2002 as the one with highest concentrations. The high concentrations of aldrin in 2001 samples reflect their close applications to the date of sampling. Occurrence and concentrations of organochlorine pesticides in the study area are decreasing excepting p,p'-DDE and dieldrin, which were quantified in almost all samples analyzed (89%). Data of one outlier individual from natural remote areas show the importance of individual analysis in small wildlife birds.

Riojas-López, Mónica E.¹; Mellink, Eric²; Ramírez Jorge L.³

¹Departamento de Ecología, CUCBA, Universidad de Guadalajara, Zapopan JA, 45221 México.

²Depto. Biología de la Cons., Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada BC, 22860 México. ³Independent fisherman San Buenaventura CO 28880 México. monica.riojas@gmail.com

A new, relevant colony of Wood Storks in western Mexico

Breeding of Wood Storks (*Mycteria americana*) in western Mexico is limited to a few known sites from Guerrero to Chiapas. However, except for nesting at one Oaxaca site photographed in 2005, the colonies were observed over 25-35 years ago, while several recent studies in western Mexico coastal wetlands have not detected Wood Stork colonies. During 2014 we documented a colony at Mogote Prieto, a mangrove-fringed island in the third water body (Vaso III) of Laguna Cuyutlán, Colima. On 15 April, about 300 adult Wood Storks in the mangroves included 30-40 clearly on nests; a few others were carrying nesting materials. Two nests contained 3 large chicks, and six nests, 2 small chicks each. On 12 June there were about 60 adults, 17 large, feathered chicks, but also adults that appeared to incubate, and one small chick. On 12 July there were about 60 adults and 15 fledglings. The disparity between number of eggs and small chicks, and the number of fledglings could reflect the effect of summer rains. MERL and EM have studied the breeding birds of Laguna Cuyutlán's Vaso III since a decade ago, while JLT has been a fisherman there for over two decades, and none of us had ever seen Wood Stork nesting in this area. Why this colony was established can only be speculated. Until early 2012 limited water entry and high evaporation leading to frequent low water levels in Vaso III. Afterwards, the opening of a large navigation channel connecting Vaso II with the ocean has seemingly caused higher water levels in Vaso III, that due to a natural dyke do not recede during low tides. This surely affected the abundance and availability of fish, albeit, according to fishermen, reducing them, and may have made it more difficult for raccoons to reach the colony. Regardless of the cause, the Wood Stork colony in Laguna Cuyutlán appears to be relevant for its conservation in western Mexico and should be given due attention. It also points out at the dynamic nature of coastal waterbird colonies.

Rodríguez-Casanova, Araceli Janette; Zuria, Iriana

Universidad Autónoma del Estado de Hidalgo Pachuca de Soto Hg 42184 México
arze_hbk@hotmail.com

Aves de la laguna de Zumpango, Estado de México

La laguna de Zumpango está ubicada al norte de la Cuenca del Valle de México entre los municipios de Zumpango y Teoloyucán, Estado de México. Durante la época prehispánica formó parte del sistema lacustre integrado por cinco grandes lagos: Texcoco, Xaltocan, Zumpango, Xochimilco y Chalco. Actualmente este cuerpo de agua es un hábitat importante para muchas aves, incluyendo migratorias, sin embargo se encuentra sometido a problemas de contaminación y no existe un inventario completo de su avifauna. Por tanto, se realizaron registros visuales y auditivos de aves dos veces al mes, de febrero de 2013 a julio de 2014 utilizando el método de puntos de conteo extensivo. Se establecieron 17 puntos sobre el perímetro de la laguna y entre los puntos se ubicaron transectos en franja para abarcar la mayor parte del borde de la laguna. Se registraron un total de 73 especies de aves, pertenecientes a 13 órdenes y 31 familias. El orden mejor representado fue Passeriformes con 32 especies, seguido de Anatiformes con 10 y Pelecaniformes con nueve. Las familias representativas de acuerdo al número de especies fueron Anatidae (10), Icteridae (8) y Ardeidae (6). De las 73 especies registradas el 12.7% fueron abundantes, el 18.3% comunes, el 21.1% medianamente comunes, el 35.2% no comunes y el 12.7% raras. El 58.9% de las aves fueron residentes, el 31.5% migratorias de verano e invierno, el 2.7% transitorias y el 6.8% introducidas. De acuerdo al estimador no paramétrico Chao2 la completitud del inventario fue del 91.2%. Se presentó una riqueza más alta en primavera e invierno, principalmente por el componente migratorio. Conocer la riqueza de especies y la dinámica temporal de las aves

revela la importancia de los hábitats acuáticos, y ayuda a desarrollar e implementar estrategias de conservación.

Rodríguez-Casanova, Araceli Janette; Goyenechea-Mayer, Irene; Ortiz-Pulido, Raúl, Zuria, Iriana

Universidad Autónoma del Estado de Hidalgo Pachuca de Soto Hg 42184 México
arze_hbk@hotmail.com

Patrones de distribución de la avifauna del estado de Hidalgo

Los patrones de distribución de la biota terrestre pueden ser identificados mediante los análisis de la biogeografía histórica, que contemplan la historia evolutiva de los taxones y los procesos que originaron esta distribución. Un método utilizado para conocer los patrones de distribución de las especies es el Análisis de Parsimonia de Endemismos (PAE) que agrupa áreas jerárquicamente mediante la presencia de taxones compartidos. El PCE (Eliminación Progresiva de Caracteres) una variante del PAE permite obtener múltiples soluciones por la presencia de más de un evento histórico en la distribución. En el estado de Hidalgo se presentan cuatro provincias biogeográficas: la Llanura Costera del Golfo de México (LLCGM), la Sierra Madre Oriental (SMO), el Altiplano Mexicano (AM) y la Faja Volcánica Transmexicana (FVT) y en el estado se encuentran representadas una gran diversidad de las aves de México. El objetivo de este trabajo fue analizar los patrones de distribución de las aves con el PAE y el PCE. El PAE se realizó con datos georeferenciados de las aves residentes, se creó una gradilla de 0.5° de latitud x 0.5° de longitud sobre el estado. Se construyó una matriz de presencia-ausencia de 12 cuadrantes (filas) por 188 especies (columnas). En el PCE se eliminaron las sinapomorphas que sustentaron los cladogramas obtenidos. A partir de bases de datos preexistentes, se obtuvo un total de 6,564 registros de distribución de 188 especies de aves, pertenecientes a 18 órdenes, 45 familias y 131 géneros. En los cladogramas obtenidos del PAE y PCE se identificaron dos áreas de endemismo relacionadas con la distribución de las aves, la primera corresponde a la LLCGM y la segunda área agrupa a la SMO, AM y FVT. El análisis PCE resultó ser más efectivo que el PAE, ya que permitió obtener un cladograma resuelto al eliminar las politomías. Los resultados obtenidos proporcionan información que puede ser tomada como una herramienta para generar estrategias de conservación.

Rodríguez-Estrella, Ricardo

Centro de Investigaciones Biológicas del Noroeste, La Paz, BC 23096 México
estrella@cibnor.mx

Hacia una estrategia integral de monitoreo de poblaciones reproductoras de Águila Real en México

El águila real (*Aquila chrysaetos*) ha sido utilizada en diversos programas de conservación por ser una especie carismática, bandera y sombrilla y depredador tope. En México se tiene un desconocimiento grande sobre su situación, su abundancia, productividad, requerimientos ecológicos para la anidación, y de otros parámetros, a pesar de ser una especie que se encuentra en la lista de especies amenazadas (NOM-059-SEMARNAT-2010). Es una especie

que tiene fuertes presiones por cambios de uso de suelo y por acción humana directa que la hacen tener una alta vulnerabilidad a extinción local. Es especie prioritaria, para ser atendida por el Programa de Conservación de Especies en Riesgo (PROCER, CONANP). Desde 2012 se inició un proyecto nacional cuyo objetivo es generar una estrategia y un protocolo de monitoreo sistemático de las poblaciones reproductoras del águila real en México. Aquí se presenta un resumen de la información integral de aspectos ecológicos y de productividad de la especie en los estados de Chihuahua, Coahuila, Nuevo León, Zacatecas, Jalisco, San Luis Potosí, Guanajuato, Sonora y la península de Baja California así como de los avances de las investigaciones para la conservación de la especie en México.

Rodríguez-Ruíz, Erick Rubén¹; Héctor A. Garza-Torres², Martha López-Hernández³ y Alfonso Banda-Valdez¹

¹Subsecretaría de Medio Ambiente, Gobierno del Estado de Tamaulipas. Torre Bicentenario s/n, Piso 6, Libramiento Naciones Unidas con Boulevard Praxedis Balboa, Ciudad Victoria, Tamaulipas, 87083, México.; ²Instituto de Ecología Aplicada, Universidad Autónoma de Tamaulipas. Avenida División del Golfo 356, Colonia Libertad, Ciudad Victoria, Tamaulipas, 87019, México; ³Comisión Nacional de Áreas Naturales Protegidas. Calle Hidalgo s/n zona centro, Gómez Farías Tamaulipas, 89780, México.

