equinox, the birds are referred to in the Spanish islands as the 'doves of St. John'."

"As April is the month of promise, May is the month of fulfilment. Along the roads there are fallen flowers, the chartreuse of genep and the pink of dog almond." Later, he writes, "The lyrical fecundity of May is not alone in the vibrating boom of red-necked pigeons but emanates from all living things in one way or another and covers the entire island, appearing to reach even to the stars. Now on a clear night Crux, the Southern Cross, appears early and hangs straight and bright above our south coast. I have always liked to believe that here was where this symbolic constellation appeared brightest to Columbus and so inspired him to name the island Sancta Cruz, or Holy Cross."

Describing July, he writes, "Summer stilts are yapping, more nervous and watchful than ever since some have youngsters with no power of flight. Martins [our swallows] trill from the skies above Mt. Eagle, their nests no doubt still safe in the draft holes of Lower Love chimney."

The common bird song for October "is the rasping but cheerful *zee-e-e-te* of our little yellow-breast, *Coereba flaveola*. There is no better known bird on our island or one with more common names: sugar bird, bananquit, honey creeper, etc. This pretty and lively little creature is our national bird, and maybe rightly so, since it is found abundantly throughout the island and has a history closely associated with us as a once great sugar producing island."

For December, Seaman writes, "The sea has become alive again after the sultry calms of October. Along our north coast, particularly, an incessant low roar marks the seasonal change. It is a sound sweet to the islander and one always remembered. Sometimes one awakes in the absence of this ancient sonance in fear that it has been lost. It is an island decibel, first and last, describing in a hundred voices the moods of our encircling mother. It is always there, from birth to death, in calm and beauty, in rage and doom. It is one of the pulsing nuances that divide an island world from any other. It is a primordial throb in the saline blood of living man. It is the susurrus; it is thunder; it is the sea laving all island shores."

Few people know that Alexander Hamilton, that historic signer of the American Constitution, grew up on St. Croix. Young Alexander was an apprentice clerk in a Christiansted store in September 1772, when St. Croix experienced a devastating hurricane. His letter to his father, describing that hurricane, is included in full by Seaman. "Our distressed helpless condition taught us humility and a contempt of ourselves," he wrote. "The horror of the night - the prospect of immediate cruel death - or, as one may say, of being crushed by the Almighty in his anger -

- filled us with terror."

I have not read another book that gives me a better sense of the natural character of a small island and man's existence there as does Seaman's *Ay-Ay*. It is biologically and historically accurate, and contains a smorgasbord of readable facts. It is worth the £4.95 or approximately U.S.$8.00 price. **Ro Wauer.**

New Book on West Indian Biogeography

"Biogeography of the West Indies: Past, Present, and Future," edited by Charles A. Woods. 1989. 896 pp. U.S.$125.00 + $2.00 postage and handling. Sandhill Crane Press, Inc., 2406 NW 47th Terrace, Gainesville, Florida 32606, U.S.A.

Abstracts of Selected Papers Presented at the Third Annual Meeting of the Society of Caribbean Ornithology, Dominican Republic, August 1989 [Concluded from El Pitirre Vol. 2(2)]

Use of Agricultural Habitat by Avian Migrants in Puerto Rico, Jamaica, and Belize. C.S. Robbins, B.A. Dowell, R.L. Sutton, A.H. Sutton, and D.D. Weyer. During January-February of 1987-89 we conducted systematic surveys (mist netting and point counts) of bird populations in citrus, cacao, coffee, mango, rice, and pine plantations to determine comparative use by migrants and to compare use of agricultural habitats with use of native forests. Results for Belize and the Greater Antilles are discussed. Mature citrus and cacao (under a canopy of *Erythrina*) attracted large numbers of migrants. Shade coffee was much favored over sun coffee. Pine plantations had low densities of both migrants and residents. Fallow rice had huge numbers of indigo buntings and good numbers of common yellowthroats, but poor diversity of migrants. Heavily sprayed habitats contained little animal food and had low to extremely low bird populations. Some species, such as least flycatcher, gray catbird, and Tennessee, magnolia, and black-and-white warblers use certain agricultural habitats in large numbers. Others, such as spotted thrushes, vireos, Louisiana waterthrushes, and Kentucky warblers, were found only rarely in agricultural habitats.

