

## LITERATURA CITADA

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intensively with schools from the different communities adjacent to the Caribbean National Forest, an area of montane rainforests in eastern Puerto Rico and home to the last population of parrots. Other strategies will be used to reach the public at large. We will present preliminary results on the materials and methods used, as well as the response these have generated among the Puerto Rican public.

### **LA COTORRA PUERTORRIQUEÑA: SU POTENCIAL COMO UNA HERRAMIENTA PARA LA EDUCACION AMBIENTAL**

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### **ABSTRACTS OF PAPERS PRESENTED AT THE 1993 ANNUAL MEETING OF THE CARIBBEAN SOCIETY OF ORNITHOLOGY (CONTINUED FROM VOL. 6(3))**

#### **HABITAT USE BY NORTH AMERICAN LANDBIRD MIGRANTS ON ST. CROIX, U.S. VIRGIN ISLANDS**

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Forty-seven species of North American landbird migrants were observed on St. Croix from September 1981 to November 1988. Observations were made at random over the entire island throughout the seven years. The occurrence of landbird migrants was recorded for each of the major habitat types on the island. Over 50% of the species were found using no more than 3 types of habitat and more than half of these species were found in only a single habitat type. Species density was highest for mangrove forest, littoral forest, and wetlands, and was lowest for open habitat, urban habitat, and dry forest.

#### **THE PUERTO RICAN PARROT: ITS POTENTIAL AS AN ENVIRONMENTAL EDUCATION TOOL**

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Recently, several education programs in the Lesser Antilles aimed at promoting the conservation of endemic West Indian amazon species (e.g., *Amazona versicolor*) have met with much success. Unfortunately, although the Puerto Rican Parrot (*Amazona vittata*) is the most studied and at present most intensively managed of all Caribbean parrots, little awareness exists among the public in Puerto Rico of its present status and of these restoration efforts. To the environmental community, its use as a symbol for conservation and education has been ignored. We have begun a project employing strategies proven in other Caribbean islands for promoting the conservation of our endemic parrot and, through it, all of Puerto Rico's natural resources. We aim to work

En años recientes, una serie de programas de educación dirigidos a promover la conservación de algunas especies de cotorras del género *Amazona* endémicas a la región del Caribe (e.g., *Amazona versicolor*) han tenido éxito a nivel local. Desafortunadamente, a pesar de que la Cotorra Puertorriqueña (*Amazona vittata*) es la cotorra que más se ha estudiado y que más intensamente se maneja, muy poco conocimiento sobre su estado y esfuerzos de restauración existe entre la público en Puerto Rico. A la comunidad ambientalista, su utilización como un símbolo para la conservación ha pasado mayormente desapercibido. Hemos comenzado un proyecto utilizando estrategias desarrolladas por la organización RARE y comprobadas en otras islas del Caribe para promover la conservación de nuestra cotorra endémica y a través de esta, los recursos naturales de Puerto Rico en general. Esperamos implementar una serie de estrategias que varíen según la comunidad y su localización con respecto al bosque de El Yunque, lugar donde se encuentra la última población de cotorras en el estado silvestre. En esta ponencia discutiremos los materiales y métodos utilizados al igual que resultados preliminares sobre la respuesta generada entre el público puertorriqueño.

#### **ROLE-CALL FOR INSULAR AVIAN EXTINCTIONS IN THE WEST INDIES**

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Extinctions (e.g., Grand Cayman Thrush *Turdus caymanensis*) or extirpations (e.g., Puerto Rican Screech-Owl *Otus nudipes newtoni* from St. John, Virgin Islands, and Puerto Rican Parrot *Amazona vittata gracilis* from Culebra Island) of forest-dwelling species occurred on small islands of the West Indies primarily as a result of forest fragmentation or habitat loss associated with colonial plantocracies. Other extinctions of insular species in the Lesser Antilles forced by similar processes of unchecked forest depletion and fragmentation are in progress. A review of the literature indicates that the possibility of another 21 species of birds becoming extinct in the Lesser Antilles is very real. The potential causes are 1)

habitat degradation or manipulation, 2) introduced predators, 3) hunting, and/or 4) random climatic events. The case of the Puerto Rican Bullfinch (*Loxigilla portoricensis grandis*) of St. Kitts, last seen in 1929, is used to illustrate extinction pathways. Since the precise cause of the bullfinch extinction it is not clear, possible scenarios may illuminate pathways of equally poorly known forest birds of the region. As more species are erected from complex super-species groups in a region of high endemism, the potential for greater extinction rates is considered. Conservation and restoration of insular habitats will be essential during the latter part of this century if preservation of biological diversity is to be an international goal in the next century.