La guacamaya verde (*Ara militaris*) en la Reserva de la biosfera El Cielo y su área de influencia

La guacamaya verde (*Ara militaris*) es residente neotropical, su distribución es fragmentada abarcando desde el norte México hasta Argentina. La cual se considera como vulnerable a nivel global. En el noreste de México, cuenta con poblaciones aisladas y poco conocidas, nosotros documentamos información biológica, de abundancia y biogeográfica de *A. militaris* en la Reserva de la Biosfera “El Cielo” y su área de influencia, se realizaron 262 muestreos, contando un total de 5863 individuos durante los años 2013 y 2014, en 104 localidades, del cual el 30% presentó valores nulos, y el resto de las localidades presentaron desde 2 a 1186 individuos, con un promedio de 59.93 individuos por localidad. En el municipio de Jaumave, se registró la mayor concentración de guacamayas con un total de 389 individuos el 30 de diciembre del 2013. La mayoría de los registros se presentaron dentro de la poligonal de “El Cielo”. Sin embargo, la distribución de dicha especie durante el otoño-invierno comprende un área mayor. Los movimientos latitudinales que realizan las poblaciones de *A. militares* corresponden a regionales (San Luis Potosí, Tamaulipas y Nuevo León) y elevacional en “El Cielo” que ocurren durante la temporada de otoño-invierno, hacia la búsqueda de sitios de alimentación en las tierras bajas, hacia la vertiente este de la Sierra Madre Oriental. Respecto a los sitios de anidación se ubicaron siete localidades, que corresponden a paredes rocosas, ubicadas entre los 500 a 1740 m snm, en el bosque mesófilo de montaña, bosque de galería, bosque tropical caducifolio y bosque de pino-encino, desde una pareja a 25 parejas activas. Además se registró la depredación de un polluelo por parte de un cuervo común (*Corvus corax*). Nuestros datos confirman que Tamaulipas concentra las poblaciones más grandes de esta especie, además en esta entidad la especie se encuentra utiliza las comunidades rurales como sitios de alimentación.

Roldán-Clarà, Blanca

Universidad Autónoma de Baja California (UABC)

Sistema complejo y cultural del uso de las aves vivas en México

El uso de las aves canoras y de ornato (ACO) es una actividad comercial y tradicional en México y su gestión debe considerar su complejidad y situación social de los involucrados. El análisis de la complejidad divide al sistema en niveles espaciales y la situación social en actores, actividades y lugares. Los pajareros son actores primordiales y utilizan las aves no solo por motivos económicos, sino también culturales y religiosos. El objetivo de este trabajo es analizar esta situación social como un sistema complejo enfatizando el papel de los pajareros, presentar diagramas de su organización y describir el arraigo cultural y religioso que tienen a su oficio. Se hizo revisión bibliográfica y durante el 2013 se hicieron entrevistas, observación directa y registros fotográficos. Se presentan diagramas en escalas espaciales, mostrándose que las actividades de los pajareros son abundantes en la escala local. Una de estas actividades son los culturales/religiosas que se manifiestan en ferias y peregrinaciones. Se describen tres peregrinaciones en México DF, en el Estado de México y de San Luis Potosí que son una tradición para dar gracias divina, alegrar con los cantos de los pájaros y convivir con la familia y compañeros. Los pajareros cargan tercios con aves cantadoras como cenizotes (*Mimus polyglottus*), jilgueros (*Myadestes occidentalis*) y clarines (*M. unicolor*). En la Feria de las aves en Tlacotepec, Puebla, se enlistaron 52 especies nativas. Se demuestra que las aves tienen un enorme valor cultural/ religioso/simbólico y que para conservarlas, los manejadores deben considerar otros valores de uso para generar estrategias que incorporen el esquema tradicional. Además se demuestra la complejidad de la actividad de uso de las aves en México y que el entendimiento correcto de los componentes es fundamental para el diagnóstico integrado y la solución de problemas de gestión.

Rosenberger, Lisa C.

York University Toronto ON M3J 1P3 Canada. Irosenb@yorku.ca

Spatial changes of black-crowned night heron nests in response to double-crested cormorant presence

Birds that live in mixed-species colonies often interact with each other. These interactions could result in the decline of one species at the expense of the other. Due to their high nest density and large body size, double-crested cormorants (*Phalacrocorax auritus*) may have a negative impact on smaller nearby tree-nesting colonial waterbirds. In this study, we examine the spatial and temporal patterns of double-crested cormorants and black-crowned night herons (*Nycticorax nycticorax*) nesting at Tommy Thompson Park (TTP), Toronto, Canada using geo-located nest site data collected from 1992 to 2011. We model whether the decrease in the heron population correlates with cormorant presence and cormorant population expansion. In addition, we model whether the decrease is expected to continue in future years based on the projected location and number of cormorants present at the spit. Preliminary ArcGIS analyses show that cormorant presence correlates with a stabilization of the heron population density in 2001 and then to a decline in the heron population density in 2005. An increase in the number of nesting cormorants also correlates to a decrease in the number of nesting herons and to a change in the nesting position of herons. This research has implications for understanding the dynamics occurring in waterbird colonies and for the implementation of management strategies, particularly for species of concern.

Ruiz-Contreras, Jorge-Daniel¹; Argote-Cortés, Aquiles²; Urbina-Torres, Fernando²; Orozco-Lugo, Carmen L.³

¹Facultad de Ciencias Biológicas, Universidad Autónoma del Estado de Morelos Cuernavaca MO 62320 México. ²Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Morelos Cuernavaca MO 62209 México. ³Centro de Investigación en Biodiversidad y Conservación, Universidad Autónoma del Estado de Morelos Cuernavaca MO 62209 México. daniellrum@gmail.com

Impacto de la urbanización sobre la avifauna del Campus Norte de la UAEM, Morelos, México

En este trabajo se explora el impacto de la urbanización sobre la avifauna del Campus Norte de la UAEM (CNUAEM) utilizando los conceptos de ensamblaje y ensamble, entendido éste como grupo funcional. Aunque algunos ensambles de aves son capaces de prosperar en los hábitats urbanos otros son desplazados, de modo que la urbanización incide negativamente sobre la riqueza de especies, diversidad, abundancia y densidad poblacional. Dentro del CNUAEM fueron registradas 90 especies en dos sitios, uno urbanizado y otro no urbanizado. La diferencia en diversidad entre los dos sitios no fue significativa (ANDEVA: $F_{1, 22} = 3.23$, $p = 0.08$). En el sitio urbanizado el ensamble de los granívoros del suelo presentó la mayor abundancia (190 individuos/100 horas-muestreo) y densidad (83 individuos/hectárea), debido a las poblaciones del gorrión casero (*Passer domesticus*) y el pinzón mexicano (*Haemorhous mexicanus*). Los insectívoros del follaje predominaron en el sitio no urbanizado (57 i/100hr; 15 i/ha aprox.). La abundancia de las especies granívoras del suelo se correlacionó positivamente con la cobertura vegetal pero también con la de pavimento. Las poblaciones de frugívoros e insectívoros respondieron positivamente a la diversidad vegetal y la complejidad de estratos vegetales. En general, las especies más abundantes en el sitio urbanizado respondieron negativamente a la presencia humana directa y positivamente a la urbanización moderada.

Salgado-Miranda, Celene¹; Bruno-Pereira, Berto²; Medina, Juan P.³; Mariusz Krzysztof, Janczur¹; Gomez-Lopes, Carlos W.²; Soriano-Vargas, Edgardo¹

¹Universidad Autónoma del Estado de México Toluca México. ²Departamento de Parasitología Animal, Instituto de Veterinaria, Universidade Federal Rural do Rio de Janeiro Brazil.

³Environment For The Americas México. celene_salgado@yahoo.com

***Isospora celata* n. sp (Apicomplexa: Eimeriidae) from the Orange-crowned warbler in Mexico.**

In the current study, a new coccidian species (Protozoa: Apicomplexa:Eimeriidae) collected from an orange-crowned warbler *Oreothlypis celata* (Say) is reported from the Nevado de Toluca National Park, Mexico at 3,200 m.a.s.l, in a coniferous forest. *Isospora celata* n. sp. has oocysts which are subspherical, 28.4 x 26.4 mm, with smooth bilayered wall 1.2 mm thick, Micropyle and polar granule are absent, but oocyst residuum is present as a compact mass. Sporocyst residuum is composed of granules of different sizes. Sporozoites are vermiform with

one refractile body and a nucleus. This is the third description of an isosporoid coccidian infecting a New World warbler.

Salgado-Miranda, Celene¹; Garcia-Conejo, Michele ¹; Galindo-Sánchez, Karla P.¹; Mejía-García, Christian¹; Janczur, Mariusz K.¹; Berto, Bruno P. ²; Lopes, Carlos W.²; Medina, Juan P.³; Soriano-Vargas, Edgardo¹

¹Universidad Autónoma del Estado de México, Toluca México. ²Departamento de Parasitología Animal, Instituto de Veterinaria, Universidade Federal Rural do Rio, Rio de Janeiro Brazil.

³Environment for the Americas, Toluca México. celene_salgado@yahoo.com

Coccidia in passerines from the Nevado de Toluca National Park, Mexico

In this study, we identified coccidian unsporulated oocysts in passerines from the Nevado de Toluca National Park, Mexico. We captured birds and took samples of their droppings during three field visits. We examined a total of 72 fecal samples and found coccidia unsporulated oocysts in 10 samples from five passerine species: *Atlapetes pileatus* (3), *Cardelina ruber* (1), *Mniotilta varia* (1), *Oreothlypis celata* (2) and *Regulus calendula* (3). This appears to be the first recorded study of coccidia unsporulated oocysts in passerine species from Mexico.

Salinas-Melgoza Alejandro; Renton, Katherine

¹Centro Tlaxcala de Biología de la Conducta, Universidad Autónoma de Tlaxcala, Tlaxcala, Tlaxcala. 90062. México. cuixmaloso@gmail.com (presentador) ²Estación de Biología Chamela, Instituto de Biología, Universidad Nacional Autónoma de México, San Patricio Melaque, Jalisco. 48980. México. krenton@ib.unam.mx

Variación geográfica en vocalizaciones de la guacamaya verde (*Ara militaris*) en el Oeste de México

La teoría de la evolución cultural predice que aquellos rasgos que son transmitidos culturalmente se diferenciarán si las poblaciones llegan a aislarse. La guacamaya verde (*Ara militaris*) tiene potencialmente poblaciones fragmentadas y aisladas que podrían mostrar variación geográfica en vocalizaciones que son transmitidas culturalmente. Evaluamos la similitud de un tipo de vocalización de ésta especie de guacamaya en tres poblaciones en el oeste de México usando diferentes enfoques. Una comparación de la similitud usando correlaciones cruzadas de los espectrogramas indicó una diferenciación de las vocalizaciones por sitio, el cual también incrementó con la distancia entre los sitios, indicando una variación gradual en las vocalizaciones. Sin embargo, los parámetros acústicos de las vocalizaciones, corregidas por una potencial falta de independencia de las vocalizaciones por individuo, no difirió entre sitios. Esto indica una diferenciación pequeña pero gradual en la señal acústica con la distancia que podría ser mantenida por medio de difusión cultural de las vocalizaciones cuando los individuos se mueven entre poblaciones, mientras realizan movimientos regionales o de gran distancia en búsqueda de alimento. Nuestros resultados en un rasgo transmitido culturalmente soportan la idea de que las poblaciones de la guacamaya verde podrían no estar aisladas como previamente se había pensado, mientras que individuos moviéndose entre poblaciones podrían estar homogeneizando las vocalizaciones de las guacamayas.

