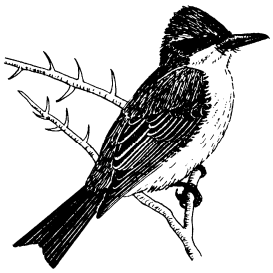

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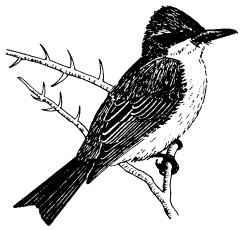

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RECUPERACIÓN DE AVES MIGRATORIAS NEÁRTICAS DEL ORDEN ANSERIFORMES EN CUBA

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Resumen.—Se expone la información de 1802 registros de aves acuáticas migratorias del orden Anseriformes, anilladas en América del Norte y recuperadas en Cuba durante el período comprendido desde el año 1930 hasta el 2002. Entre las especies recuperadas con mayor número de registros se destacan: *Anas discors*, *Anas americana* y *Anas acuta*. Los sitios de anillamiento de mayor importancia para las aves recuperadas en Cuba resultaron ser: Saskatchewan, Manitoba, Ontario y Dakota del Norte.

Palabras claves: Recuperación, anillos, aves migratorias, Anseriformes, Cuba

Abstract.—BAND RECOVERIES OF NEARTIC MIGRATORY BIRDS OF THE ORDER ANSERIFORMES IN CUBA. We report data for 1802 records of aquatic birds of the order Anseriformes, banded in North America and recovered in Cuba during the period from 1930 to 2002. The species recovered with the greatest amount of records include: *Anas discors, Anas americana*, and *Anas acuta*. The most important banding sites of the recovered birds were: Saskatchewan, Manitoba, Ontario, and North Dakota.

Key words: band recoveries, migratory birds, Anseriformes, Cuba

LA RECUPERACIÓN DE BANDAS metálicas o anillos colocados en las aves, ha contribuido de forma eficaz al desarrollo de innumerables investigaciones ornitológicas relacionadas con el estudio de las migraciones y la conservación de la avifauna en diferentes regiones del mundo (Bianki y Gerasimova 1960, Van Velzen 1971, Carvalho 1975, Candeias y Castro 1982, Silva 1984, Lara-Rasende y Antas 1985, Dennis 1986, Ballesteros y Santaeufemia 1990, Silva y Castro 1991).

En Cuba, en los últimos 70 años se ha obtenido un considerable volumen de información relacionado con la recuperación de aves acuáticas migratorias procedentes de América del Norte, sin embargo, la información presentada en congresos y revistas científicas relacionada con esta temática, ha sido muy limitada (Moreno 1991, Blanco 1993, Blanco y Herrera 2000).

En el presente trabajo se exponen los resultados de la recuperación de anillos en aves migratorias neárticas del orden Anseriformes capturadas en el Archipiélago cubano durante el período comprendido entre los años 1930 y 2002. Estos resultados aportan nuevos elementos relacionados con la migración de estas aves a través del Caribe, los que pudieran contribuir al desarrollo de programas y estrategias futuras dirigidas a la conservación de especies del orden y sus hábitat naturales en el hemisferio occidental.

MATERIALES Y MÉTODOS

Los registros de recuperación en diferentes regiones de Cuba, se obtuvieron a través de la colabora-

ción de pescadores, estu-diantes, cazadores deportivos y especialistas, en respuesta a un programa de educación ambiental elaborado y divulgado en todo el país por el Laboratorio de Aves Migratorias de Cuba, perteneciente al Instituto de Ecología y Sistemática del Ministerio de Ciencia, Tecnología y Medio Ambiente.

Los datos complementarios relacionados con el anillamiento de las aves recuperadas en Cuba se obtuvieron con la colaboración de los Centros de anillamiento de Fish and Wildlife Service de Estados Unidos y Canadian Wildlife Service (CWS). Con toda la información obtenida se elaboraron bases de datos automatizadas. Para la clasificación de las aves y su categoría de permanencia en Cuba, se tomaron en consideración los criterios de Raffaele *et al*. (1998) y Garrido y Kirkconnell (2000).

RESULTADOS Y DISCUSIÓN

Hasta el año 2002, se han recuperado en Cuba 1802 aves migratorias neárticas del Orden Anseriformes correspondientes a cuatro géneros y 12 especies (Tabla 1), anilladas en territorios de Norteamérica en el período comprendido entre los años 1929 y 2002. Del número total de taxones capturados, 66.6 % correspondió a representantes del género *Anas*, destacándose con un mayor número de individuos el Pato de la Florida (*Anas discors*), el Pato Lavanco (*Anas americana*) y el Pato Pescuecilargo (*Anas acuta*).

El número de especies recuperadas durante el período analizado constituye una muestra representativa equivalente a 41.37 % del total de taxones migratorios del orden reportadas para Cuba y 38.70 % del total de patos, cisnes y gansos registrados en la región de las Antillas por Raffaele *et al*. (1998).

De las 15 regiones donde se produjeron las recuperaciones de aves en Cuba, Pinar del Río, la Habana, Sancti Spíritus y Ciego de Avila fueron las provincias con mayores valores de individuos capturados (Tabla 2). En conjunto, el número de aves registradas en estos cuatro territorios fue de 1017, lo que representó 56.4 % del número total de las recuperaciones de este orden obtenidas en el país durante el período analizado.

Las especies *A. discors*, *A. acuta*, *A. americana* y *Aythya collaris* presentaron los mayores valores de recuperación por provincias (Tabla 2), destacándose las dos primeras con un mayor número de individuos capturados y por su presencia en todas las provincias.

La información obtenida de los Centros de Anillamiento reveló que las aves capturadas en Cuba proceden de 47 regiones de América del Norte destacándose con una mayor contribución de individuos anillados los estados canadienses: Saskatchewan, Manitoba y Ontario, así como, Dakota del Norte en los Estados Unidos (Tabla 3).

Del número total de territorios de anillamiento de las aves capturadas, 24 correspondieron a la región central de Norteamérica (Tabla 3), lo que demuestra la importancia del territorio cubano en la migración de las poblaciones de patos que utilizan la ruta del Mississippi. En conjunto, el número de aves recuperadas procedentes de esta región representó 84,68 % del total de recuperaciones obtenidas en el país. Se destacaron los estados de Manitoba, Ontario, Sas-

Tabla. 1. Relación de especies y número total de individuos del Orden Anseriformes recuperados en Cuba durante el período desde el año 1930 hasta el 2002.