### **FEEDING BEHAVIOR OF WHITE-CROWNED PIGEON NESTLINGS IN RELATION TO DIET, HATCHING SEQUENCE, AND HATCHING PATTERN**

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Selection for asynchronous hatching in White-crowned Pigeons (*Columba leucocephala*) may occur because of high rates of predation during the incubation period. This hatching pattern leads to nestling size asymmetries that, in the Florida Keys, result in decreased survival of last-hatched nestlings when food is limited, and lower fledgling masses when food is not limited. As nestlings can be readily distinguished by their size differences, parents may respond by selectively feeding the smaller nestling. I observed nestling feeding behavior at 69 natural asynchronous and experimentally-synchronized nests during and after food limitation. Larger chicks from both asynchronous and synchronous broods received more feeds per hour, more pumps per feed, and fed longer than their smaller siblings when food was limited. Feeding behavior did not differ when food was not limited, but larger nestlings continued to receive more food. During food limitation, smaller nestlings begged more than their siblings, but a smaller proportion of those begs resulted in feedings. After food limitation, no difference existed in begging frequency or feedings between large and small nestlings, regardless of hatching pattern. Larger nestlings were closer to the adult prior to 42% of all feedings and were fed first 92% of the time. Small nestlings were rarely close to the adult prior to feedings and were fed first only 8% of the time. When food was not limited, nestling position or feeding sequence did not differ. These data suggest that adult White-crowned Pigeons in the Florida Keys have little potential to counteract the competitive asymmetries between different-sized young and, ultimately, the starvation of smaller nestlings as a result of this competition.

### **MOVEMENTS AND MORTALITY OF WHITE IBISES (*EUDOCIMUS ALBUS*) AS DERIVED FROM RECOVERIES OF BIRDS BANDED IN THE SOUTHEASTERN UNITED STATES**

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From 1957 to 1987, 18,713 White Ibises have been banded with USFWS leg bands and/or color marks at colonies in the southeastern United States. These bandings have resulted in 163 recoveries (0.8% recovery rate), 150 of which have usable information. These returns indicate that ibises, in general, migrate to the south during the winter months, apparently often crossing the straits of Florida to Cuba (16% of recoveries). Few returns were from further south, and it is likely that there is little interchange with Scarlet (*Eudocimus ruber*) and White Ibis populations in the southern Caribbean rim. Juvenile ibises tend to undergo rapid postbreeding dispersal, often towards the north. Although there are several problems with the banding data (too few adults banded, visibility bias for juveniles, inconsistent hunting pressure), the band recoveries suggest that the North American White Ibis population experiences 62% mortality in the first year of life, 33% in the second year, and 26% mortality for adults. With these rates, it is estimated that 2.07 young must be produced on average per breeding pair to maintain a stable population. These figures may, however, be obsolete, since over 50% of the returns were from hunting, a condition which may have been greatly reduced in the past two decades.

### **EFFECTS OF COLONIZATION PATTERNS, DISPERSAL BARRIERS, AND ISLAND SIZE ON GENETIC VARIATION PATTERNS IN CARIBBEAN YELLOW WARBLERS**

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I used a restriction endonuclease analysis of mitochondrial DNA (mtDNA) to estimate genetic variation within and among Caribbean populations of the Yellow Warbler (*Dendroica petechia*) sampled from 11 islands and 4 coastal Venezuelan localities. There was no clear-cut pattern of greater among-population genetic variation in the West Indies relative to Venezuela. However, there was a significant effect of island size on within-population variation (lower levels of variation within populations on smaller islands). There was also a "phylogenetic effect" on variation: multiple colonizations of individual islands and of the West Indies as a whole (inferred from a phylogenetic analysis of mtDNA) was correlated with increased genetic variation within populations and among islands.