Morphological Development on Captive Puerto Rican Plain Pigeon (*Columba inornata wetmorei*). Carlos

R. Ruiz. A morphological study in the captive program of the Puerto Rican plain pigeon was made from August 1987 to May 1989 at the Humacao University College (UPR), Humacao, Puerto Rico. I present the development of fostered plain pigeon squabs in this study, including weight increase, wing cord, culmen, ulna, tarsus, 9th primary, tail, and body size of squabs for the first two months of life. Other body characteristics are presented, such as: changes in skin, eye, and claw color; eye opening; feather development; and other behavioral patterns related to development. I propose making a guide of measurements to determine age of squabs. This aging table will be useful for later studies in the wild population and/or to determine differences between captive and wild pigeons. Also, those measurements could be compared with other columbids, setting correlations among them. Behavioral and morphological characteristics are useful for management of the species in captivity.

Studies of Resident Columbid Game Species in Puerto Rico. Frank F. Rivera Milán. Columbids are severely hunted in the Caribbean. It is unfortunate to find a lack of significant (integrated) biological and ecological evidence on which to base critical management decisions in the majority of the Caribbean islands. Results of studies conducted in Puerto Rico are presented. With some exceptions (e.g., *Columba inornata* in Puerto Rico), columbid populations are considered to be highly resilient. Columbids are capable of faculative feeding and multiple nesting. In Puerto Rico, for example, *Zenaida aurita* is capable of raising up to four broods per year; over 100 plant species are listed as probable food sources; nesting activity peaks between April and June, but active nests are detectable year-round. Columbids successfully inhabit a wide variety of habitats dominated by xeric and/or mesic environments. Many species are ecologically ecotonal, inhabit edges, and exploit urban and agricultural landscapes. Therefore, rapid population turnover rate is a dominant characteristic of Columbidae.

Regulation of Food Provisioning Patterns of White-tailed Tropicbirds. Fred C. Schaffner. Observations of the food provisioning patterns of individually identified white-tailed tropicbird (*Phaethon lepturus*) parents indicated that the food delivery intervals of adults to their chicks were more variable than food payload mass and that there was no day-to-day relationship between the feeding interval and feed mass. Energetic considerations suggest that there is strong selection for parents to decrease the feeding frequency and increase feed mass, to some limit

imposed by either the limits of the parents' delivery capabilities, or the limits of the chick's food receiving (swallowing) capabilities (the volume a chick can ingest in one feeding bout). In fact, the limits of the chick's swallowing capabilities occur well before the parents' delivery limits are reached, and thereby set the feed mass at both a weight and volume which is easily within the adults' lifting and transporting capabilities. The mean feed mass is viewed as reflecting a particular "target" payload mass which parents strive to collect as quickly as conditions, and their own individual foraging abilities will allow, and is a practical compromise between the short term interest of the chick and those of the adult.

Radio-tracking of White-tailed Tropicbirds Over the Caribbean Sea. F.C. Schaffner, M.R. Fuller, C.J. Pennycuick, H.H. Obrecht III, and J. Gonzalez-Martinez. Sixteen white-tailed tropicbirds (*Phaethon lepturus*) (body mass = 370 g) were radiomarked in June 1987 and May 1988 at the Culebra National Wildlife Refuge, Puerto Rico. Transmitters were attached to birds using harnesses to hold 9-11 g packages on the birds' backs, or with glue and thread to tie 6 or 8 g packages ventrally on retrices. The tail-mounted transmitters proved most useful. Birds were tracked over the open sea from a Cessna 182 aircraft equipped with side-ways mounted four-element Yagi antennas, arranged in a null-peak configuration, and connected to a scanning receiver. Locations were determined by recording bearing and distance from at least one of three VOR/DME aeronautical navigation beacons at the San Juan (SJU), St. Thomas (STT), and St. Croix (STX) international airports. In 1987, one bird was tracked as far as 155 km north of San Juan at the close of the nesting season, and in 1988 a foraging parent was tracked as far as 116 km south of the nesting colony. Individuals were tracked from 1-4 days in 1988, when we obtained an average of 2.6 locations per radiomarking effort. While there were no statistically significant differences between the chick provisioning performance of radio marked versus unencumbered parents, doubly labeled water ($D_2{}^{18}O$) analysis indicated that the radio marked parents consumed markedly more energy in their efforts.

The Role of Aviculture in the Captive Propagation of the Puerto Rican Parrot (*Amazona vittata*). Teri Sorenson. The following topics in Puerto Rican parrot aviculture will be presented and discussed briefly: cage and aviary design, nest box design and placement, adult breeder diet, artificial incubation techniques, hand-rearing diet techniques, and

problems of low production and their possible causes and solutions.