Nombre Científico	Nombre Común	Número de Individuos
Aix sponsa	Huyuyo	4
Anas acuta	Pato Pescuecilargo	37
Anas americana	Pato Lavanco	40
Anas bahamensis	Pato de Bahamas	1
Anas clypeata	Pato Cuchareta	8
Anas crecca	Pato Serrano	9
Anas cyanoptera	Pato Canelo	1
Anas discors	Pato de la Florida	1644
Anas strepera	Pato Gris	1
Aythya affinis	Pato Morisco	13
Aythya collaris	Pato Cabezón	14
Dendrocygna bicolor	Yaguasín	30

Tabla 2. Número de individuos por especie del Orden Anseriformes recuperados en diferentes provincias de Cuba durante el período desde 1930 hasta el 2002. IJ= Isla de la Juventud, PR= Pinar del Río, H= Habana, CH= Ciudad de La Habana, MTZ= Matanzas, Cfg= Cienfuegos, VC= Villa Clara, SSp= Sancti Spíritus, CAv= Ciego de Avila, Cam= Camagüey, Tun= Las Tunas, Hol= Holguín, Gra= Granma, Stgo= Santiago de Cuba y Gmo= Guantánamo.

Especies	IJ	PR	H	CH	Mtz	Cfg	VC	SSp	CAv	Cam	Tun	Hol	Gra	Stgo	Gmo
A. sponsa			1							1	2				
A. acuta	1	4	2	1	4	4	2	7	4	1	2	1	2	1	1
A. americana		4			3	3	3	2	4	5	3	6	5	1	1
A. bahamensis				1											
A. clypeata	1	2						1	2		1				1
A. crecca			1					5	3						
A. cyanoptera										1					
A. discors	11	379	246	66	90	50	45	201	121	94	57	87	89	24	27
A. strepera	1														
A. affinis		1			1	1	3		1	4	1			1	
A. collaris		2	1		1	2	1	1	1	3		1		1	
D. bicolor	1	9			2		1	10	2	2			1		

katchewan, Dakota del Norte y del Sur, Iowa, Misouri, Illinois, Michigan, Louisiana y Minnesota con registros de aves en más de 10 de las 15 provincias de Cuba.

migración de las poblaciones de patos que utilizan la ruta del Mississippi. En conjunto, el número de aves recuperadas procedentes de esta región representó 84,68 % del total de recuperaciones obtenidas en el país. Se destacaron los estados de Manitoba, Ontario, Saskatchewan, Dakota del Norte y del Sur, Iowa, Misouri, Illinois, Michigan, Louisiana y Minnesota con registros de aves en más de 10 de las 15 provincias de Cuba.

En la región del Atlántico, el número de sitios de anillamiento de las aves recapturadas en Cuba fue también importante (18 estados), sin embargo, el número de individuos recapturados en el país sólo representó 10,68 % de los individuos procedentes del centro de América del Norte.

La dinámica de capturas durante el período estudiado (por meses), muestra que el mayor número de recuperaciones de aves se produjo durante las épocas residencia invernal e inicios de la migración primaveral (936 individuos) comprendidas entre los meses de enero hasta marzo (Fig. 1). El valor máximo de capturas correspondiente a marzo (361 aves)

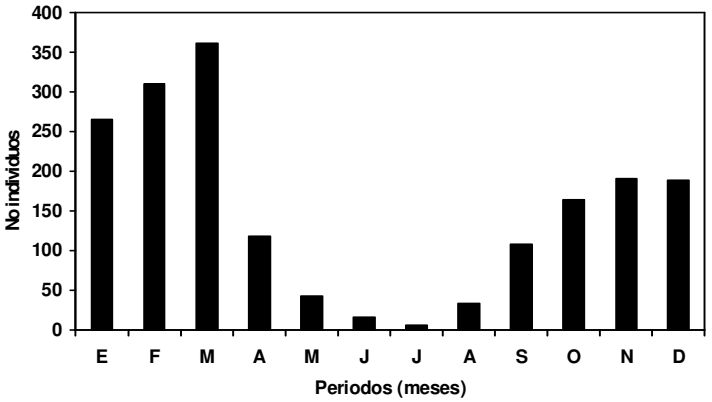

Fig. 1. Dinámica de recuperación de individuos migratorios neárticos del Orden Anseriformes capturados en Cuba por meses durante el período comprendido entre los años 1930 y el 2002.

Tabla 3. Número de individuos del Orden Anseriformes recuperados en diferentes territorios provinciales de Cuba durante el período comprendido entre los años 1930 y 2002 con sus correspondientes regiones de procedencia o anillamiento en el continente americano. Ver leyenda de nombres de las provincias en Tabla 2.

Regiones	IJ	PR	H	CH	Mtz	Cfg	VC	SSp	CAv	Cam	Tun	Hol	Gra	Stgo	Gmo
Alberta		38	13	4	3	5	6	12	11	5	1	3	1	2	
British Columbia		1				1				1					
California										1					
Colorado		1			1										
Connecticut										1					
Delawere	1	1	2		1								1		1
Florida	1	10	1		2		1	10	3	2	1		1		
Georgia	1	2	1		1										
Idaho					1										
Illinois		13	11	3	6	3	1	3	1	4	1	1	4	2	
Indiana		3	1	1				1	1				1		
Iowa		14	12	3	2	4		1	2	1	1	4	1		
Kansas		3	3	3	1		1		1	2		1	1		
Kentucki		1			1										
Louisiana		10	10		2	1		4	1	1	3	2	1	1	
Mackenzie		1							1			1			
Maine							1					1			
Manitoba	4	74	57	15	26	7	2	53	29	18	6	7	19	5	5
Maryland		3		1		1		1	1		3	2			1
Massachusetts															1
Michigan		2	2	1	3	2	1	2	1	1		3		2	3
Minnesota	2	21	8	6	4	2	2	4	3	3	4	9	11	1	3
Mississippi					1										
Misouri		13	4	1	4	4		1	2	2	4	2	5		2
Montana	1	3	2		1			2	1		1				
Nebrasca		1	5	1						1		2			1
New Brunswick			1		1	1	1	1	2		1	1			
New York		1	9	1	4	1		2		8	1	4	4		1
North Carolina		1							1	1					
North Dakota	1	26	15	10	6	5	5	11	9	7	2	5	2	3	1
New Scotia		1	3	1	1			1				1		1	
Ohio			2		1	1			1	3		2	3		
Oklahoma		1					1				1			1	
Ontario		11	14	4	3	2	6	20	8	13	7	13	14	4	2
Pensilvania								1							
Prince Edward			1		1		1	1	2	1					2
Quebec		3	2	1					1			1			1
Saskatchewan	3	106	53	10	17	18	9	81	49	21	20	23	15	5	
San P. et Miguelon								2	2	1					
South Carolina		1	1							2			1		
South Dakota	1	22	9	3		1	5	5	5	7	5	3	9		2
Tennesse		1	1		1					2	1	2	1	1	1
Texas		1													
Vermont					1						1		1		
Virginia							1	1			1				
Wisconsin		11	8		4	1	1	7		1	2	2	2	2	

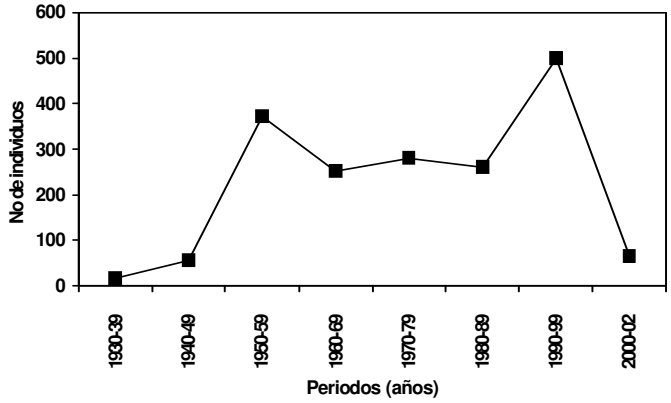

Fig. 2. Recuperación de aves neárticas migratorias del Orden Anseriformes en Cuba por décadas, durante el período comprendido entre los años 1930 y el 2002.