### THE GREATER ANTILLEAN NIGHTJAR: IS IT ONE SPECIES?

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The Greater Antillean Nightjar is found in Cuba, Cayo Coco, Isle of Youth, and Hispaniola. It was described in Cuba as *Antrostomus cubanensis* by Lawrence (1862), in Hispaniola (Haiti) as *A. eckmani* by Lonnerberg (1929), and currently is lumped as *Caprimulgus cubanensis* (AOU 6th Check-list 1983). A note there suggests that two species may be present, based on vocalization differences. The song in the Dominican Republic is a 'click,' plus a 2-syllable phrase, fitting the rhythm of the common name there, "*Pitangua*." In Cuba, the song is a 4-syllable phrase, not 3 syllables, as indicated in the common name "*guabairo*." It could be paraphrased as "*gua bai ah ro*". In Hispaniola, the song is higher pitched by 250 Hz, longer in duration (1.2 vs. 0.6s), and slower in delivery (at 2 vs. 1.5s intervals). Among plumage differences are (1) the size of the beige underside distal area of the rectrices—length 70mm in Hispaniolan vs. 25mm in Cuban birds, (2) blackish crown and hind neck streaks wider than in Cuba, and (3) coverts in the vent area are not streaked in Hispaniolan specimens as they are in Cuba. Our information supports returning to two species: *Caprimulgus eckmani*, the Hispaniolan Nightjar; and *C. cubanensis*, the Cuban Nightjar. Tape recordings and sonograms will be presented.

### PRELIMINARY STATUS OF THE WEST INDIES' ONLY NUTHATCH

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We studied *Sitta pusilla insularis*, the endemic race of the Brown-headed Nuthatch confined to Grand Bahama Island, in both the museum and field, and compared it to south Florida populations of the same species. The *insularis* race was diagnosed largely based on a longer, straighter bill, but we learned that the type's bill had been mismeasured and that specimens from Grand Bahama differed only slightly from those taken in nearby Florida. In life, the Grand Bahama nuthatch is different visually, vocally, and behaviorally compared to south Florida populations. We encountered it with less than 5% the frequency that might be expected from densities and detection coefficients determined by John Emlen on Grand Bahama about 25 years ago. We believe that the West Indies' only nuthatch has recently declined precipitously and may be heading for extinction. We speculate that this may be a consequence of its isolation and ecological requirements compared to the nature of pine forest regeneration following rapid massive clearcutting of its single-island range.

### CONSERVATION OF BIOLOGICAL DIVERSITY IN THE NATURAL PINE FORESTS OF THE BAHAMA ISLANDS

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The scientific management of the pine forests of the Bahama Islands significantly contributes to the conservation of biological diversity of flora and fauna. Some notable plant species adapted to varied site conditions include thatch palms (*Sabal palmettos*) and poison wood (*Metopium toxiferum*), among others. Enthusiastic bird watchers have a diversity of bird life to view that rivals the finest elsewhere, and includes Turkey Vulture (*Cathartes aura*), Red-tailed Hawk (*Buteo jamaicensis*), and Bahama Parrot (*Amazona leucocephala bahamensis*). All wild birds are protected by Bahamian law and numerous national parks and bird reserves have been dedicated to protect and conserve biological diversity. Nevertheless, law enforcement is difficult. The concept of multiple-use forestry, as practiced by the Forestry Section, can be used to achieve a balance for the co-existence of all facets of forest management and the environment. Further, great care and control can be exercised in forest practices, and adjustment made to conserve the genetic resources of both flora and fauna of the pine forests.

### HABITAT CONSTRAINTS ON THE DISTRIBUTION OF PASSERINE RESIDENTS AND NEOTROPICAL MIGRANTS IN LATIN AMERICA

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With continuing tropical deforestation, there is increased concern for birds that depend on forest habitats in Latin America. During the past 10 northern winters, we have conducted quantitative studies of habitat use by wintering migrant songbirds and by residents in the Greater Antilles, Mexico, Central America, and northern South America. Many migrants, but few residents, winter in forest fragments and in certain arboreal agricultural habitats (citrus, cacao, shade coffee). Many other agricultural habitats (sun coffee, mango, commercial banana plantations, and heavily grazed pasture) are avoided by most birds. Some species, such as thrushes and ground-feeding warblers, depend on closed-canopy forest. Some, such as Northern Waterthrush (*Seiurus noveboracensis*) and Prothonotary Warbler (*Protonotaria citrea*), winter primarily in mangroves or other swamp forests. The majority of neotropical migrant passerines winter in forest fragments and certain agricultural habitats, as well as mature forest; but many resident species, especially suboscines (Furnariidae, Dendrocolaptidae, Formicariidae, Papridae), are heavily impacted by loss and fragmentation of the forest.