Algunos Aspectos de la Ecologia Reproductiva del Jui de Puerto Rico (*Myiarchus antillarum*) en el Refugio Nacional de Vida Silvestre de Cabo Rojo, Puerto Rico. Pablo Torres Baez and Jaime A. Collazo. El jui de Puerto Rico es endémico de la Gran Region de Puerto Rico. Previo a este trabajo no existen estudios sobre su ecología reproductiva. Mediante este estudio se determinó la cronologia de anidaje, el éxito reproductivo, y patrón de crecimiento de los juveniles de Jui. Se estudiaron 24 nidos, 14 en 1987 y 10 en 1989. El éxito reproductivo obtenido fue sobre un 80%. La variable morfométricas más significativas fueron largo del ala, culmen y largo del tarso.

History of Introduced Species of Birds in Jamaica. Robert Sutton and A. Haynes-Sutton. The historical pattern of introduction of bird species to Jamaica is described, and the effects discussed with reference to ecology and survival.

Population Responses of the Puerto Rican Nightjar to Forest Clear Cutting. Francisco J. Vilella. From 1985 to 1987, we used call count surveys to investigate the effects of forest clear cutting on the local distribution and density of the Puerto Rican nightjar (*Caprimulgus noctitherus*). This species is the only endemic caprimulgid of the islands in the Puerto Rican Bank and is presently limited to the southwestern region of Puerto Rico where it mostly inhabits coastal dry limestone forest. It is listed on the IUCN Red Data Book and the U.S. Fish & Wildlife Service's Endangered Species list. The easternmost populations inhabit a privately owned limestone forest region known as the Guayanilla Hills. Within this region, there is an area of approximately 600 ha on which we selected 5 survey routes covering 322 ha. During the first survey, when the area was completely forested, we heard 25 nightjar males on our routes. Starting on July 1985, clearing of the area for pasture using slash and burn practices began. Between July 1985 and July 1986, approximately 20% of the study area was cleared, with clearings ranging from 50 to 100 ha. Call count surveys indicated that the total number of nightjars remained similar to numbers before clearing started. However, the number of nightjars per route changed considerably (i.e., the number of birds remained constant, but their distribution changed). During the following year, clearing activities increased.

History of an Unsuccessful Colonization of an Island by a Psittacine. James W. Wiley. *Aratinga pertinax* is native to Panama, northern South America, and the

islands off the northern coast of Venezuela. The parakeet is widely considered to have been brought to St. Thomas from Curaçao before the mid-19th century, although no records exist of when or how it was introduced. The parakeet was not recorded from Vieques or Culebra islands, or from mainland Puerto Rico before 1975. However, in that year *pertinax* underwent an apparent natural range expansion from St. Thomas to each of these islands. The April 1975 population in eastern Puerto Rico consisted of 5 individuals. That population made 5 breeding attempts, produced a total of 11 chicks, and grew to a maximum size of 10 birds in June 1979. The population declined to 1 bird by July 1980, and was extinct by the beginning of the 1982 breeding season. The Culebra and Vieques islands populations were apparently extinct by 1976. Habitat use, general behavior, breeding ecology, and competitors of the colonizing population in eastern Puerto Rico are described. Biogeographic, evolutionary, and conservation implications of these observations are discussed.

The Effect of Hurricane Gilbert on Terrestrial Bird Populations in Jamaica. Joseph M. Wunderle, Robert B. Waide, and D. Jean Dodge. Hurricane Gilbert struck Jamaica on 12-13 September 1988 with sustained winds of 126 mph which swept through our 10 sites established before the storm in December 1987. We returned to these 10 sites 4 months after the storm (January 1989) and replicated our baseline methods (mist netting, fixed radius point counts, vegetation measurements). The storm's short-term impact on terrestrial bird populations was complex, depending upon elevation, habitat type, and diet. Three montane sites (cloud forest, pine, coffee) showed significant declines in total number of individuals and species, while two lowland sites showed no change. In the montane habitats, the bird species most dependent upon plants for food (nectar, fruit, or seeds) showed significant declines, while insectivores (residents or migrants) showed no change. Within the 10 sites, 8 bird species showed significant declines, 7 species showed significant increases, and 3 species showed both significant increases in some habitats and decreases in others. These results suggest that some species moved from badly damaged habitats to less damaged habitats.