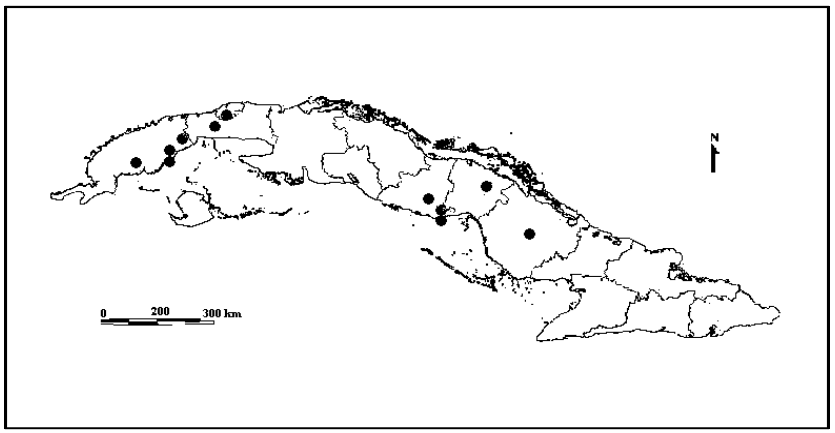

Fig. 3. Distribución de las localidades de recuperación más importantes de aves migratorias del Orden Anseriformes en Cuba desde 1930 hasta el 2002.

refleja la existencia en este mes de una mayor concentración de individuos del Orden en Cuba. Estos resultados pueden estar asociados con el inicio de los desplazamientos migratorios de primavera a través del Caribe, los que pueden extenderse hasta finales de abril.

Se estima que las recuperaciones obtenidas en los meses de verano (junio, julio y agosto) pueden estar determinadas por la presencia de individuos enfermos o muertos a consecuencia de infecciones provocadas por endopárasitos (McNeil *et al*. 1996).

El análisis de capturas por décadas (Fig. 2), muestra un aumento en el número de individuos (499) en el período comprendido entre 1990 y 1999. Este resultado se atribuye a un incremento en la colaboración por parte de la población en tareas de recuperación de anillos, logrado a partir de los años 90 con la puesta en práctica de un Programa Nacional de Educación Ambiental y conservación de la avifauna migratoria, dirigido por el Laboratorio Cubano de Aves Migratorias y BirdLife International.

Entre las aves capturadas, 823 correspondieron a individuos entre tres meses y un año de edad. Los registros de captura de aves con mayor número de años correspondieron a la especie *A. discors* con un ave de 38 años de edad anillado en Dakota del Norte en mayo de 1938 y recuperado en la provincia de Cienfuegos en enero de 1976. Este dato supera el registro de longevidad de *A. discors* de 16 años, referido por Garrido y García (1975) para Cuba.

Los registros de recuperación de aves durante los períodos de migración y residencia invernal mues-

tran la presencia de las aves asociadas a cuerpos de agua interiores del país, entre los que figuran por su importancia en abundancia de individuos capturados: la Presa Zaza, la Laguna de la Leche, las Arroceras del Jíbaro y la Laguna de Ariguanabo, lo que demuestra la importancia de estos humedales para la supervivencia invernal de un considerable número de especies migratorias neárticas del Orden Anseriformes en el Caribe.

De las 255 localidades donde se produjeron las recuperaciones en el país, 11 correspondieron a las áreas más importantes en número de individuos capturados (Fig. 3), entre las que se destacan: la región subcostera de las arroceras del Jíbaro y la presa Zaza, en la provincia de Sancti Spíritus con 177 registros; el sector costero sur próximo a los Palacios y la localidad San Vicente en Pinar del Río con 96 recuperaciones y la Laguna de Ariguanabo en la provincia de la Habana con 57 individuos capturados.

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INVENTARIO DE LA AVIFAUNA DE TOPES DE COLLANTES, SANCTI SPÍRITUS, CUBA

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Resumen.—Se realizaron observaciones de aves en tres formaciones vegetales boscosas representativas de Topes de Collantes durante el período de febrero de 1995, julio del 2001 y junio del 2002. Un total de 75 especies fueron registradas para el área de estudio, las que incluyen 12 endémicos y cuatro especies globalmente amenazadas. Entre las especies más comunes se encontraron: el Bien te Veo (*Vireo altiloquus*), el Zorzal Real (*Turdus plumbeus*), el Chichinguaco (*Quiscalus niger*), el Tocororo (*Priotelus temnurus*), la Cartacuba (*Todus multicolor*), el Tomeguín de la Tierra (*Tiaris olivaceus*) y el Carpintero Verde (*Xiphidiopicus percussus*), siendo el bosque semideciduo de Javira el que presentó un mayor número de taxas. Se incluyen además 15 nuevos registros para el área de estudio y se realizan comentarios relacionados con la distribución y abundancia de algunas especies.

Palabras claves: Inventario de aves, nuevos reportes, Topes de Collantes, Cuba

Abstract.—BIRD SURVEY IN TOPES DE COLLANTES, SANCTI SPÍRITUS, CUBA. Bird observations were carried out in three vegetation formations representative of Topes de Collantes, in Central Cuba, during the period of February 1995, July 2001, and June 2002. A total of 75 species were detected in the study area, including 12 endemics and four globally threatened birds. The Black-whiskered Vireo (*Vireo altiloquus*), Red-legged Thrush (*Turdus plumbeus*), Greater Antillean Grackle (*Quiscalus niger*), Cuban Trogon (*Priotelus temnurus*), Cuban Tody (*Todus multicolor*), Yellow–faced Grassquit (*Tiaris olivaceus*), and Cuban Green Woodpecker (*Xiphidiopicus percussus*) were the most common species. The semideciduos forest of Javira was the locality with the greatest species richness. Sixteen new reports for the study area are included with comments on the distribution and abundance of some species.