Sánchez Velasco, Alma¹; Rodríguez-Estrella, Ricardo²

¹Universidad Autónoma Indígena de México, Mochicahui, El Fuerte, Sinaloa. ²Centro de Investigaciones Biológicas del Noroeste (CIBNOR), La Paz, Baja California Sur.

al-ma_@hotmail.com,

Efectos de una planta exótica invasora en la avifauna de oasis de Baja California Sur, México

Cryptostegia grandiflora (Apocynaceae) es una planta exótica invasora originaria de Madagascar, que se ha reportado en 40 países. En México ocurre en 14 estados. La planta desplaza a la vegetación nativa con lo que cambia la estructura y el funcionamiento de los sistemas. Sin embargo, poco se sabe sobre las interacciones en los sitios donde se ha introducido esta planta. En Baja California Sur esta planta ha sido introducida en 22 oasis. El objetivo de este estudio fue determinar el efecto de *C. grandiflora* en la riqueza y abundancia de aves en los oasis, habiendo trabajado en 3 de ellos. Se realizó una visita mensual de julio de 2011 a abril de 2012 observando las interacciones de las especies de aves con la planta exótica invasora y las plantas nativas mediante un seguimiento focal. Las aves utilizaron esta la planta principalmente para perchar (77.2%) en sus ramas (80.5%). En el oasis de San Pedro de la Presa se registraron 25 especies de aves; las más abundantes fueron *Icterus cucullatus*, *Sayornis nigricans* e *Hylocharis xantusii*, todas perchando básicamente. En el oasis de San José del Cabo la riqueza de aves fue de 21 especies; las más abundantes fueron *Mimus polyglottos*, *Camphylorhynchus brunneicapillus* y *Wilsonia pusilla*. Las dos primeras la usaron básicamente como percha, mientras que *W. pusilla* la usó mayormente para forrajear insectos. En el oasis La Soledad la riqueza fue de 34 especies; las más abundantes fueron *I. cucullatus*, *S. nigricans* y *Cardinalis cardinalis*, siendo la actividad más realizada perchar en sus ramas. Se discute sobre las implicaciones del uso de esta planta exótica.

Scopel, Lauren C.

¹University of New Brunswick Fredericton NB E3B 5A3 Canada. l.scopel@unb.ca

Colony collapse in an arctic tern metapopulation: food, weather, or predation?

Machias Seal Island (MSI) once held the largest colony of Arctic Terns (*Sterna paradisaea*) in North America (~2,800 pairs). MSI represented at least 50% of the Arctic Tern metapopulation in the Gulf of Maine (GOM) in the 1990s and early 2000s. In 2006, the MSI colony experienced complete breeding failure, which continued through 2013. The metapopulation has declined 42% since 2007; this crash has caused much speculation regarding Arctic Tern breeding success in the GOM, including concern over the sustainability of the metapopulation. The collapse of the MSI colony was the first indication of metapopulation instability, yet the cause of MSI's collapse was unclear. We analyzed trends in Arctic Tern nesting success and number of chicks fledged on MSI in 1995-2005 using logistic regression, focusing on predictors of food, weather, and predation. Predation and inclement weather best predicted nesting success and the number of chicks fledged. Nest success was not predicted by the amount of herring (a high-quality food) in the chick diet, but in successful nests the chick feeding rate predicted the number of chicks fledged. The high rate of predation at MSI is unique in this region, where

selective lethal control is employed on large predatory gulls in all other major seabird colonies. In 2014, when limited lethal control was performed on MSI, terns bred successfully for the first time since 2005, lending support to our conclusions from these analyses.

Sesser, Kristin A.¹; Reiter, Matthew E.¹; Iglecia, Monica N.²; Strum, Khara M.¹; Hickey, Catherine M.¹; Shuford, W. David¹; Golet, Greg H.³

¹Point Blue Conservation Science Petaluma CA 94954 USA. ²Audubon California Sacramento CA 95814 USA. ³The Nature Conservancy Chico CA 95926 USA ksesser@pointblue.org

Developing regional waterbird conservation through practices on agricultural lands

Over 95% of natural wetland habitat has been lost in California's Central Valley yet waterbirds use this region throughout their annual cycle. Flooded agriculture provides over half of available flooded habitat in winter. Rice in the Sacramento Valley supports over 50 species of waterbirds. In partnership with California's rice industry, rice growers, and the Natural Resources Conservation Service (NRCS), we developed a suite of innovative practices, compatible with rice production, to enhance the habitat value of rice fields for waterbirds throughout the year. We compared waterbird response to rice fields with these alternative management practices to fields with traditional management practices. Our results indicate that implementing these alternative practices can provide valuable waterbird habitat. Through this collaborative partnership, waterbird-friendly management practices are now part of an incentive program through the NRCS called the Waterbird Habitat Enhancement Program. Our model of landscape-scale conservation is now being applied to other agricultural crops in the Sacramento Valley and the Sacramento-San Joaquin River Delta. A wide variety of crops are grown in the Delta and we evaluated waterbird response to these crops first by doing an intensive case study where several different alternative management practices were tested in corn and wheat and identified benefits for waterbirds. The NRCS will soon be adding a new suite of alternative practices, compatible with corn and wheat to further enhance the habitat value of agricultural lands for waterbirds.

Sheehan, Kate Lyn¹; Hechinger, Ryan F.²

¹University of California, Santa Barbara Santa Barbara CA 93101 USA. ²Scripps Institute of Oceanography La Jolla CA 92037 USA. kate.l.sheehan@gmail.com

What mites and lice might be doing to shorebirds

Energetic models can provide powerful tools to understand the performance of individual birds and their populations. These models track energy inputs (e.g., dietary consumption) and energy expenditures (e.g., metabolic rate). For birds, most energy output is frequently associated with thermoregulation, and foraging/breeding activities. However, limited evidence indicates that parasitism can also account for a substantial proportion of energetic losses. Thus, it is important to understand the energetic relationships between hosts and parasites. Ectoparasitism has been indicated as a major source of morbidity and nest failure. Here we use the metabolic theory of ecology to examine the abundance and potential impacts of ectoparasites on different shorebirds. We use the scaling relationship between metabolic rate and body sizes of both hosts and parasites to predict the maximum density of ectoparasites that

a bird can support at energetic equilibrium. We then compare these theoretical maximums to observed densities of mites and lice of shorebirds collected in California estuaries. We predict to see that ectoparasite density increases with host body mass to the 5/12 power because we expect that space (host surface area) not energy supply, is the limiting factor for ectoparasite abundance. We also apply metabolic scaling directly to different ectoparasite groups to evaluate the energetic impacts that they may have on their hosts.

Sheehan, Kate Lyn¹; Esswein, Samuel T.²; Dorr, Brian³

¹University of California, Santa Barbara Santa Barbara CA 93101 USA. ²Clemson University Clemson SC 29634 USA. ³USDA/WS/National Wildlife Research Center Starkville MS 39762 USA. kate.l.sheehan@gmail.com

Nesting habitat suitability of two Double-crested Cormorant subspecies

Effective management plans and conservation initiatives for subspecies require an awareness of contrasts in their ecology and geographic distributions. Two subspecies of the Double-crested Cormorant (*Phalacrocorax auritus*) occur in South Carolina, but limited molecular evidence exists for the separation of the subspecies. Migration to northern nesting sites differentiates migratory *P. a. auritus* from non-migratory *P. a. floridanus*. Population declines and recoveries in the last few decades have altered the subspecies distributions and uncertainty exists whether birds breeding in South Carolina are *P. a. auritus* or *P. a. floridanus*. We use Maxent to develop species distribution models to compare the habitats used in South Carolina to nesting habitat characteristics from the historical breeding ranges of *P. a. floridanus* (Florida) and *P. a. auritus* (Minnesota). Model results suggest the nesting habitat in South Carolina more closely resembles the habitat characteristics associated with *P. a. floridanus*. Our findings for habitat differences between these two subspecies could be used by managers to refine management strategies to limit human conflicts with overabundant *P. a. auritus* and conservation initiatives needed for *P. a. floridanus*.

Shuster, Jonathan¹; Parsons, Katharine C.¹

Mass Audubon, Barnstable MA 2637 USA. jshuster@massaudubon.org

Patterns of nest overwash in Piping Plover *Charadrius melodus* in Massachusetts, USA

Mass Audubon's Coastal Waterbird Program (CWP) has monitored nesting Piping Plover (*Charadrius melodus*) in Massachusetts, USA since 1986. Our work protects approximately 40% of the state population (250 pairs). We evaluated patterns of nest overwash using the CWP longterm database to assist with planning for climate change impacts to nesting habitat on Cape Cod. We selected 20 Cape Cod beaches to evaluate OW patterns during 2008-2013. Beaches were selected for having consistent and complete nesting records, a sufficient number of nesting attempts, and for contributing to the geographic diversity of the regional sample. The percentage of OWs varied greatly from 0% at several sites to 35.7% at Lieutenant Island in Wellfleet, MA. Variability in OW likelihood has direct implications for Piping Plover management and climate change planning. The average distance to the high tide line of overwashed nests was 8.9 + 1.3 m (n=62) while the average for hatched nests was 13.9 + 1.0 m (n=204); (p=0.0015). Initial nesting attempts, or "A" nests, were significantly farther from the high tide

line than subsequent nesting attempts ($p=0.0023$). Higher wind speeds, regardless of directionality, were correlated with higher rates of overwash on individual days ($p= 0.0016$). The frequency of nests failing due to overwash varied substantially across the 6 year study with lowest frequency in 2010 (7.5% of nesting attempts) and the greatest in 2012 (28.7%). However, individual sites and regions exhibited variability in OW frequency within years. Variability in Piping Plover productivity necessitates the retention of nesting habitat amidst sea level rise, coastal development, and shifting climatic and weather patterns. The data highlight the need for planning and adaptive beach management-- strategies that will not only enhance Piping Plover resiliency, but could benefit coastal system integrity and the communities of Cape Cod.