## COLONIAS DE ANIDACION DE AVES COSTERAS EN SIAN KA'AN, QUINTANA ROO

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Nosotros localizamos los sitios de anidación de aves zancudas y marinas en la Reserva de la Biósfera de Sian Ka'an, en la parte este-centro de la Península de Yucatan. Visitamos 24 sitios de reproducción, 13 de ellos en la Bahía de la Ascensión y 11 en la Bahía del Espíritu Santo. Las aves acuáticas coloniales que se reproducen en la Reserva de la Biósfera de Sian Ka'an incluyen 17 especies, 6 de estas amenazadas. La Bahía de la Ascensión sobresalió por su extensa área, número de especies, tamaño colonia y diversidad, aunque con una menor homogeneidad. Las colonias estan tipicamente localizadas cerca de humedales continentales de la región, sin embargo, hasta ahora la relación que guardan los sitios de reproducción y de alimentación es pobremente conocida en la reserva. Después del Delta del Usumacinta, la Reserva de la Biósfera Sian Ka'an mantiene la segunda comunidad de aves acuáticas más grande en México.

## BREEDING COLONIES OF WATERBIRDS IN SIAN KA'AN, QUINTANA ROO

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Breeding sites of wading and marine birds were located at Sian Ka'an Biosphere Reserve, central-east Yucatan Peninsula. We visited 24 breeding sites, 13 in Ascension bay and 11 in Espíritu Santo bay. The colonial waterbirds that breed in Sian Ka'an include 17 species, 6 of them endangered. Ascension bay stands out by its area, number of species, size of colonies, and diversity, but lower evenness. Colonies are typically near to inland wetlands in the Reserve. Sian Ka'an Biosphere Reserve contains the second largest community of waterbirds in Mexico.

## SITIOS DE ANIDACION DE PANDION Y BUBO EN SIAN KA'AN, QUINTANA ROO

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Nosotros localizamos por tierra nidos de *Pandion haliaetus* y *Bubo virginianus* en la Reserva de la Biósfera de Sian Ka'an durante 1992 y 1993. Encontramos 25 nidos de *P. haliaetus*, 11 de ellos fueron activos y tan solo 5 de ellos tuvieron éxito, resultando en 8 pollos volantones. Para *B. virginianus* encontramos cuatro nidos, tres de ellos activos y uno tuvo

éxito reproductivo con dos pollos volantones. *Pandion haliaetus* contruyó sus propios nidos en sitios sobresalientes, estando esto expuestos a los vientos, mientras que *B. virginianus* empleó nidos usados de otras especies, incluidos los de *P. haliaetus* y puede incluir nidos activos. El viento es un factor que afecta el éxito reproductivo de *P. haliaetus* y *B. virginianus* en Sian Ka'an.

## PANDION AND BUBO BREEDING RECORDS IN SIAN KA'AN, QUINTANA ROO

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Using ground searches, we found Osprey *Pandion haliaetus* and Horned Owl *Bubo virginianus* nests at the biosphere reserve of Sian Ka'an in 1992 and 1993. We recorded 25 Osprey nests, 11 of which were active and 5 were successful with 8 fledglings. On the other hand, we recorded four Horned Owl nests, three of which were active and one of them was successful with two fledglings. Ospreys built their own nests on isolated sites and they were exposed to the wind, whereas Horned Owls used nests built by other bird species, including Osprey, and may use active nests. We suggests that the wind played a major role in the breeding success of Ospreys and Horned Owls in Sian Ka'an.

## ASSESSING THE EFFECT OF HABITAT CHANGES ON THE WATERBIRD POPULATIONS OF HELLSHIRE, ST. CATHERINE, JAMAICA

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Waterbirds are valuable as indicators of habitat change. This has been well documented in temperate wetlands, but no studies have been conducted in such habitats in the Caribbean. Studies were conducted in St. Catherine, Jamaica, on a natural and a man-made wetland; the latter was a recently-constructed natural sewage treatment plant. These studies were made to determine the effect of the second habitat on the waterbirds of Hellshire, St. Catherine. Numbers of adults and juveniles were counted in populations in the natural wetland during an 18-month period, and in the man-made wetland during a 12-month period. The results were compared to assess the effects of the man-made system. These results showed that changes in extent and quality of the available wetland habitat influenced the composition of the waterbird population.