Key words: Bird survey, new reports, Topes de Collantes, Cuba

LA REGIÓN DE TOPES DE COLLANTES se localiza en el Macizo de Guamuhaya, provincia de Sancti Spíritus; en la actualidad, forma parte del conjunto de sitios bajo protección propuestos por el Sistema Nacional de Áreas Protegidas de Cuba, incluida en la categoría de manejo de Paisaje Natural Protegido, con una extensión territorial de 29 425 Km^2 (CNAP, 2002).

Su avifauna ha sido poco estudiada, a pesar de la importancia que representa su conocimiento para la propuesta de estrategias conservacionistas, proyectos investigativos y el desarrollo de planes de manejo de los recursos naturales existentes en el área. Hasta el presente se conoce el trabajo de Ayala (1989), quien reporta 63 especies de aves y los de Kirkconnell *et al*. (1989) y Kirkconnell *et al*. (1999), que abordan aspectos de la alimentación del Carpintero Verde (*Xiphidiopicus percussus*) y la distribución de la Siguapa (*Asio stygius*), respectivamente.

En el presente trabajo se estudia la composición taxonómica de la avifauna existente en Topes de Collantes y se ofrecen comentarios sobre la abundancia y distribución de las aves registradas en diferentes localidades de este importante grupo montañoso. La información reflejada forma parte de los resultados obtenidos en dos proyectos de investigación desarrollados por el Instituto de Ecología y Sistemática y la Facultad Agropecuaria de Montaña del Escambray relacionados con el estudio de la biodiversidad de Cuba.

MATERIALES Y MÉTODOS

Topes de Collantes pertenece a la región físico-geográfica Montañas de Trinidad (Mateo y Acevedo 1989) y desde el punto de vista fitogeográfico está incluida en el Sector Cuba Central, sub-sector Centro-Oriental y particularmente en el Distrito Escambray (Guamuhaya), Subdistrito "Lomas de Trinidad", el que presenta relaciones estrechas con la región montañosa de la Sierra Maestra (Samek 1973).

Las localidades de estudio fueron seleccionadas teniendo en cuenta la diferenciación ambiental del área como consecuencia de factores altitudinales y litológicos, la representación de las formaciones vegetales, la accesibilidad a las áreas y el grado de

naturalidad (M. del Carmen Marqueti y Pedro Herrera, com. pers.). A continuación se relacionan las áreas de estudio, su ubicación geográfica, altitud y formación vegetal: 1. Caburní, (21°56'N, 80°00'W, 650 m.s.n.m., Bosque siempreverde), 2. Castillito (21°55'N 80°01'W, 720 m.s.n.m., Pinar), 3. Codina (21°53'N 80°02'W, 800 m.s.n.m., Bosque siempreverde) y 4. Javira (21°51'N, 80°01'W, 270 m.s.n.m., Bosque semideciduo).

La composición de la avifauna del área de estudio se determinó con la utilización del método de conteos por transecto lineal (Blondel, 1969) en horarios comprendidos entre las 7:00 y 12:00 horas, fundamentalmente durante los períodos de residencia invernal, que corresponde con la presencia de las aves migratorias del norte (febrero de 1995) y el de residencia de verano o etapa de reproducción de la mayoría de las especies que nidifican en Cuba (julio del 2001 y junio del 2002).

En los conteos se anotaron todas las aves vistas u oídas y como medida de abundancia cualitativa se utilizaron los criterios de Garrido y Kirkconnell (2000). Para la detección de algunas especies poco abundantes o raras, así como, de otras registradas para la región, pero no observadas en los muestreos, se reprodujo su canto con una grabadora de cassettes (Marca Radio Shack 14-1156) a fin de corroborar su presencia.

La clasificación sistemática de las aves, el estado de permanencia en Cuba y la relación de endémicos se realizó según Raffaele *et al*. (1998) y Garrido y Kirkconnell (2000). Esta información fue actualizada con los criterios de American Ornithologists' Union (2000) y Banks *et al*. (2002, 2003, 2004). Entre los endemismos se incluyeron además, taxas recientemente elevadas a especies endémicas, de acuerdo a lo considerado por Garrido y Reynard (1998), Garrido *et al*. 2002, Garrido *et al*. (en prensa) para el Guabairo (*Caprimulgus cubanensis*), el Camao (*Geotrygon caniceps*) y el Solibio (*Icterus melanopsis*), respectivamente.

RESULTADOS Y DISCUSIÓN

En el período de estudio se registraron en el área 75 especies (Tabla 1), correspondientes a 14 órdenes y 29 familias, lo que representa 20,3% del número total de especies vivientes reportadas para Cuba (Llanes *et al*. 2002). La mayoría de las especies observadas correspondieron a aves terrestres, por prevalecer en el área formaciones vegetales boscosas; solo una especie acuática se registró en ríos y arroyos de algunas localidades.

Entre las familias mejor representadas están Psittacidae, Columbidae y Picidae (Tabla 2); la primera con las dos especies vivientes registradas para Cuba y las otras con 76,9% y 66,6% de sus taxa, respectivamente. Las familias Aramidae, Tytonidae, Trogonidae y Todidae, también estuvieron representadas por el 100% de sus especies, aunque cada una está integrada por un solo taxon.

Del número total de especies detectadas, 58 ya habían sido registradas por Ayala (1989), las otras son nuevos registros o adiciones a la avifauna de Topes de Collantes (Tabla 1), entre los que se encuentran: el Guareao (*Aramus guarauna*), el Barbiquejo (*Geotrygon chrysia*), el Boyero (*Geotrygon montana*), la Golondrina Azul Cubana (*Progne cryptoleuca*), la Golondrina de Árboles (*Tachycineta bicolor*), el Cao Montero (*Corvus nasicus*), el Tordo Pecoso (*Hylocichla mustelina*), el Vireo de Pecho Amarillo (*Vireo flavifrons*), el Bien te Veo (*Vireo altiloquus*), la Bijirita de Garganta Negra (*Dendroica virens*), la Bijirita Común (*Dendroica palmarum*), la Monjita (*Wilsonia citrina*), la Señorita de Río (*Seiurus motacilla*), la Señorita de Monte (*Seiurus aurocapilla*), el Aparecido de San Diego (*Cyanerpes cyaneus*) y el Tomeguín de la Tierra (*Tiaris olivaceus*).

La presencia del Aparecido de San Diego y el Cao Montero en Topes de Collantes es un resultado importante, ya que esta región no aparece incluida en el área de distribución de estas especies en Cuba (Garrido y Kirkconnell 2000). El Aparecido de San Diego ha sido también encontrado recientemente en otras localidades de Ciudad de La Habana (Pérez y Ayón 2002), lo que amplia el rango de su distribución en el país.