Soberanis-Vega, Alan; Walmer, Adrian-Vidal; Chablé-Santos, Juan

¹Universidad Autónoma de Yucatán Mérida YU 97000 México. al_sv@hotmail.es

Distribución y abundancia de Aves en el campus de ciencias biológicas y agropecuarias - UADY

La Reserva Ecológica de Cuxtal (REC) se ubica al sur de la ciudad de Mérida, Yucatán y cuenta con 10,757ha. El desarrollo urbano ha ganado espacio de manera desordenada, principalmente en la parte norte o más cercana a la ciudad. El Campus de Ciencias Biológicas y Agropecuarias (CCBA) se encuentra dentro del polígono de la REC. En 2014 se inicia con este programa de monitoreo de aves, de tal forma que se cuente con información que sirva como herramienta en la toma de decisiones. El CCBA cuenta con 148.8 ha. El 65% de su superficie corresponde a selva baja caducifolia, el 25% a pastizales inducidos y el 10% a infraestructura. De enero a julio de 2014, se efectuaron 28 muestreos (2 por hábitat por mes), utilizando puntos de conteo con radio fijo (20m), los que estuvieron separados uno del otro por 150 m de distancia. En total se cubrió un área de muestreo de 1.25 ha por hábitat. Se registraron 84 especies pertenecientes a 15 órdenes y 30 familias taxonómicas. Las familias mejor representadas fueron Tyrannidae con 10 especies, así como Parulidae e icteridae, ambas con 8. Con respecto a su estatus de residencia, fue el grupo de las residentes el mejor representado con 71 especies, así como 14 migratorias. Seis son endémicas de la Provincia Biótica de la Península de Yucatán y de acuerdo con la normatividad mexicana (NOM-059-SEMARNAT-2010) 2 se encuentran en la categoría de protección especial. Las especies registradas representan el 45.7 % de la avifauna verificada en la REC, además de 9 nuevos registros para la misma. Para selva se registraron 570 individuos de 65 especies. Las especies más abundantes fueron *Leptotila verreauxi* y *Cyanocorax yucatanicus* con 63 y 52.5 respectivamente. En pastizal la abundancia fue de 812, con *Quiscalus mexicanus* y *Zenaida asiatica* como las más abundantes (132 y 80 respectivamente). Veintiuno especies se registraron como exclusivas de selva y 19 para pastizal.

Soriano-Vargas, Edgardo¹; Medina, Juan P.²; Salgado-Miranda, Celene¹; Sánchez-Jasso, Jessica³

¹Universidad Autónoma del Estado de México, Toluca México. ²EFTA, Toluca 50120 México ,

³Dirección de Medio Ambiente y Servicios Públicos,

Toluca.soriano@uaemex.mx

Nuevos registros altitudinales de la cotorra argentina (*Myiopsitta monachus*) en Toluca, México.

Informamos el primer registro de la cotorra argentina (*Myiopsitta monachus*) en localidades de los municipios de Toluca y Metepec, región hidrológica Lerma-Santiago, al norte de la subcuenca del Alto Lerma, dentro del Valle de Toluca, Estado de México, México; entre un gradiente altitudinal desde los 2617 a los 2764 msnm. Registramos nidos activos en izotes (*Yucca spp.*) y una colonia de 40 individuos, así como, grupos perchando en *Cupressus lusitanica* y *Eucalyptus spp.*, alimentándose de árboles frutales (*Prunus spp.*, *Pyrus communi* y *Malus domestica*) y espigas de *Zea mays*, lo cual indica el establecimiento de la especie en esta región del país. Para evitar un impacto negativo en los ecosistemas adyacentes, se sugieren estudios en la zona que deriven en una estrategia de control y posible erradicación.

Stantial, Michelle Lynn; Cohen, Jonathan B.

SUNY-ESF Syracuse NY 13210 USA. michelle.stantial@gmail.com

Using a collision risk model to assess potential impacts to Piping Plovers along the Atlantic Coast

As the focus on clean energy continues in the United States, collisions of piping plovers (*Charadrius melodus*) with wind turbines in coastal areas poses a potential threat that could counteract recent recovery successes gained through protection and management. We studied flight characteristics and flight behavior of breeding piping plovers at six study sites along the Atlantic coast. We determined day-time flight frequency (SH: 2.35, CH: 2.82, DN: 3.66, AV: 1.59, ST: 1.58, SM: 2.96 flights/hour) and flight heights (2012: 0.25 - 40 m, 2013: 0.20 - 40 m) through behavioral observations and flight speed (9.02 m/s, 2013: 2.49 m/s) of commuting plovers through video-based observations. With this species specific information about flight behavior, we employed the Scottish Natural Heritage's (SNH) methodology for calculating collision risk, assuming no avoidance behavior, to estimate the potential number of piping plover collisions over a breeding season at each of our study sites. We estimated the total amount of time per breeding season that piping plovers spend within potential areas of turbine construction (n: 22039 - 193588 bird seconds), which is used in Stage 1 of the SNH collision risk model to estimate the number of birds flying through the rotors of a wind farm. Stage 2 calculates the probability of a bird being struck when flying through the rotor of a turbine using the number of blades of the rotor, the angular velocity of the rotor, the chord width of the rotor blades, the pitch angle of the blades, and the outer rotor radius. By multiplying Stage 1 and Stage 2 of the SNH model, it is possible to predict the potential collision risk of breeding piping plovers for a specific turbine that may be placed at beaches along the Atlantic coast. The collision risk calculation can then be reproduced by resource agencies to evaluate permit requests for turbine construction at piping plover breeding areas along the Atlantic coast.

Stenzel, Lynne¹; Conway, Warren²; Page, Gary¹; Pruner, Raya³

¹ Point Blue Conservation Science, Petaluma, CA. ²Texas Tech University, Lubbock, TX.

³Florida Park Service, Panama City, FL

Population status of coastal breeding Snowy Plovers, threats to their reproductive success, and the efficacy of management actions.

The Snowy Plover shares a US breeding range with the Least Tern and Gull-billed Tern on the Florida Atlantic, Gulf of Mexico, and southern California coasts, as well as interior locations in southern California and the southern Great Plains. Snowy Plovers nesting in southern California coastal habitat are federally listed as Threatened. Monitoring studies provide information on population status for the three regions. Active management at some locations, and particularly in southern California, focuses on controlling the effects of both native and exotic predators, some of whose populations and ranges have expanded due to human subsidies. The plover also faces challenges to its reproductive success (beyond natural limiting factors) from human activity and alterations to habitat, including climate change. Factors that constrain and facilitate management opportunities for the plover include its breeding strategy, the length of its breeding season, the extent of breeding habitat and its configuration in the wider landscape, the proximity of human development, and levels of human activity.

Stone, Heather M.¹; Maccarone, Alan D.¹; Brzorad, John N.²

¹ Friends University, Wichita, KS, 67213, USA. ²Lenoir-Rhyne University, Hickory, NC, 28601, USA. alanm@friends.edu

Nest-activity patterns and nest energetics by Great Egrets (*Ardea alba*)

Previously, we examined the energetic costs of flying, ambulation, and striking at prey by Great Egrets (*Ardea alba*). However, Great Egrets spend a considerable amount of time at the nest site prior to and during breeding. The range of activities includes mating displays and copulations, gathering nesting material with which to build and repair nests, incubation and egg-turning, and the protection of nestlings. While these activities contribute to a Great Egret's overall time-and-activity budget, they have not been well quantified from an energetic standpoint. We document time-and-activity budgets related to nesting, and then quantify these activities as part of the birds' overall energy budget. Frequencies of Great Egret mating displays, copulations, and bringing materials to the nest were documented in April 2014 at 14 random nests in a large mixed-species colony in Wichita, Kansas. From May-July in 2008 and 2009, 35 h of scan samples at 28 random nests resulted in 5062 activity records. Based on these records, adults at the nest engage mainly in low-cost activities such as sitting (43% of all activities), standing (23%), and preening (15%). Nest maintenance (nest repair, egg-turning) accounts for 4% and feeding chicks < 1% of daily activities. Activity patterns differed significantly by nest content, in that adults with eggs spent more time sitting but less time standing, preening, or away from the nest. The results from this study suggest that Great Egrets engage in low-cost activities and minimize energy costs while at the nest, and although birds devote large amounts of time to such activities, they account for only a minor percentage of their overall energy budget.

Svigelj, Walter S.