## **RAPTOR MIGRATION IN THE CARIBBEAN: THE JAMAICAN PERSPECTIVE**

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There is a general consensus among the birding community in Jamaica that the migrant birds of prey observed on the island are largely vagrants. To test this hypothesis, a 13-year (1980-1993) record of data available from the Gosse Bird Club (Jamaica) was analysed. A total of 8 species of raptors were recorded during this period. Of these, the American Kestrel (*Falco sparverius*) and the Red-tailed Hawk (*Buteo jamaicensis*) are resident. The data support the hypothesis, although there may be some degree of under-reporting due to the inexperience of bird watchers with some species, and the generally low numbers of migrating individuals. An assessment is made of the suitability of Jamaica as a habitat for birds of prey in terms of vegetation type and food availability, taking into account the status of the species in their breeding range.

## **THE BIODIVERSITY MONITORING PROJECT FOR ANTIGUA**

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A Biodiversity Monitoring Project was recently initiated in Antigua under the auspices of the Environmental Awareness Group. One of the most important components of the project is the assessment and cataloguing of native species of plants and animals, targeting the remnant moist forest environments and wetlands on Antigua. We hope this will lead to a better system of classification and management for parks and protected areas in Antigua and Barbuda.

## **RECENT PROGRESS IN THE MANAGEMENT OF THE CAPTIVE PUERTO RICAN PARROT POPULATION**

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Captive efforts for the Puerto Rican Parrot (*Amazona vittata*) have been ongoing since 1972. Progress in this part of the parrot project has been particularly slow and expensive. At present, 57 Puerto Rican Parrots and 34 Hispaniolan Parrots (*Amazona ventralis*) are housed in the Luquillo aviary. In February 1992, a series of modifications on the physical plant of the Luquillo Aviary, as well as on the management and health care of the captive parrots, was initiated. All captive breeding pairs have been supplied with a PVC nest prototype

with a palm tree entrance to mimic natural cavities. These nests are reusable, and are proving to keep nesting females in a drier, more sterile environment. All captive breeding units (cage with breeding pair and nest structure) are being remotely monitored by a closed-circuit TV camera system. At present, we have successfully pair-bonded 11 genetically compatible pairs and placed these birds in breeding units. Microbiology studies were conducted.

## **PROGRESOS RECIENTES EN EL MANEJO DE LA POBLACION CAUTIVA DE LA COTORRA PUERTORRIQUEÑA**

PABLO TORRES-BÁEZ, ANA B. ARNIZAUT AND FRANCISCO J.  
VILELLA

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Esfuerzos en cautiverio para la propagación de la Cotorra Puertorriqueña (*Amazona vittata*) se están llevando a cabo desde 1972. Progresos en esta parte del proyecto de la cotorra han sido lentos y costosos. Al presente, existen un total de 57 Cotorras Puertorriqueñas y 34 Cotorras Dominicanas (*Amazona ventralis*) en el aviario de Luquillo. Desde Febrero de 1992, se han realizado una serie de modificaciones en la planta física del aviario de Luquillo, así como en el manejo y cuidado de las cotorras cautivas. Todas las parejas reproductoras han sido suplidas con un prototipo de nido de tubo de PVC con una entrada hecha de palma. Estos nidos son reusables, y proveen un ambiente más seco y estéril para el anidaje. Todas las unidades de anidaje (jaula con una pareja reproductora y estructura de anidaje) son monitoreadas a través de un sistema de circuito cerrado de cámaras. Al presente contamos con 11 parejas reproductoras exitosas, genéticamente compatibles y localizadas en unidades de anidajes. Pruebas microbiológicas se están realizando tanto a los individuos como a los nidos.

## **THE TOBAGO STRIPED OWL (*RHINOPTYNX CLAMATOR OBERI*): WHAT DO WE KNOW?**

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This presentation examines all available literature on this Red Data Book endemic owl, and discusses the various conflicting accounts of habitat use by this species and alarming lack of behavioral and ecological data available for conservation of this owl. The attendant habitat and species management concerns which arise because of this lack of data are also addressed. I discuss present habitat availability on the island of Tobago and possible threats posed to the species there. I close with the outline of the Trinidad Wildlife Section's proposal to study this species and the response of the NGO community to this work.