Group Foraging Dynamics in the Blackbird *Quiscalus lugubris*. A. Worrel, J.A. Horrocks, and E. Krebs. The relationship between individual pecking rate and group size in birds is often assumed to be bell-shaped since vigilance rates per bird is expected to be higher at smaller group sizes, and chase frequencies are expected to be higher at larger group sizes. The assumption is that less time will

therefore be available for pecking at small and large group sizes. Relationships between pecking rate, vigilance rate, aggression and group size at controlled food densities were investigated in groups of grackles (*Quiscalus lugubris*) in Barbados. The relationship between pecking rate and group size was not bell-shaped. Vigilance rate per bird was higher at smaller group sizes as expected, suggesting that one function of vigilance may be predator detection; but vigilance rate was positively correlated with pecking rate. This may suggest that a second function of vigilance is observation of conspecific foraging rates. Aggression rate was positively correlated with group size as expected, but pecking rate was not correlated with aggression rate. The results suggest that foraging behaviours are not time-budgeted so tightly that increases in one behaviour necessarily lead to decreases in others. The absence of time trade-offs is consistent with the observation that the relationship between pecking rate and group size is not bell-shaped for grackles in Barbados.

Evidencias Citogeneticas en Torno al Status Taxonomico de la Cigua Palmera, *Dulus dominicus* (Passeriformes: Dulidae). Celeste Mir. La cigua palmera es un ave endémica de la isla Hispaniola e islas adyacentes. Es un ave gregaria que construye nidos comunales donde anidan varias parejas. Es el único miembro de la familia Dulidae. Se consideran como familias más cercanas a ella a Bombycillidae y Ptilogonatidae, aunque las relaciones entre estas tres familias son aún muy controversiales. Este estudio realiza una comparación de los cromosomas de esta especie con un miembro de la familia Bombycillidae, utilizando células de la médula ósea. Se encontró que coinciden en 4 de los 8 cromosomas mayores, en el número diploide y en el tamaño de los cromosomas sexuales. Se propone que Dulidae sea incluída en Bombycillidae, aunque la falta de estudios con otras especies de esta familia con las cuales comparar impide que la evidencia sea más fuerte.

Indices de Densidad de las Comunidades de Aves en el Parque Nacional de los Haitises, República Dominicana. Carlos Cano Corcuera and Domingo Siri. Son importantes los estudios que abordan los indices de densidad en comunidades animales ya que dan una visión bastante aproximada de como fluctuan dichas poblaciones en el tiempo. En este trabajo se dan los resultados obtenidos en los censos realizados en dos comunidades de aves en las áreas de Pilancón y Trepada Alta, localizadas dentro del Parque Nacional de los Haitises, así como del status de cada grupo de residentes, endémicos, migratorios, etc., dentro de cada comunidad.

Habitos Alimentarios de la Madám Sagá (*Ploceus cucullatus*) en Zona Agricola Cercana a Santo Domingo, República Dominicana. Tomás A. Vargas Mora. La madam saga o chichiguao fue introducida en la Hispaniola durante el siglo XVIII. Desde entonces se ha dispersado por toda la Isla convirtiéndoes en una de las especies más abundante, particularmente en hábitats áridos y alterados, y en una de las peores plagas de la agricultura. En los períodos de enero a julio de 1979 y 1980 realizamos trabajos de campo para investigar las preferencias alimentarias de esta ave en un área donde cultivan arroz situada a unos 15 km al noroeste de Santo Domingo. Colectamos y analizamos una muestra de 236 estómagos durante este estudio. Los resultados de nuestra investigación indican que, en el área del estudio, el arroz fue la materia alimentaria preferida, con un 77.5% del total del volumen consumido. Semillas de plantas silvestres, principalmente cebadilla (*Rottboellia exaltata* L.f.), cabeza de indio (*Panicum fasciculatum* Sw.), y una especie desconocida (Graminea?), constituyeron un 12.8% de los contenidos estomacales. Los insectos representaron practicamente el 100% de la materia animal y un 2.4% del volumen total. De la materia animal, los coleópteros constituyeron el 53.9% del número total de presas ingeridas, mientras que los lepidópteros e hymenópteros representaron un 12.4% cada uno. Piedrecitas, principalmente calizas, formaron un 1.4% del total de los contenidos estomacales.

Algunos Aspectos Sobre la Composicion Estructural de una Comunidad Ornitica en el Parque Nacional de los Haitises, República Dominicana. Carlos Cano Corcuera and Domingo Sirí. Son pocos los trabajos publicados en la República Dominicana acerca de la composición y estructura de las comunidades de aves. Parámetros básicos que nos pueden dar una idea de en que condiciones se encuentran dichas comunidades y que pueden ser la base para estudios posteriores más puntuales. En este trabajo se expresan los datos de diversidad, equitabilidad y riqueza de las comunidades de aves que se encuentran en el Parque Nacional de los Haitises, de naturaleza karstica, localizado en el noreste de la República Dominicana.