Instituto de Investigaciones Marinas y Costeras (IIMyC), CONICET - Universidad Nacional de Mar del Plata (UNMdP), Dean Funes 3250, Mar del Plata, Buenos Aires, 7600, Argentina
titosvigelj@hotmail.com

Statistical modeling on clutch size and brood size: problems, caveats, and the COM-Poisson alternative

Generalized linear models are widely used by ornithologists for modeling the relationship between a response variable and a set of predictor variables. In many cases, the response variable is a count that takes nonnegative integer values. For this type of data, the most commonly used model is Poisson regression. However, the Poisson distribution cannot account for underdispersion (less variation than theoretically expected) usually encountered in response variables as clutch size or brood size. The Conway-Maxwell-Poisson (COM-Poisson) distribution is a two-parameter extension of the Poisson model that generalizes discrete distributions as Poisson, binomial and negative binomial. Remarkably, it is a flexible distribution that can account for both overdispersion and underdispersion. Using simulated and real data from Imperial Shags (*Phalacrocorax atriceps*), I evaluated the performance of Poisson and COM-Poisson models in the context of generalized linear models applied to clutch size and brood size. To illustrate the relationship between predictor and response variables, I used date of egg laying as predictor variable. Both clutch size and brood size exhibited severe underdispersion. Predicted values derived from Poisson and COM-Poisson models were similar. Standard errors derived from COM-Poisson models were comparatively smaller than those from Poisson, and differences increased as underdispersion increases. Thus, Poisson model showed unappropriated to model clutch size and brood size in Imperial Shags. This study shows the flexibility and utility of the COM-Poisson distribution applied to generalized linear models. Also, I show how generalized linear models with COM-Poisson distribution can be implemented in R (a free software environment for statistical computing) using `CompGLM`, `compoisson` and `COMpoissonReg` packages.

Szczys, Patricia¹; Waddington, Scott²; Baird, Patricia³; Burr, Timothy⁴

¹Eastern Connecticut State University Willimantic CT 6226 USA. ²Holualoa HI 96725 USA.

³Simon Fraser University Burnaby BC Canada. ⁴Poway CA 92064 USA.

szczysp@easternct.edu

Least Terns (*Sternula antillarum*) breeding on the Big Island of Hawaii

The Least Tern (*Sternula antillarum*) breeds throughout North America: in California and Mexico, in the Mississippi River drainage, and along the eastern seaboard to the Caribbean. The Little Tern (*Sternula albifrons*), which ranges throughout the UK, Europe, Indonesia, and the western Pacific, is not distinguishable from the Least Tern morphologically, but it is isolated geographically, and can be distinguished by call. Both Little and Least Terns have been identified in the Northwestern Hawaiian Islands in the summer in low numbers with successful breeding on Midway in 1989 (Least) and 2000 (Little). Little Terns only were confirmed to breed on Pearl and Hermes Atoll in 1988. In the Southeast Hawaiian Islands, small terns were noted in summer between 1953 and 2009 from The Big Island of Hawaii, Maui, and Oahu, but breeding was not documented. Both species have been observed to overwinter in small numbers on Oahu and Maui (SE Islands 1950s-2000s). The first indication that *Sternula* terns might be nesting on The Big Island of Hawaii was from a photograph sent to T. Burr in April 2012. In May 2013, we documented three pairs of small terns nesting on the Big Island in two protected areas: one pair at the Kealahehe Wastewater Treatment Pond and two pairs at Kapo'ikai Pond. In May 2014, we collected one egg from a two-egg nest for DNA analysis to make an unequivocal determination of species identity. Molecular sexing using the CHD gene indicated the embryo was female. Mitochondrial regions sequenced from this embryo shared 99% sequence identity with Least Tern specimens in GenBank, while alternative species

sequence identity (*S. supercilarius* or *S. albifrons*) was <96%. Furthermore, the control region primers specific to Least Tern produced 99% identity for the Hawaiian specimen but did not amplify in any controls (Arctic and Common Terns). This study reports DNA evidence confirming, for the first time, successful breeding of Least Terns on the Big Island of Hawaii.

Tavernia, Brian G¹; Wires, Linda R²; Stanton, John³; Casey, Jennifer⁴; Heglund, Patricia⁵; Laskowski, P. Harold⁶; Coppen, Jorge¹; Jones, Tim¹; Knutson, Melinda⁶; Lyons, James¹; Sutherland, Todd¹; Jacobi, Sarah⁷; Lonsdorf, Eric⁷; Koch, Katie⁸; Loges, Brian⁸; Ertel, Janet¹; Tirpak, John¹; Runge, Mike¹; Wilson, Andy¹; Thompson, Bill⁴.

¹ USGS, Laurel, MD, 20708, USA. ² USFWS, Minneapolis, MN, 55406, USA ³ USFWS, NC, USA. ⁴ USFWS, NY, USA. ⁵ USFWS, WI, USA. ⁶ USFWS, USA. ⁷ Chicago Botanic Garden, IL, USA. ⁸ USFWS, MI, USA. ⁸ USFWS, IL, USA. iwmmprogram@gmail.com

Integrated Waterbird Management and Monitoring Initiative: a structured-decision making approach

Structured decision-making (SDM) offers an organized, transparent, and defensible approach that can guide waterbird habitat decision making when there are conflicting management objectives, uncertainty about environmental conditions, and staff and financial resource limitations. SDM includes identifying management decisions, objectives, and alternatives, assessing consequences of alternative decisions through modeling, and making tradeoffs among competing objectives to select an alternative. The Integrated Waterbird Management and Monitoring (IWMM) initiative is a multi-region monitoring and habitat management decision support effort grounded in the principles of SDM and focused on non-breeding waterbirds and their habitats in the Atlantic and Mississippi Flyways. Following SDM workshops, IWMM developed standardized monitoring protocols for management actions, habitat conditions, and waterbird counts at the scale of individual wetlands. Within an applied management context, IWMM monitoring data can inform decisions by enabling assessments of habitat conditions, permitting evaluation of previous management actions, and improve iterative decisions by reducing uncertainty about action effects on habitats and waterbirds. IWMM monitoring protocols are designed to provide data that can be integrated into local-scale decision frameworks, e.g., focused on the simultaneous management of multiple wetlands within a single refuge. An example from Mattamuskeet National Wildlife Refuge is provided to illustrate. A standalone migration model based on waterbird energetics has been created to address habitat acquisition and management decisions at a flyway scale, and is being evaluated prior to application in a decision context. Separate from formal decision frameworks, IWMM protocols and database tools provide a valuable, standardized approach to collect and report habitat and waterbird metrics at multiple spatial scales relevant to the decisions of waterbird managers.

Tavizón- García, Patricio; Castorena, Miguel; Macías Patiño, Manuel

Zacatecas, ZA, 98610, México. ptavizon@prodigy.net.mx

Últimos avances en la conservación del águila real en Zacatecas, México

La conservación del Águila real (*Aquila chrysaetos*) en Zacatecas ha cursado por las etapas de estudio de la biología, de la ecología, del monitoreo, de la caracterización genética de las

poblaciones, del análisis de distribución, de preferencia de hábitat, de educación ambiental y recientemente de manejo y protección del hábitat. La prospección de sitios de anidación, su georreferenciación y el seguimiento han arrojado un incremento poblacional mayor al 50% inicial después de 28 años. Mediante la distribución de microsátélites se identificaron cinco poblaciones correspondiendo a siete de las poblaciones geográficamente referenciadas y separadas. Destaca la similitud del 73% entre águilas de un sitio de anidación de Zacatecas con un ejemplar del estado de Guanajuato distante 235 kilómetros. Para proteger algunos sitios de anidación se promovieron tres áreas naturales protegidas bajo régimen federal y una de régimen estatal y se reintrodujeron de perritos llaneros (*Cynomys mexicanus*) en localidades históricas de ocurrencia de ambas especies. La conservación ha sido apoyada por actividades de educación ambiental dirigida a promover la coexistencia de los habitantes con las águilas reales en zonas rurales principalmente. Actualmente se promueve el mejoramiento del hábitat en sitios de ocurrencia de águila real cercando cuerpos de agua, instalando bebederos para fauna silvestre, produciendo material didáctico accesible a niños de localidades rurales y se promueve una reserva de la biósfera de más de dos millones y medio de hectáreas en el norte del estado de Zacatecas, cubriendo el sur del Desierto de Chihuahua.

Tinajero, Romeo, Rodríguez-Estrella, Ricardo

Centro de Investigaciones Biológicas del Noroeste S.C. La Paz, Baja California Sur 23096
México. jromeoti@gmail.com

Cotorra Argentina nueva especie anidando en el sur de la península de Baja California

Las especies exóticas pueden causar problemas ecológicos y económicos donde se establecen, sobre todo si se vuelven invasoras. La Cotorra Argentina (*Myiopsitta monachus*) es una especie nativa de Sudamérica (Uruguay, Bolivia, Brasil y Argentina) y se ha reportado recientemente en libertad en diferentes partes de del mundo, en Europa y Norteamérica, y en algunas regiones se ha registrado un crecimiento exponencial en las zonas donde se ha establecido. En México, recientemente se ha reportado su presencia en varios estados del país. En la presente investigación reportamos información sobre una población de la cotorra argentina que se ha establecido en el sur de la península de Baja California y la manera en que ha variado su abundancia durante un año. La cotorra fue registrada por primera vez en mayo de 2013 en el poblado de Chametla, 7 km al norte de la ciudad de La Paz. Desde entonces y hasta el día de hoy, el perico ha incrementado su abundancia. Reportamos actividad de anidación, entre mayo - agosto, y se da información sobre hábitos alimenticios y las estructuras de soporte del nido. Se discuten las posibles implicaciones de la presencia de esta especie exótica en la región.

Tinajero, Romeo; Rodríguez-Estrella, Ricardo

Centro de Investigaciones Biológicas del Noroeste S.C. La Paz, Baja California Sur 23096
México. jromeoti@gmail.com

Utilización del índice de condición corporal en Halcón de Harris, relacionado a bioquímica sanguínea

En diversas especies de animales domésticos y silvestres se han utilizado índices de condición corporal (ICC), los cuales permiten conocer de manera indirecta la condición de salud y nutricional de los individuos. Los valores ICC han sido relacionados con la supervivencia y éxito reproductivo de los individuos los cuales son parámetros importantes a considerar en las poblaciones animales. Para elaborar el índice de condición corporal se utiliza la relación con valores de peso y una medida morfológica del ave, como tarso, longitud de ala, culmen, entre otros. En este trabajo se presenta un análisis del ICC de individuos de halcón de Harris (N=31) muestreados en áreas naturales del matorral desértico de Baja California Sur. Los valores obtenidos de índice de condición corporal fueron relacionados a variables de bioquímica sanguínea (proteína total, triglicéridos, colesterol, glucosa, fósforo, calcio, magnesio, fosfatasa alcalina, bilirrubina total, bilirrubina directa, creatinina, urea y ácido úrico) de cada uno de ellos. Encontramos que las mayores relaciones de peso con alguna medida morfológica fueron las de longitud de ala y culmen ($R^2= 0.67$ y 0.52 , respectivamente). En cuanto al sexo de los individuos, en las hembras la relación de peso longitud de ala fue mayor que en los machos ($R^2= 0.76$ y 0.61 , respectivamente). Los análisis indican que el ICC está inversamente relacionado con los valores de glucosa y presenta una relación directa con los triglicéridos y el ácido úrico. Se discuten las implicaciones en la interpretación de salud de los individuos y la población.