## **SOME IMPLICATIONS OF SMALL POPULATION SIZE FOR MANAGEMENT OF WATERBIRDS IN JAMAICA**

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Relatively little scientific work has been done on waterbird populations and habitats in Jamaica. Consequently, the data base for rational management is poor. Records from wetland and coastal sites over the past 15 years contain little more than a list of species present during a single observation period and little consecutive monthly or seasonal data are available. These and recent studies at north and south coast wetlands show a high species diversity at some sites, but low numbers at all sites. No site had more than 1000 birds of all species recorded at any one time and passage migrants increased in numbers only slightly; so small populations of waterbirds appear to be characteristic of Jamaica. Research is needed to determine whether habitat quality is restricting resident species and the extent to which Jamaica is used as a shorebird flyway; but small size has implications for waterbird management. Few sites in Jamaica meet international criteria of importance for waterfowl conservation, can support sport hunting, or have potential for birdwatching or ecotourism. Consequently, funding for ecological research, waterbird protection, or possible population enhancement activity may not be readily available. These and other management problems are discussed.

## **THE IMPACT OF THE LANDSCAPE ON AVIAN COLONIZATION OF ISOLATED PATCHES OF HABITAT**

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The placement of a habitat patch within its local landscape can strongly affect the ability of organisms to find and colonize that patch. A habitat patch that is relatively isolated from potential sources of dispersers may be less likely to support a population than is a similar patch that is close to such sources. We demonstrate that this landscape effect can be seen even with relatively vagile organisms such as birds, which are not generally considered dispersal-limited. We have studied the distribution of Bachman's Sparrow (*Aimophila aestivalis*) in the managed pine woodlands of the Savannah River Ecology Laboratory in the coastal plain of South Carolina. In 1991 and 1992, we followed the sparrow's ability to colonize two "linear landscapes," which were sets

of clearcuts that began near a source of dispersing birds, and extended in one direction through a landscape matrix of unsuitable habitat. Thus, the clearcuts differed from one another primarily in their isolation from potential sources. Surveys of singing male sparrows during the breeding season showed that densities of the sparrow decreased with increasing distance from potential sources. The effect of patch isolation within the landscape could provide an explanation for this species' population decline during the last 50 years, and may suggest management strategies for halting the sparrow's decline.

## **COLLECTING INFORMATION FOR AN ISLAND DATABASE OF BIRD RECORDS**

or

### **WHO IS THE FINAL AUTHORITY?**

CATHERINE LEVY

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Using illustrations from recent unusual observations in Jamaica, this paper sets out what type of information can be collected from regularly kept records of bird species. Ideas are presented on the application and importance of this information to programs for conservation of avifauna or of natural areas. The compilation of records can be useful in providing a basis for further study and research of a species and its habitat, for producing an atlas and checklists, and for involving groups and individual volunteers in bird observation and nature conservation. Finally, suggestions on types of databases and headings will be presented. Examples of acceptable records and standards will be discussed.

## **ESTABLECIMIENTO DE UN SISTEMA DE MONITOREO DE AVES EN EL LAGO ENRIQUILLO**

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Se establece un sistema de monitoreo de aves en el Lago Enriquillo. Durante el primer año se ha dado prioridad a la determinación de la riqueza de especies, a la identificación de hábitats críticos y al censo de las poblaciones de flamencos (*Phoenicopterus ruber ruber*), garzas (*Egretta* sp.) y especies migratorias. En una franja de 325.4 km<sup>2</sup> alrededor del lago se han identificado unos nueve hábitats críticos utilizados por las aves para el forrajeo y la nidificación; estos son: zona de playa y áreas pantanosas (17%), manglares (15%), cultivos mixtos, entre los que se encuentran arrozales (14%), pastizales inundados estacionalmente (14%), y bosque seco circundante e islas Cabritos, La Islita y Barbarita (38%); otros (2%). La superficie del espejo de agua es de unos 238.0 km<sup>2</sup>. Se han identificado tres hábitats críticos de forrajeo para las

poblaciones de flamencos: Boca de Cachón, con un promedio de 466 individuos durante los meses de marzo, abril y mayo, y Villa Jaragua y Bahía de los Ríos con 216 y 115 individuos respectivamente.