Estudio Preliminar de la Avifauna en las Lagunas Limón y Redonda, Miches, República Dominicana. Tammy G. Dominguez Montandón and Domingo Sirí Nuñez. Un estudio comparativo entre dos comunidades de aves fue realizado en las lagunas Limón y Redonda, Miches, Prov. El Seibo, durante los días 20-21 de Mayo 1989. Se hizo un recorrido en bote a remos en cada laguna durante las primeras

horas de la mañana. En la laguna Limón el recorrido fue de 8.65 km, en el cual se observaron 388 individuos correspondientes a 21 especies, siendo las más abundantes el *Podilymbus podiceps*, *Ploceus cucullatus*, *Oxyura jamaicensis* y *Fulica americana*; mientras que en la laguna Redonda el recorrido fue de 11.25 km en donde se detectaron 196 ejemplares distribuidos en 22 especies, resultando ser las más abundates el *Quiscalus niger*, *Fulica americana*, *Gallinula chloropus* y *Fregata magnificens*. Se determinaron la diversidad, riqueza, equidad y predominio en ambos cuerpos de agua. Los valores más altos para estos parametros excepturando el predominio se obtuvieron en la laguna Redonda.

Announcements

Supplements to the "Checklist of the Birds of the West Indies," by James Bond are available on request from:

Ornithology Department
Academy of Natural Sciences of Philadelphia
19th and the Parkway
Philadelphia, Pennsylvania 19103 U.S.A.

The Academy normally charges a fee of $1.00 per Supplement, but will waive the fee for Caribbean workers. Questions can be directed to Christine Bush, Department Assistant, at telephone 215-299-1181.

The American Ornithologists' Union has published "Latin American Research Libraries in Natural History: A Survey", compiled by Tristan Davis. It surveys 112 libraries in 27 South and Central American countries, including information on library size, services provided, and kinds of researchers who use their holdings. The report is designed to encourage and assist individuals, organizations, and institutions interested in donating publications. It may be ordered for U.S.$5.50 + $2.00 postage and handling from Max C. Thompson, Assistant to AOU Treasurer, Biology Department, Southwestern College, 100 College St., Winfield, Kansas 67156, U.S.A.

Manomet Bird Observatory announces its 1990-91 Field Biology Training Program. Upperclass and beginning graduate students are given a thorough and intense experience in field biology, and work closely with staff biologists in continuing research. For detailed information, write Katherine C. Parsons, Manomet Bird Observatory, Box 936, Monomet, Massachusetts 02345, U.S.A.

Opportunities

The Peregrine Fund offers a position as a Research Scientist, available 1 January 1990, for a Ph.D. level scientist with a strong background and proven scientific ability in ornithology, preferably with raptors. Experience in tropical environments and at least conversational ability in Spanish and/or French desirable. Excellent spoken and written skill in English is manditory. Non U.S. citizens will be considered. Must be willing to relocate to Boise, Idaho, U.S.A., spend several months a year in the field, design and direct research, supervise student workers, write proposals, synthesize data and prepare publications, and answer correspondence or other activities the job may require. Salary will depend, in part, on qualifications. Benefits include health, dental, life and disability insurance, retirement, and workman's compensation. Send letter and resume to William Burnham, The Peregrine Fund, World Center for Birds of Prey, 5666 West Flying Hawk Lane, Boise, Idaho 83709, U.S.A. Deadline 31 December 1989.

Post-Doctoral Opportunity in the Brazilian Amazon. Money is being sought to support a full-time biologist to manage the ornithological research of the Biological Dynamics of Forest Fragments Project in Manaus, Brazil. Responsibilities include training and supervision of field interns who will continue the ongoing banding study of birds in forest islands and management of the associated data base. It is expected that the candidate chosen will take advantage of the ample opportunities to develop independent research into some aspect of the local avifauna, particularly, but not exclusively, in the context of the forest islands being studied by the project. Those interested should contact Rob Bierregaard, NHB-106, Smithsonian Institution, Washington, D.C. 20560, U.S.A.

The Peregrine Fund and Boise State University are offering a scholarship for a Master of Science degree in raptor biology to a qualified Latin American citizen. To qualify, the individual must have a Bachelor of Science degree in biology or a related field, be fluent in Spanish and English, and have an intense interest in birds of prey and making a career in conservation in Latin America. The degree is based on a 2-year program that requires course work and research. The research must be accomplished in Latin America in conjunction with The Peregrine Fund. The scholarship will include tuition and fees, books, 12 months living stipend, and 2 round trip tickets from Latin America annually. Send resume and explanation of interest in conservation and birds of prey in Latin America (in English) to William