Tobón-Pérez¹, Adriana; Meléndez-Herrada, Alejandro²; Vera-Alejandre, Raúl German ¹

¹Centro Interdisciplinario de Investigaciones y Estudios sobre Medio Ambiente y Desarrollo-IPN Ciudad de México, 7340 México. ²Universidad Autónoma Metropolitana Unidad Xochimilco Ciudad de México, 4960 México. adrianatobonp@yahoo.com.mx

Impacto del cambio de vegetación y tendencias climáticas en aves endémicas del centro de Veracruz

El cambio climático suele asociarse a un decremento en las poblaciones de las de aves, en particular las de distribución restringida; sin embargo, no para todas las especies parece ser así y la modificación antrópica del hábitat hace compleja su comprensión. En este trabajo se presenta un análisis comparativo de mapas de vegetación y uso del suelo durante 1976-2000 y la estimación de seis índices de cambio climático en el AICA 150 Centro de Veracruz donde *Cyanolyca nana*, *Dendrotyx Barbatux* y *Doricha eliza* se consideran altamente sensibles por ser endémicas y estar en peligro de extinción. Se presenta una disminución en la superficie del bosque mesófilo de montaña (BMM), selvas y pastizales, así como un aumento en la superficie agrícola-pecuaria-forestal. En cuanto a los índices climáticos, los extremos de temperatura presentan tendencia negativa en las zonas de distribución del BMM donde habita *C. nana* y *D. barbatux*, y positiva en la selva media y baja caducifolia donde se distribuye *D. eliza*; la precipitación total presenta tendencia negativa con excepción de las zonas donde dominan los BMM y encino; y el índice simple de intensidad diaria y de días secos consecutivos señalan un incremento en el valor promedio de las lluvias diarias así como en los periodos sin precipitación. Los resultados sugieren condiciones climáticas favorables para la conservación de *D. barbatux*, *C. nana* y *D. eliza* particularmente en el BMM por la formación de neblina y en la selva mediana subcaducifolia donde al presentarse noches menos frías ha incrementado su distribución altitudinal hacia áreas antes ocupadas por bosque de encino.

Vallarino, Adriana¹; González, Zuarth César Alberto¹; Rendón von Osten, Jaime²

¹El Colegio de la Frontera Sur Unidad Campeche Campeche 24090 México. ²Universidad Autónoma de Campeche Campeche 24090 México. avallarinom@gmail.com

Persistent organic pollutants and aromatic hydrocarbons in terns' eggs nesting in the Gulf of Mexico

Off the coast islands and their surrounding waters are usually considered pristine and untouched by human influence. However, persistent organic pollutants (POPs) and polycyclic aromatic hydrocarbons (PAHs) are present on the biota from these immaculate places. POPs are wide dispersed all over the world and PAHs are well extended in oceanic habitats due to pyrogenic and petrogenic sources. The main damages that these pollutants cause are on the reproduction through alterations of different tissues and organs and their role as endocrine disruptors. We analyzed POPs and PAHs in eggs from colonies of Least and Sooty terns in the south of the Gulf of Mexico nesting in habitats with different anthropogenic impacts in 2010 and 2011. The most abundant POPs in both species in both years were Σ drins, Σ DDT and Σ heptachlor. The most abundant PAH was Anthracene, followed by Perlyene in the least terns, while in the Sooties it was Florene followed by Benzo (k) fluoranthene in 2010. In 2011 the most abundant PAH was Dibenzo (a, H9 anthracene. When comparing ratios of PAHs, apparently their origin was petrogenic in 2010 and uncertain in 2011. Levels of pp-DDE in 2010 in the least tern were 68 times higher than levels found in brown boobies in the Mexican Pacific coast. Sooty terns in 2010 showed levels of pp-DDE within the range found in the brown boobies. However, in 2011 Least terns showed even higher levels of pp-DDE with average concentrations of more than 12ppm which is reported as detrimental for reproduction in herons. In 2011 sooty terns showed pp-DDE concentrations 370 times higher than in 2010. From the PAHs that were higher in one species than in the other, it was the sooty tern the one that showed higher levels always. Both species in both locations are being impacted by anthropogenic pollution originated far from their breeding places. Future studies are needed in order to measure the impact of these pollutants on reproduction and the size of the population.

Velasco-Bautista, L. A.2, Roque-Rodríguez, J. S. 1, Valdez- Moncada, J. S. 1, y Lozano-Cavazos, E. A. 1

Departamento de Recursos Naturales Renovables¹, Departamento de Botánica². Universidad Autónoma Agraria Antonio Narro. Saltillo, Coahuila. C.P. 25000.

Caracterización del sustrato de anidamiento del gorrión de Worthen (*Spizella wortheni*) en Coahuila

El gorrión de Worthen es una especie endémica del altiplano mexicano y de las menos estudiadas de Norteamérica (Behrstock et al. 1997), considerada por las leyes mexicanas bajo el estatus de amenazada (SEMARNAT 2002) y en peligro de extinción a nivel mundial (Birdlife International 2008). En el verano 2013 encontramos una nueva colonia reproductiva y monitoreamos 43 nidos activos. Determinamos el sustrato o especie de planta donde se encontró el nido, altura del sustrato, diámetro del sustrato, altura de nido y distancia del nido respecto al borde de la planta. Los principales sustratos de anidamiento por parte del gorrión fueron la Mariola (*Parthenium incanum*) y Hojasén (*Flourensia cernua*) con 67.45 % y 25.59 %, respectivamente. La altura promedio del sustrato de anidación fue (promedio \pm 95% I.C.; 79.74

± 8.16 cm), el promedio del diámetro del sustrato fue (105.33 ± 9.29 cm), la altura promedio del nido en el sustrato fue (26.13 ± 2.8 cm) y la distancia del nido respecto al borde de la planta fue (33.83 ± 3.4 cm). Se mencionan otros aspectos de ecología reproductiva de la especie.

Velver-Galván, Rafael; López-Saut, Edgar G; Meríz-Rodríguez, Luis F.; Velázquez- Gurrola, Aron R.; Arroyo Raul ¹.

Instituto Tecnológico del Valle del Guadiana, Durango, 34227, México. rafvelver@gmail.com

Las aves rapaces son buenos indicadores del ecosistema por estar al final de las cadenas tróficas

El estado de Durango cuenta con más de 300 especies de aves en los diferentes ecosistemas que lo constituyen. Uno de estos ecosistemas son las zonas de los llanos, los cuales se caracterizan por áreas de pastizales y matorrales que han sido transformados a través del tiempo en campos de cultivos y zonas de pastoreo. A pesar de que se sabe que el cambio de uso de suelo disminuye el hábitat de las diferentes especies presentes, no se cuenta con evaluaciones del efecto de la fragmentación sobre la flora y fauna. Debido a que las rapaces son un grupo que se encuentra en lo más alto de la cadena alimenticia, son buenos bioindicadores del efecto de las actividades humanas sobre los ecosistemas. Por lo anterior en el Instituto Tecnológico del Valle del Guadiana con su Programa de Aves se desarrolló una serie de estudios para determinar el estado de las rapaces en el Valle del Guadiana el cual se encuentra bajo la presión del crecimiento de la mancha urbana de la ciudad de Victoria de Durango, capital del estado, y los diferentes desarrollos industriales que se están realizando al norte del valle. Al crecimiento de poblaciones dentro del valle, se suma el incremento de agricultura en el área, lo que trae la pérdida de matorrales, principalmente de Huizachales (*Acacia farnesiana*), así como los pastizales que anteriormente cubrían todo el valle. Es por esto que el presente estudio tuvo como objetivo evaluar las condiciones de las rapaces en el Valle del Guadiana. En este documento se presentan los resultados de monitoreo de rapaces en un área de huizachales y pastizales al este de la ciudad de Durango, con presión ganadera. Se realizaron ocho muestreos mensuales a partir de Diciembre 2013 hasta Junio de 2014. Se obtuvo un total de 12 especies, entre las que destacan *Buteo albicaudatus*, *Buteo jamaicensis* y *Falco sparverius*. Durante el monitoreo se registraron nidos de *Buteo jamaicensis*, del cual se siguieron hasta volantones a dos crías del mismo.

Vidal Hernández, Wendy J.; Arizmendi Arriaga, María del Coro

Laboratorio de Ecología, UBIPRO, FES-Iztacala, UNAM DF 54090 México
wendyvidalh@gmail.com

Uso diferencial de flores y bebederos artificiales en colibríes de bosques templados en México.

Los colibríes, son aves nectarívoras, capaces de modificar sus estrategias de forrajeo para enfrentar cambios en el ambiente; esta versatilidad en el uso del recurso, les ha permitido emplear alimentadores artificiales que pueden representar un efecto antropogénico en la relación entre los colibríes y las plantas de las que ellos se alimentan. El presente trabajo, tuvo

como objetivo identificar la frecuencia de visita de colibríes ante la oferta de dos recursos alimenticios: bebederos artificiales y parches de flores fluctuantes, en dos bosques de pino-encino en el Estado de México. Las plantas empleadas en los experimentos fueron: *Phaseolus coccineus*, *Salvia mexicana*, *Salvia elegans* y *Loeselia mexicana*. En el área de estudio se registraron seis especies de colibríes: *Hylocharis leucotis*, *Eugenes fulgens*, *Colibri thalassinus*, *Lampornis clemenciae*, *Archilochus colubris* y *Selasphorus platycercus*. Como principal resultado se encontró que las especies de colibríes de la zona cambian su comportamiento de forrajeo en respuesta al número de flores presentes en el área y a la concentración de azúcar en los bebederos (bebederos con agua y azúcar al 0%, 10% y 25%). Con este trabajo se concluye que los colibríes dejan de emplear los bebederos artificiales cuando la cantidad de flores aumenta, pero cuando esta empieza a disminuir, los bebederos constituyen una fuente importante de alimento, siendo la concentración de azúcar un factor que determina el uso por parte de estas aves.