A pesar de que durante este estudio se realizaron muestreos en diferentes períodos, hábitats y localidades, no fueron detectadas cinco de los taxa registrados por Ayala (1989), entre los que figuran tres especies endémicas: la Chillina (*Teretistris fernandinae*), el Carpintero Churroso (*Colaptes fernandinae*) y el Tomeguín del Pinar (*Tiaris canorus*). Por otra parte, Garrido y Kirkconnell (2000) tampoco incluyen a Topes de Collantes dentro del área de distribución de las dos primeras especies.

La avifauna registrada en el área estuvo representada fundamentalmente por especies residentes permanentes (45) y residentes de invierno (18), el resto fue clasificado de la siguiente forma: seis residentes bimodales, cinco residentes de verano y un transeúnte. La información referente a las aves migratorias pudiera ser ampliada en futuras investigaciones

durante los períodos de permanencia de esas aves en territorio cubano.

Con relación al endemismo, en Topes de Collantes se registraron 12 de las 27 especies endémicas presentes en Cuba, cifra que constituye 16% del total de taxa observados en el área de estudio. Entre ellos se encuentran: el Gavilán Colilargo (*Accipiter gundlachi*), el Camao (*Geotrygon caniceps*), el Guabairo (*Caprimulgus cubanensis*), el Catey (*Aratinga euops*), el Sijú Cotunto (*Gymnoglaux lawrencii*), el Sijú Platanero (*Glaucidium siju*), el Tocororo (*Priotelus temnurus*), la Cartacuba (*Todus multicolor*), el Carpintero Verde, el Juan Chiví (*Vireo gundlachii*) y el Totí (*Dives atroviolaceus*).

En el área están presente, además, cuatro especies globalmente amenazadas, consideradas por Birdlife International (2000) de la siguiente forma: el Gavilán Colilargo categorizado en peligro (EN), el Camao (*Geotrygon caniceps*) y el Catey como vulnerables (VU) y la Cotorra (*Amazona leucocephala*) en la categoría de bajo riesgo casi amenazada (LR / NT). La familia Psiittacidae, a la que pertenecen las dos últimas especies, es entre las aves, una de las que posee un mayor número de taxa amenazados, por lo que todo esfuerzo de conservación dirigido a la protección a estas aves es de notable importancia.

De acuerdo con la frecuencia de observación de las aves durante los conteos en cada una de las formaciones vegetales muestreadas, se consideraron 43 especies comunes, 20 no comunes, ocho raras y cuatro abundantes. Entre las especies más frecuentes y abundantes detectadas en las cuatro localidades estudiadas figuran: el Bien te Veo, el Zorzal Real (*Turdus plumbeus*), el Chichinguaco (*Quiscalus niger*), el Tocororo, la Cartacuba, el Tomeguín de la Tierra, el Carpintero Verde, entre otros. Vale aclarar que, la Paloma Doméstica (*Columba livia*) solo fue observada en los asentamientos humanos y no en estado silvestre.

A diferencia del resto de las localidades, Javira y Codina fueron las que presentaron los mayores valores de riqueza con 59 y 46 especies, respectivamente (Tabla 1). Estos resultados se atribuyen fundamentalmente al notable número de aves migratorias neárticas observadas durante los conteos de residencia invernal, en los que se detectaron 18 especies, lo que indica la importancia del área protegida de Topes de Collantes para la supervivencia invernal de especies migratorias, particularmente del orden Passeriformes.

Se estima, además, que el elevado valor de riqueza de especies en Javira está asociado con el mayor grado de conservación y complejidad estructural de su vegetación, lo que ofrece una alta diversidad de hábitats a las aves y garantiza con éxito actividades relacionadas con la alimentación, la reproducción y el refugio. Estos resultados corroboran lo planteado por MacArthur y MacArthur (1966), quienes hacen referencia a la influencia que ejercen la conservación de los hábitats y la complejidad estructural de la vegetación en la diversidad y abundancia de la avifauna.

Hasta la fecha, en Topes de Collantes no habita el Gorrión Doméstico (*Passer domesticus*). Esta ave, de distribución cosmopolita, de elevada capacidad reproductiva y asociada completamente con el hombre, no ha logrado invadir esta importante región montañosa del centro de Cuba, a pesar de incluirse entre las áreas con mayor grado de transformación de su vegetación original (CNAP, 2002). La ausencia de esta ave y la baja abundancia del Sinsonte (*Mimus polyglottos*) en Topes de Collantes, pudiera estar relacionada con el hecho de que los asentamientos humanos y las áreas abiertas presentes en esta región son relativamente escasos y están incluidos dentro del paisaje natural.

Dado el valor de endemismo y la presencia de especies amenazadas en Topes de Collantes, así como, la condición de área protegida que ostenta esta región, se considera importante dar seguimiento a los estudios relacionados con la composición, distribución y estado de conservación de la avifauna que permitan el adecuado manejo y conservación futura de sus valores naturales.

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Tabla 1. Lista taxonómica y abundancia cualitativa de las aves observadas en diferentes localidades de Topes de Collantes. + = Nuevos reportes para el área de estudio. ** = Género endémico, * = Especie endémica. X = Presencia. RB= Residente Bimodal, RP= Residente Permanente, RV= Residente de Verano, RI= Residente Invernal, T= Transeúnte. A = Abundante, C = Común, NC = No Común, R = Raro.