### ESTABLISHMENT OF A SYSTEM OF MONITORING OF BIRDS IN LAGO ENRIQUILLO

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A system of monitoring of birds has been established in Lago Enriquillo. During the first year, the main interest has been the determination of species richness and the identification of critical habitats, as well as the census of the populations of the Greater Flamingo (*Phoenicopterus ruber ruber*), herons (*Egretta* sp.), and migratory species. In a fringe of 325.4 km<sup>2</sup> around the lake, 9 critical habitats used by birds for foraging and breeding activities were determined; these are: the shore and swampy areas (17%), mangroves (15%), mixed crops (e.g., rice) (14%), temporarily inundated pastures (14%), and dry forests around the lake and on the islets of Cabritos, La Isleta, and Barbarita (38%); others (2%). The water surface of the lake is 238.0 km<sup>2</sup>. Three critical habitats are used by the flamingo for foraging: Boca de Cachón, with a monthly average of 466 individuals during the period from March to May 1993, and Villa Jaragua and Bahía de Los Ríos with averages of 216 and 115 individuals, respectively.

### VOCAL BEHAVIOR OF THE ST. ANDREW VIREO (*VIREO CARIBAEUS*)

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*Vireo caribaeus*, of the southeastern Caribbean Isla San Andrés, is vocally unique among species of the subgenus *Vireo* because it: (a) utters monosyllabic "chatter" song, bisyllabic songs, and general polysyllabic song of three or more kinds of syllables; (b) has incorporated repetitive congested song into its song types repertoire; and (c) does all of the above with only six different syllables and their variants. Some of the six syllables are shared with other western Caribbean insular and continental species of the *V. griseus* superspecies complex. Isolation of a small founder population on tiny San Andrés (34 km<sup>2</sup>), which experienced cultural drift or evolution, may explain in *V. caribaeus* the origin of such complex song from such a simple syllable repertoire.

### PARAMETROS ECOLOGICOS DE UNA COMUNIDAD ORNITICA EN EL PARQUE NACIONAL DEL ESTE, REPUBLICA DOMINICANA

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En éste trabajo se exponen los primeros resultados obtenidos acerca de la abundancia, diversidad, riqueza y equitabilidad de una comunidad ornítica siguiendo el método de transecto lineal, realizado por tres guardaparques del "Parque Nacional del Este" a lo largo de 14 recorridos de un Kilometro cada uno. Este trabajo es parte del proyecto de "Uso público, protección y recuperación de vida silvestre del Parque Nacional del Este," que ejecuta la "Agencia Española de Cooperación Internacional" (AECI) junto con la "Dirección Nacional de Parques" (DNP) en la República Dominicana. La identificación se hizo según el canto y de visu, durante los meses de marzo a junio. También se compara estadísticamente las posibles desviaciones en el muestreo al ser realizado por tres personas distintas a lo largo del mismo recorrido. La importancia de este trabajo reside no sólo en el valor científico de los resultados, sino también en la integración del personal encargado del Parque a las labores de investigación.

### THE RELEASE PROGRAM FOR THE PUERTO RICAN PLAIN PIGEON

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Eight Puerto Rican Plain Pigeons (*Columba inornata wetmorei*) were released to the wild in April 1993. All pigeons were raised by their own parents representing six different families. Birds were moved from the Humacao Aviary to a releasing cage (3 x 3 x 10m) at Cidra. We provided daily pellets, natural food, and water. A total of 22 plant species were provided and most of them tried and accepted. Preferred fruits were *Roystonea borinquena*, *Schefflera morototoni*, *Lantana camara*, *Psychotriaberteriana*, and *Nectandra membranacea*. The birds were acclimatized for five weeks in the releasing cage. During the last two weeks a radio transmitter was installed to each pigeon to study their behavior with this device. All pigeons were released and monitored with the radiotelemetry equipment. Three pigeons were lost, one illegally shot and two killed by Red-tailed Hawks (*Buteo jamaicensis*). Most of the birds integrated into the wild population of plain pigeons and at the end of the study two released pigeons started to breed in two different areas. Dispersion of pigeons varied from 0.2 km to over 7.0 km (maximum range of the receiver). All pigeons were monitored for three months, the life of the transmitters' batteries.