Villaseñor-Gómez, José Fernando; Villaseñor-Gómez, Laura E.; Juárez-Ochoa, Ivonne; Torres-Villanueva, Francisco Javier.

Laboratorio de Investigación en Ornitología, Facultad de Biología, UMSNH Morelia Michoacán
58000 México jfvillasenorg@hotmail.com

Uso de gradientes sucesionales de bosque tropical seco y bosque de coníferas por aves en Michoacán

Las comunidades de aves se modifican como resultado del proceso de sucesión ecológica, en el que cambian las condiciones originales de la vegetación, estableciéndose etapas serales estructuralmente diferentes. Se analiza y compara la dinámica del uso de hábitat de las comunidades de aves en zonas relativamente conservadas y dos zonas representativas de vegetación secundaria diferentes de bosque tropical seco de la región costera y de bosque de pino-encino en la Sierra Madre del Sur en Michoacán, México. A lo largo de actividades de monitoreo desarrolladas entre 1998 y 2001, se capturaron 2,094 individuos en 5,830 hr/red. El porcentaje general de especies residentes/ migratorias en las dos regiones fue de 70/30%. Durante la época de lluvias (mayo-octubre), periodo en el que se da principalmente la reproducción de las especies residentes, los juveniles fueron registrados especialmente en los sitios de vegetación secundaria, mientras que los adultos reproductivos se presentaron principalmente en los sitios con vegetación más conservada (con los valores más altos en junio-julio). Por otra parte, durante la época seca del año (noviembre-abril), las especies migratorias se registraron en mayor proporción en las áreas de vegetación secundaria más reciente, mientras que las mayores proporciones de especies residentes se presentaron en los sitios más conservados. Se destacan los siguientes patrones generales: a) la importancia de las áreas de vegetación conservada como los sitios más óptimos para la realización de los procesos reproductivos, b) la dispersión de juveniles al dejar sus áreas de nacimiento se da hacia los sitios con vegetación secundaria, y c) la existencia de uso diferencial del hábitat por las especies residentes y migratorias. Estos elementos indican la existencia de una dinámica temporal y espacial compleja en el uso del hábitat a lo largo del ciclo anual.

Vitale, Nick; Frederick, Peter

University of Florida Gainesville FL 32611 USA. nevitale@ufl.edu

Are Black Crowned Night Herons displacing *Egretta* Herons from the Everglades of Florida, USA?

Black-crowned Night Herons (*Nycticorax nycticorax*) often nest in multispecies heronries in association with other ardeids. However, Black-crowned Night Herons have also been documented preying upon the young of other birds including small herons. In the Everglades of Florida, the majority of Little Blue (*Egretta caerulea*) and Tricolored (*Egretta tricolor*) Herons historically nested in small (<2ha) willow-dominated tree islands. From 2008-2014, the number of *Egretta* herons detected in systematic surveys has been reduced by 83% (average=41 adults detected) compared to historic averages (1996-2007 average=236 adults detected), while Black-crowned Night Herons increased by over 820% during the same period (average=53 and 435 adults detected for present and historic conditions respectively). We observed that colonies could have large numbers of *Egretta* herons or Black-crowned Night Herons, but rarely large numbers of both. Active colonies of *Egretta* herons were significantly less likely to form in year t+1 if Black-crowned Night Herons were observed in year t, compared to colonies with no Black-crowned Night Heron activity (chi square=15.502, n=722, p< 0.001). This suggests the presence of Black-crowned Night Herons may be a deterrent to *Egretta* heron nesting. While the negative association is strongly significant, an increase in abandonment rate of small colonies by *Egretta* herons has occurred in all colonies, including those where the effects of Black-crowned Night Herons were not evident. This suggests that there may be other ecological factors at play. Population dynamics of both species could be affected either by displacement from other breeding areas, or by changes in prey community composition.

Wakeland, K.

Lafayette LA 70506 USA. kmw0697@louisiana.edu

Age structure composition change in Brown Pelican potentially related to Deepwater Horizon Oil Spill

The BP Deepwater Horizon oil spill released over 4 million barrels of oil into the Gulf of Mexico on April 20, 2010. Oil spills are known contaminators of aquatic and nearshore ecosystems, and colonial seabirds are particularly susceptible oil contamination. Surveys were conducted from 2008-2014 in three Louisiana regions on Brown pelican age structure composition. Age structure classifications consisted of 1 yr, 2 yr, and 3yr old and older birds. Surveys began three years prior to the oil spill (including 2010 when oil reached study area after the completion of the surveys), and have continued for four years after the oil spill. The proportion of one year old and two year old Brown pelicans in Louisiana has decreased over time (P <0.0001), and the average proportion of 1 yr old and 2 yr old Brown pelicans is lower in the years after the old spill than in the years prior to the oil spill (P = 0.0001). This observation could be due to either decreases in fecundity, or changes in age-specific patterns of mortality or site fidelity, between the survey periods before and after the spill event.

Weseloh, D.V. Chip

Canadian Wildlife Service Toronto ON M3H 5T4 Canada. chip.weseloh@ec.gc.ca

Roosts and roosting habits of Great Egrets on the lower Great Lakes

Non-breeding roosting sites, seasonal numbers of individuals and habits of Great Egrets (*Ardea alba*) at roosts were tracked in the lower Great Lakes Basin (primarily southern Ontario), 2008-2014, to learn more about roosts as criteria for identifying Important Bird Areas. Roosts were located by following egrets near dusk as they left their foraging areas and from reports by the public. Fifty-four roosting areas, with >80 roosting sites, were located; 15 roosting areas had more than one roosting site. The number of egrets at these roosts ranged from 1-844; median size was 23 egrets. The most common roosting substrate was live trees immediately adjacent to water; other substrates were trees, bushes, deadfalls or other vegetation in water, mudflats/shallow water (<2 cm) and shallow water (> 2cm). The nearest neighbor distances between wetlands that contained roosts ranged from 1-160 km (median = 24 km, mode = 8km). Large roosts (>400 egrets) became active in June, smaller roosts in early August. Peak usage usually occurred in late August - early September; most roosts were vacated by late October. Flights to the roost often commenced an hour or more before sunset and lasted until dark; some egrets foraged in the immediate vicinity of the roost much of the day. Morning dispersal was rapid and usually occurred about 10-15 minutes before sunrise. Most roosts were not used in the spring. Where they were, morning dispersal had birds resuming northward migration or feeding locally. Disturbance associated with duck hunting in the autumn may cause roost abandonment. Size criterion should be set if using egret roosts as justification for recommending Important Bird Areas.

Weseloh, D.V. Chip

Canadian Wildlife Service Toronto ON M3H 5T4 Canada. chip.weseloh@ec.gc.ca

Re-sighting characteristics of banded Great Egrets at a breeding colony in southern Ontario

From 2001 to 2014, over 2100 Great Egrets (*Ardea alba*) were marked individually with field readable (numeric-numeric-alpha) coloured plastic leg-bands or coloured laminated PVC wing-tags in southern Ontario and the New York waters of the Niagara River. Annual re-sighting efforts were made at Nottawasaga Island, Georgian Bay, Lake Huron, the main breeding colony and banding site, 2004-2014; 289 sightings were made of 152 different egrets (7.2% of banded birds). From 4-60 different marked egrets were observed each year. The number of years each egret was seen on the island ranged from 1-6 over a span of 1-11 years. Over 50% of the observed egrets were only recorded at the colony in one year. Over 35% of the egrets were first observed on the island when two years of age. Twenty-eight percent were first observed on the island as 3 year olds and 15% each were first observed as 4 or 5 year olds. No 1 year old egrets were observed at the breeding colony. The oldest egret observed was 13 years old. In 2011, when 60 marked egrets were observed, birds ranged from 2-10 years old; 15-23% of the birds were 3, 4, 5 or 6 years old. Survivorship and other demographic parameters will be estimated using capture-mark-recapture models.

Wilson, Troy Emery

US Fish & Wildlife Service Atlanta GA 30345 USA. troy_wilson@fws.gov

Reddish Egret conservation action plan: Strategies for addressing threats and limiting factors

Despite its large range, the Reddish Egret occupies a restricted belt of coastal habitat, is patchily distributed and has a relatively small and declining global population. Accordingly there is broad agreement that the Reddish Egret is in need of our conservation effort. Using the "Open Standards Approach for Conservation Measures" the Reddish Egret Working Group presents a range-wide conceptual conservation model for this species that highlights and ranks the greatest threats to maintaining population stability and expanding the population, explores the underlying causes of those threats, and identifies key strategies to address them. This presentation summarizes the planning efforts to date for conserving the Reddish Egret throughout its range, proposing processes to identify focal colony sites and foraging areas, defined as the locations that should be priorities for collective conservation effort. This plan also provides the context to support management action for locally important locations. We recommend four overarching strategies: 1. Actively manage factors directly affecting Reddish Egret populations. 2. Ensure that long-term stewardship and management of habitat is effectively implemented in focal colony sites and foraging areas. 3. Develop and implement long-term monitoring of populations to support better decision-making at the local, regional and global scale. 4. Identify mechanisms for conserving unprotected focal areas. This plan emphasizes consideration of the way interventions will influence indirect and direct threats, and promotes activities to ultimately achieve the stated goals. Central to this process was compilation of current species information to identify focal nesting and foraging areas. Although this plan lists activities to address threats and proposes a list to calculate necessary investments, it is not a business strategy--yet. Next steps include further articulating activities, formulating metrics to measure success, assessing capacity and risk, and making this plan operational. It should be viewed as a milestone in an ongoing and evolving campaign by the Reddish Egret Working Group to restore and maintain viable Reddish Egret populations throughout the species' range.