Especies	Caburní BSV	Castillito Pinar	Codina BSV	Javira BSD	Áreas antrópicas	Estado de residencia	Abundancia en Topes
Garcita Bueyera (*Bubulcus ibis*)					X	RB	A
Aguaitacaimán (*Butorides virescens*)	X					RB	C
Aura Tiñosa (*Cathartes aura*)	X	X	X	X		RP	C
Gavilancito (*Accipiter striatus*)				X		RB	R
Gavilán Colilargo (*Accipiter gundlachi*)*			X			RP	R
Gavilán de Monte (*Buteo jamaicensis*)				X		RP	NC
Cernícalo (*Falco sparverius*)		X	X	X		RP	C
Codorniz (*Colinus virginianus*)					X	RB	C
Guareao (*Aramus guarauna*) +					X	RP	C
Torcaza Cuellimorada (*Patagioenas squamosa*)	X	X	X	X		RP	C
Torcaza Cabeciblanca (*Patagioenas leucocephala*)				X		RB	NC
Paloma Aliblanca (*Zenaida asiatica*)				X		RP	C
Guanaro (*Zenaida aurita*)	X		X			RP	NC
Paloma Rabiche (*Zenaida macroura*)			X	X	X	RB	C
Tojosa (*Columbina passerina*)				X	X	RP	NC
Barbiquejo (*Geotrygon chrysia*)+				X		RP	R
Camao (*Geotrygon caniceps*) *	X					RP	R
Boyero (*Geotrygon montana*)+	X			X		RP	C
Paloma Doméstica (*Columba livia*)					X	RP	NC
Catey (*Aratinga euops*)*	X	X		X		RP	NC
Cotorra (*Amazona leucocephala*)			X	X		RP	NC
Arriero (*Saurothera merlini*)	X	X	X	X		RP	C
Judio (*Crotophaga ani*)		X	X	X	X	RP	C
Lechuza (*Tyto alba*)			X			RP	NC
Sijú Cotunto (*Gymnoglaux lawrencii*) *		X	X	X		RP	NC
Sijú Platanero (*Glaucidium siju*) *		X	X	X		RP	NC
Siguapa (*Asio stygius)*					X	RP	NC
Querequete (*Chordeiles gundlachii)*		X		X		RV	C
Guabairo (*Caprimulgus cubanensis*) **		X	X	X		RP	NC
Vencejo de Collar (*Streptoprocne zonaris*)	X	X	X	X		RP	C
Zunzún (*Chlorostilbon ricordii)*	X	X	X	X		RP	C
Tocororo (*Priotelus temnurus*) *	X	X	X	X		RP	C
Cartacuba (*Todus multicolor*) *	X	X	X	X		RP	C
Carpintero Jabado (*Melanerpes superciliaris*)	X	X	X	X		RP	C
Carpintero Verde (*Xiphidiopicus percussus*) **	X	X	X	X		RP	C
Carpintero Escapulario (*Colaptes auratus*)			X			RP	NC
Carpintero de Paso (*Sphyrapicus varius*)			X	X	X	RI	NC
Bobito Chico (*Contopus caribaeus*)	X	X	X	X		RP	C
Bobito Grande (*Myiarchus sagrae*)	X	X	X	X		RP	C
Pitirre Guatíbere (*Tyrannus caudifasciatus*)	X	X	X	X		RP	C
Pitirre Abejero (*Tyrannus dominicensis*)	X	X		X		RV	C
Golondrina Azul Cubana (*Progne cryptoleuca*) +				X		RV	NC
Golondrina de Cueva (*Petrochelidon fulva*)				X		RV	C
Golondrina de Arboles (*Tachycineta bicolor*) +			X			RI	NC
Cao Montero (*Corvus nasicus*) +				X		RP	R
Rabuita (*Polioptila caerulea*)			X	X		RI	C
Zorzal Real (*Turdus plumbeus*)	X	X	X	X		RP	A
Tordo Pecoso (*Hylocichla mustelina*) +			X			T	R
Sinsonte (*Mimus polyglottos*)				X		RP	R
Zorzal Gato (*Dumetella carolinensis*)			X	X		RI	C

Tabla 1. (Continuación)

Especies	Caburní BSV	Castillito Pinar	Codina BSV	Javira BSD	Áreas antrópicas	Estado de residencia	Abundancia en Topes
Zorzal Gato (*Dumetella carolinensis*)			X	X		RI	C
Juan Chiví (*Vireo gundlachii*) *	X			X		RP	C
Bien te Veo (*Vireo altiloquus*) +	X	X	X	X		RV	A
Vireo de Pecho Amarillo (*Vireo flavifrons*) +			X			RI	NC
Bijirita Atigrada (*Dendroica tigrina*)			X	X		RI	NC
Bijirita de Garganta Negra (*Dendroica virens*) +			X			RI	NC
Bijirita Común (*Dendroica palmarum*) +			X	X		RI	C
Bijirita Azul de G. Negra (*Dendroica caerulescens*)			X	X		RI	C
Mariposa Galana (*Dendroica discolor*)			X	X		RI	C
Bijirita Chica (*Parula americana*)			X	X		RI	C
Bijirita Trepadora (*Mniotilta varia*)			X	X		RI	C
Candelita (*Setophaga ruticilla*)			X	X		RI	C
Caretica (*Geothlypis trichas*)			X	X		RI	C
Monjita (*Wilsonia citrina*) +				X		RI	R
Señorita de Monte (*Seiurus aurocapilla*) +				X		RI	C
Señorita de Río (*Seiurus motacilla*) +				X		RI	C
Aparecido de San Diego (*Cyanerpes cyaneus*) +				X		RP	C
Cabrero (*Spindalis zena*)	X	X	X	X		RP	C
Azulejo (*Passerina cyanea*)				X		RI	NC
Negrito (*Melopyrrha nigra*)	X	X	X	X		RP	C
Tomeguín de la Tierra (*Tiaris olivaceus*) +	X	X	X	X	X	RP	C
Mayito (*Agelaius humeralis*)	X	X		X		RP	C
Sabanerro (*Sturnella magna*)					X	RP	C
Totí (*Dives atroviolaceus*) *	X	X	X	X		RP	C
Chichinguaco (*Quiscalus niger*)	X	X	X	X		RP	A
Solibio (*Icterus dominicensis*) *	X	X	X	X		RP	C

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NUEVO REGISTRO Y COMENTARIOS ADICIONALES SOBRE LA AVOCETA (*RECURVIROSTRA AMERICANA*) EN CUBA

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Resumen.—Presentamos información sobre tres nuevos registros de la Avoceta (*Recurvirostra americana*) en Cuba con algunos comentarios adicionales acerca de la regular presencia de esta especie en diferentes localidades del país durante el periodo desde 1995 hasta el 2004.

Palabras claves: Avoceta, Cuba, nuevos registros, Recurvirostra americana

Abstract.—NEW RECORDS AND ADDITIONAL COMMENTS FOR THE AMERICAN AVOCET IN CUBA. We present information on three new records of the American Avocet (Recurvirostra americana) in Cuba with some additional comments about the regular presence of this species in different sites of the country during 1995-2004.

Key words: American Avocet, Cuba, new records, Recurvirostra americana

LA AVOCETA (*Recurvirostra americana*), constituye una de las aves acuáticas coloniales más representativas en tamaño y colorido de las 142 formas que componen el orden Charadriiformes en el continente americano (National Geographic Society 1987). Su población global estimada en unos 450 000 individuos (Morrison *et al*. 2000), se encuentra distribuida en algunas regiones del oeste y el centro de América del Norte las que incluyen territorios del sur de Canadá, de Estados Unidos y México donde se reproduce cada año (Hayman *et al*. 1986).

Sus áreas de invierno, se localizan al Sur de la Península de la Florida y zonas de la costa del Golfo de México. Durante el otoño, la Avoceta realiza sus desplazamientos migratorios rumbo al Sur desde el occidente del continente americano hasta Costa Rica, atravesando territorios costeros de México, Guatemala, Honduras y Nicaragua, en donde es posible que resida durante el invierno más del 36 % de la población global estimada para la especie según resultados de censos aéreos obtenidos por Morrison *et al*. (1993) y Morrison *et al*. (1994).

En Cuba y en otras islas del Caribe tales como: Jamaica, Puerto Rico, islas Vírgenes, Cayman, Antigua, Barbados, Tobago y Bonaire, la Avoceta está considerada como una especie accidental observada en limitadas ocasiones (Raffaele *et al*. 1998, Hayman *et al*. 1986, Garrido y Kirkconnell 2000), sin embargo, existe información reciente que demuestra que esta ave visita con mayor frecuencia el territorio cubano, lo que resulta un hecho interesante a integrar en el desarrollo de estudios de distribución que se realizan en la actualidad en el país con especies del orden Charadriiformes.

RESULTADOS Y DISCUSIÓN

La obtención en el territorio cubano, de nuevos registros de observación de la *Recurvirostra americana* (4 individuos) en la localidad de la laguna el Remate en la Ciénaga de Birama, provincia de Granma durante los días 24 y 29 de abril del 2001, 18 de noviembre del 2003 y 18 de enero del 2004, resulta un hecho interesante que muestra diferencias entre la información obtenida sobre esta especie en Cuba con relación al resto de los territorios insulares del Caribe donde es considerada una especie rara o accidental.

Con estos nuevos registros suman 11 las observaciones obtenidas hasta la fecha, acerca de la presencia de la Avoceta en localidades costeras cubanas (Blanco *et al*. 1996, Garrido y Kirkconnell 2000, Pérez y Blanco 2002), entre las que se destaca el aporte reflejado por J. Gundlach (Gundlach 1863) desde mediados del siglo XIX (Tabla 1).

La información obtenida durante el periodo 1995-2002 expuesta en la tabla 1, muestra que la categoría de ave migratoria accidental en el territorio cubano conferida a esta especie por Garrido y Kirkconnell (2000), no se corresponde con los datos de observación de la misma, la que aparece registrada tanto en periodos de migración como en épocas de residencia en siete localidades correspondientes a seis provincias del país.

Tabla 1. Registros de observación de la Avoceta (*Recurvirostra americana*) en Cuba durante el período comprendido entre los años 1863 y el 2002.

	Localidades	Provincias	Fecha	No Ind.
1	Casilda	Sancti Spíritus	Noviembre 1863	1
2	Arroceras del Jíbaro	Sancti Spíritus	Junio 1995	150
3	Península de Guanahacabibes	Pinar del Río	Octubre 1997	1
4	Cayo Coco	Ciego de Ávila	Enero 1999	1
5	Península de Hicacos	Matanzas	Noviembre 2000	1
6	Península de Hicacos	Matanzas	Octubre 2001	1
7	Península de Hicacos	Matanzas	Diciembre 2002	2
8	Ciénaga de Birama	Granma	Abril 2001	4
9	Playa Bagá	Camagüey	Noviembre 2002	1
10	Ciénaga de Birama	Granma	Noviembre 2003	16
11	Ciénaga de Birama	Granma	Enero 2004	3

No obstante al número de registros obtenido, se considera que aún los resultados son insuficientes para proponer un cambio de categoría de permanencia de la especie en Cuba, pues proponer la categoría de residente invernal para la Avoceta, resulta inadecuado ante la ausencia de observaciones que avalen la continua estancia de la especie durante el invierno en hábitats cubanos.

De igual forma, el empleo del termino transeúnte, no resulta apropiado ante la existencia de más de 80 fuentes bibliográficas publicadas (Wiley 2000), que avalan la categoría de rara o accidental para esta ave en la región de las Antillas sin hacer referencia alguna a la existencia de tránsito regular o sitios de invierno establecidos por la especie en la región del Caribe y Sudamérica

Aunque la presencia de la Avoceta en Cuba puede resultar lógica dada la proximidad existente entre las costas del país con otras zonas costeras del continente americano como son las penínsulas de la. Florida y de Yucatán, las que constituyen en la actualidad importantes sitios para el tránsito migratorio y permanencia invernal con registros superiores a los 5 000 individuos durante el invierno (Morrison *et al*. 1993, Morrison *et al*. 2000), resulta interesante el bajo numero de observaciones de la especie en el país en periodos anteriores a 1994 a pesar del desarrollo de múltiples investigaciones ornitológicas y actividades de colectas científicas realizadas en más de 60 localidades del archipiélago cubano.

Se recomienda en años futuros intensificar las observaciones en las localidades de la Ciénaga de Birama, en la provincia de Granma, las salinas de Hicacos en Matanzas y la península de Guanahacabibes en Pinar del Río, donde se ha reportado la presencia de la Avoceta con mayor frecuencia durante los periodos de migración y residencia de invierno comprendidos entre los años 1997 y el 2004 con el fin de corroborar la residencia invernal y las causas que originan su presencia en el país.

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AVES DE CAYO CARENAS, CIÉNAGA DE BIRAMA, CUBA

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Resumen.—Se da a conocer el listado de aves de Cayo Carenas en la Ciénaga de Biramas, Cuba, a través de inventarios realizados durante los años 1992 y 2001.
Palabras claves: Cayo Carenas, Cuba, listado de aves,

Abstract.—BIRDS OF CAYO CARENAS, CIÉNAGA DE BIRAMAS, CUBA. We provide a list of the birds of Key Carenas in the Marsh of Biramas, Cuba, based on surveys carried out during the years 1992 and 2001.
Key words: bird survey, Cayo Carenas, Cuba

CAYO CARENAS, situado al SE de la desembocadura del río Cauto se ubica geográficamente en los 20°32'34"N, 77°08'15"O y forma parte de la Ciénaga de Birama, uno de los principales humedales de Cuba, donde habitan numerosas especies de aves tanto acuáticas como terrestres. Presenta un área de 22 km^2 y una extensión de 6 km; siendo su parte más ancha el Hoyo de Viro- Los Lirios con 4,5 km y la más estrecha el Alto de Carenas (1,5 km).

En el cayo predomina la vegetación de manglar con sus especies típicas: mangle rojo (*Rhizophora mangle*), mangle prieto (*Avicennia germinans*) y pataban (*Laguncularia racemosa*). El suelo es cenagoso e inundado casi todo el año y presenta sólo una porción de suelos negros profundos donde se desarrolla la vegetación de costa, que se caracteriza por la presencia de especies de plantas como: brasil, ateje, aroma, rabo de perico, rodocactus y algunas herbáceas como la hierba de guinea.

Para conocer la diversidad de especies de aves que habitan, pernoctan, nidifican o invernan, se realizaron diferentes viajes de investigación al cayo durante los años 1992 y 2001, donde se recorrieron las formaciones vegetales antes mencionadas y el complejo de lagunas y esteros presentes en esta área.

Para la clasificación sistemática de las aves, se siguieron los criterios de Raffaele *et al*. (1998) y Garrido y Kirkconnell (2000). Esta información fue actualizada con los criterios de American Ornithologists' Union (2000) y Banks *et al*. (2002, 2003, 2004). Como medida de abundancia relativa se utilizaron los siguientes criterios: muy rara (1 individuo), rara (2-5 individuos), escasa (6-10 individuos) y común (mas de 10 individuos).