Wires, Linda R.

US Fish and Wildlife Service Minneapolis MN 55406 USA. linda_wires@fws.gov

Cormorant-fisheries conflicts: an evaluation of management policy

During much of the twentieth century, Double-crested Cormorants (DCCOs) existed in marginalized numbers. Legislation in 1972 protected the species and reduced contaminants in aquatic environments, resulting in population recovery in many areas, including several where fisheries have been highly modified and intensively managed for human interests. As a result, population recovery is viewed as negative by some segments of the public and in the U.S., between 1998 and 2012, more than half a million DCCOs were killed and millions of eggs oiled, mostly to protect fisheries. To examine whether DCCO management is based on sound wildlife policy, I reviewed the scientific evidence presented in environmental assessments and agency reports on DCCO management undertaken to benefit fisheries in the Great Lakes Basin and southern states, the adaptive management context in which much management is purportedly conducted, and other primary considerations that could influence management decisions (e.g., ethics, diversity of stakeholder groups). Results from this review demonstrate: 1) destructive management to benefit fisheries occurred at multiple locations in the states of TX, SC, MI, MN, NY and WI, but peer-reviewed studies linking DCCO predation to fish declines were available for just three locations; 2) management described as adaptive did not meet criteria for

monitoring and / or did not adjust actions as new data became available; 3) stakeholder groups represented fisheries interests but did not include individuals with animal welfare and rights concerns; 4) no program included a formal ethical analysis as part of the decision process. These results indicate that current management policy for DCCOs is neither science- nor ethics-based, frequently employs destructive measures over other approaches (e.g., nonlethal, alteration of fisheries management practices), and perpetuates negative public perceptions about DCCOs that promote increasing demands for lethal management.

Zambrano, Ricardo

Florida Fish and Wildlife Conservation Commission West Palm Beach FL 33412 USA
ricardo.zambrano@myfwc.com

A comprehensive survey of waterbird roof nesting in Florida

Several species of shorebirds and seabirds have nested on flat tar-and-gravel roofs in Florida and other regions of the United States since the early 1950s. Habitat disturbance and loss has been implicated as the primary reason for this increasing shift from the ground to building roofs. The Florida Fish and Wildlife Conservation Commission conducted a statewide survey of roof nesting water bird colonies between April and July, 2010. The main objectives of the survey were to 1) determine the breeding status and species present at all known roof colonies, 2) locate previously unreported colonies, 3) document the percentage of colonies lost due to reroofing or other factors since the last statewide survey conducted from 1998-2000, and 4) obtain peak statewide estimates of breeding pairs on roofs. A total of 474 buildings with reported roof colonies were surveyed. The survey found 146 active colonies, 222 inactive colonies, and 106 sites no longer suitable for nesting. Six different seabirds and shorebirds were recorded nesting on roofs: the Least Tern (*Sternula antillarum*), Black Skimmer (*Rynchops niger*), Roseate Tern (*Sterna dougallii*), American Oystercatcher (*Haematopus palliatus*), Gull-billed Tern (*Gelochelidon nilotica*), and Killdeer (*Charadrius vociferus*). With the exception of the Killdeer, all of these species are either state or federally listed or are in decline. Least Terns and Black Skimmers had the most nests on roofs and were found in the majority of colonies on roofs. The 1998-2000 statewide survey found 287 roof colonies. Ten years later, this survey found 32% (n =92) of those colony sites had been reroofed, demolished, or rebuilt and were unsuitable for nesting. Two buildings with non-gravel roofs were found to contain Least Tern nests. This was the first record of any waterbird species nesting on non-gravel roofs.

Zaragoza Rosales, Jorge G.¹, Salinas, Alejandro².

¹Universidad Michoacana de San Nicolás de Hidalgo, Facultad de Biología, Morelia, Michoacán. ²Centro Tlaxcala de Biología de la Conducta, Universidad Autónoma de Tlaxcala, Tlaxcala puppe_stop@hotmail.com.

Evaluación del fenómeno del querido enemigo en el Carpintero Enmascarado, *Melanerpes chrysogenys*

Las respuestas diferenciales a vecinos y extraños, y el reconocimiento individual, presumiblemente han evolucionado para reducir los costos de defensa territorial. La resolución

de conflictos en territorios mediante comportamientos agresivos de mayor intensidad a individuos no vecinos que a vecinos es un aspecto conductual conocido en el mundo animal como el fenómeno del querido enemigo. Evaluamos la presencia de este fenómeno en el carpintero enmascarado (*Melanerpes chrysogenys*). Se grabaron las vocalizaciones de 44 individuos territoriales en la costa de Jalisco. Se analizaron tres vocalizaciones (chic-o, kududuck, chigú), a las cuales se les midieron 8 variables espectrales y temporales para evaluar la individualidad vocal. Con un análisis de componentes principales y pruebas de ANOVA se encontró que la especie presenta individualidad vocal en dos de los tres tipos de vocalizaciones estudiadas (chic-o y kududuck). Para la evaluación del fenómeno del querido enemigo se realizaron experimentos con playbacks donde fueron medidas 10 variables conductuales. Los tratamientos comprendieron vocalizaciones de individuos vecinos, no vecinos y un control. Se encontró conforme a nuestra prueba de ANOVA que la respuesta a individuos vecinos y no vecinos fue similar, pero diferentes al control. A pesar de la existencia de la individualidad vocal en la especie, esta no presenta el fenómeno del querido enemigo. Esto podría deberse a que los individuos que poseen territorios podrían responder ante cualquier intromisión con otros individuos, sean vecinos o no, y así evitar falsos positivos al identificar erróneamente a un individuo vecino y poner en juego su territorio y/o nidada.

Zeigler, S. L.¹; Catlin, Daniel H.²; Kelsi L. Hunt², Lauren R. Dinan³, Mary Bomberger-Brown⁴, Joel G. Jorgensen³, Meryl J. Friedrich², James D. Fraser², Kayla L. Davis², Sarah M. Karpanty²

¹ United States Geological Survey, Woods Hole, MA, 2543, USA. ²Department of Fish and Wildlife Conservation, Virginia Tech, Blacksburg, VA, 24061, USA. ³Nongame Bird Program, Nebraska Game and Parks Commission, Lincoln, NE, USA. ⁴School of Natural Resources, University of Nebraska, Lincoln, NE, USA. szeigler@usgs.gov

Are source habitats consistently important for a piping plover metapopulation in a dynamic landscape?

Source populations and the habitats that support them are axiomatically critical for metapopulation persistence. Such populations are self-sustaining and can support other populations through dispersal-related rescue effects. However, much of what is known about the importance of source populations has been derived from classical metapopulation theory, which assumes that a metapopulation's habitat patches are stable in number and quality. Yet, many species, such as the imperiled piping plover (*Charadrius melodus*), inhabit dynamic landscapes, where habitat availability and quality are tied to local disturbance regimes. In these dynamic landscapes, it is unclear if distinct source populations exist and persist through time given habitat stochasticity. Here, we investigated the role that a potential source population plays in a metapopulation of piping plovers in a dynamic landscape. We used population viability analysis (PVA) to examine the predicted long-term dynamics of a plover metapopulation comprised of three populations located (i) along the Lower Platte River and in the Missouri River on (ii) the Gavins Point Reach and (iii) Lewis and Clark Lake. We described movement patterns and estimated survival rates and reproductive output for these populations during both flood and non-flood years to parameterize the PVA model. Because movement rates increased and reproductive output decreased when habitat was flooded, metapopulation persistence was closely tied to areas of stable habitat. Our results suggest that source populations can be just as important, and perhaps more important, in dynamic landscapes. These results can inform the

prioritization of conservation efforts in dynamic systems, helping to focus limited resources on source populations.

Zuria, Iriana; Castellanos, Ignacio

Universidad Autónoma del Estado de Hidalgo Pachuca Hi 42184 México izuria@yahoo.com

Sitios de anidación de la cotorra argentina (*Myiopsitta monachus*) en la ciudad de Celaya, Guanajuato

La cotorra argentina (*Myiopsitta monachus*) es una especie de ave exótica e invasora que está expandiendo rápidamente su distribución en México. A pesar de que su presencia se ha registrado en diversas localidades de México, aún existen pocos datos sobre la presencia de nidos y las características del sitio de anidación. Presentamos el primer registro formal de su presencia en la ciudad de Celaya, Guanajuato e incluimos datos sobre sus sitios de anidación. Durante agosto y septiembre del 2013 encontramos cinco sitios de anidación en distintas zonas de la ciudad, con un total de siete nidos, todos sobre tinacos de agua. Los nidos se encontraron a un promedio de 16.31 (± 0.29) m de altura y estaban construidos con ramas con espinas, principalmente de mezquite (*Prosopis laevigata*). Los nidos presentaron entre una y tres entradas. Uno de los nidos parecía abandonado, pero en los otros seis nidos observamos entre 2 y 12 individuos. Para México se han reportado con anterioridad nidos en eucalipto (*Eucalyptus sp.*), palmas (*Washingtonia robusta*), sauces (*Salix bonplandiana*) y espectaculares. Éste es el primer registro de nidos sobre tinacos de agua para el país. La aparente selección de los tinacos puede deberse a que su altura y material dificultan el acceso a los depredadores terrestres y a que los tinacos proveen de cierta protección contra condiciones climáticas adversas, además de que las cotorras podrán estar aprovechando las propiedades térmicas del agua. Debido a los problemas potenciales que puede ocasionar esta especie, es necesario establecer un programa de monitoreo en México para documentar su expansión, estudiar los sitios de anidación preferidos y monitorear su éxito reproductivo, así como las interacciones con especies nativas y los daños económicos que provoque.