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RELACIÓN DE ESPECIES

Pelecanus occidentalis (Pelícano), común en las costas.
Phalacrocorax auritus (Corúa de Mar), común y nidifica en el cayo.
Anhinga anhinga (Marbella), es escasa, pero se observan algunos nidos en época de cría.
Fregata magnificens (Rabihorcado), es escasa, se observa en las costas.
Ardea alba (Garzón), común, nidifica en el cayo.
Egretta rufescens (Garza Rojiza), común, sus poblaciones se han incrementado en los últimos años en el área de estudio. Nidifica en el cayo.
Egretta caerulea (Garza Azul), común, nidifica en el cayo.
Egretta tricolor (Garza de Vientre Blanco), común, nidifica en el cayo.
Egretta thula (Garza Blanca), común, nidifica en el cayo.
Butorides virescens (Aguaitacaimán), común.
Nycticorax nycticorax (Guanabá de la Florida), común, nidifica en el cayo.
Eudocimus albus (Coco Blanco), común, nidifica en el cayo.
Platalea ajaja (Sevilla), es escasa, pero nidifica en el área.
Cathartes aura (Aura Tiñosa), común en el cayo, fundamentalmente en la época de reproducción.
Phoenicopterus ruber (Flamenco), común, nidifica en el cayo. En ocasiones la colonia nidificante posee más de 3 200 nidos.
Anas discors (Pato de la Florida), especie residente invernal común en el cayo.
Anas bahamensis (Pato de Bahamas), común.
Pandion haliaetus (Guincho), escaso, se observaron pocos individuos.
Rallus longirostris (Gallinuela de Manglar), no es muy abundante, aunque se han localizado nidos en el cayo.
Pluvialis squatarola (Pluvial), común en lagunas interiores.
Charadrius wilsonia (Títere Playero), común en la etapa invernal.
Himantopus mexicanus (Cachiporra), común, nidifica en el cayo.
Tringa melanoleuca (Zarapico Patiamarillo Grande), común en lagunas interiores.
Tringa flavipes (Zarapico Patiamarillo Chico), común.
Catoptrophorus semipalmatus (Zarapico Real), raro se han observado en pocas ocasiones.
Calidris minutilla (Zarapiquito), común en playazos y lagunas interiores.
Larus atricilla (Galleguito), común en playazos y lagunas interiores.
Sterna máxima (Gaviota Real), común fundamentalmente en la costa sur.
Sterna antillarum (Gaviotica), común en zonas costeras.
Zenaida macroura (Paloma Rabiche), común, nidifica en el cayo.
Zenaida asiática (Paloma Aliblanca), común, nidifica en el cayo.
Patagioenas leucocephala (Torcaza Cabeciblanca), escasa, aunque se han observado tres o cuatro nidos.
Columbina passerina (Tojosa),escasa, se observaron entre cuatro y seis individuos.
Saurothera merlíni (Arriero), escaso, se han observado en la parte alta del cayo.
Chlorostilbon ricordii (Zunzún), raro, se han observado pocos individuos.
Ceryle alcyon (Martín Pescador), raro, se han observado hasta cuatro individuos.
Xiphidiopicus percussus (Carpintero Verde), se observan en las zonas de manglares altos, donde es común.
Tyrannus dominicensis (Pitirre Abejero), común.
Contopus caribaeus (Bobito chico), común en manglares.
Dendroica petechia (Canario de Manglar), común, nidifica en el cayo.
Dendroica dominica (Bijirita de Garganta Amarilla), común en invierno.
Dendroica palmarum (Bijirita Común),es una de las especies más comunes.
Setophaga ruticilla (Candelita),escasa, se han observado en época invernal.
Seiurus noveboracensis (Señorita de Manglar), escasa, se han observado hasta 12 individuos.
Melopyrrha nigra (Negrito), común en algunos meses como marzo, abril y mayo.
Quiscalus níger (Chichinguaco), común en el cayo, fundamentalmente en invierno.

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FORAGING BEHAVIOR OF TWO TYRANT FLYCATCHERS IN TRINIDAD: THE GREAT KISKADEE (*PITANGUS SULPHURATUS*) AND TROPICAL KINGBIRD (*TYRANNUS MELANCHOLICUS*)

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Abstract.—We compared the foraging behavior of two large, sympatric flycatchers, the Great Kiskadee (*Pitangus sulphuratus*) and Tropical Kingbird (*Tyrannus melancholicus*), in Trinidad. For each observation of foraging, we recorded or estimated the type of substrate, height class above ground at which foraging occurred, size class of food item captured, and type of prey. The kiskadee foraged more often on the ground and less often in the air than the kingbird, which rarely foraged on the ground. The kiskadee foraged at significantly lower levels than the kingbird. Both species foraged mostly on animal prey with roughly equal frequency. Although a variety of prey sizes were taken, both species foraged primarily on prey < 1 cm long, with no significant difference between the species.

Key words: foraging behavior, Pitangus sulphuratus*, Trinidad, Tyrannidae,* Tyrannus melancholicus

Resumen.—COMPORTAMIENTO DE FORRAJEO DE DOS TIRÁNIDOS ATRAPAMOSCAS: EL CRISTOFUÉ (*PITANGUS SULPHURATUS*) Y EL PITIRRE CHICHARRERO (*TYRANNUS MELANOCHOLICUS*). Comparamos el comportamiento de forajeo de dos especies grandes de atrapamoscas, el Cristofué (*Pitangus sulphuratus*) y el Pitirre Chicharrero (*Tyrannus melanocholicus*), en Trinidad. Para cada observación de forrajeo, registramos o estimamos el tipo de sustrato, clase de altura por encima del suelo en la cual se alimentó, la clase de tamaño de alimento capturado, y el tipo de alimento. El Crisofué se alimentó más frecuentemente en el suelo y menos frecuentemente en el aire que el Pitirre Chicharrero, el cual raramente se alimentó en el suelo. El Cristofué se alimentó a alturas significativamente más menores que el Pitirre Chicharrero. Ambas especies se alimentaron principalmente de presas animales con frecuencia casi igual. Aunque incluyeron alimentos de tamaño variable, ambas especies consumieron principalmente insectos de < 1 cm de longitud, sin una diferencia significativa entre las especies.

Palabras claves: conducta de forrajeo, Pitangus sulphuratus*, Trinidad, Tyrannidae,* Tyrannus melancholicus

AS A LARGE AND DIVERSE FAMILY of New World birds, flycatchers of the family Tyrannidae exhibit a wide variety of foraging strategies (Fitzpatrick 1980). The Great Kiskadee (*Pitangus sulphuratus*) and Tropical Kingbird (*Tyrannus melancholicus*) are large, ubiquitous inhabitants of relatively open country that occur sympatrically in much of their Neotropical range (Stouffer and Chesser 1998, Brush and Fitzpatrick 2002), including Trinidad, a large island on the continental shelf of northeastern South America (ffrench 1991). The Great Kiskadee is heavier and has a longer bill (body mass, 47.5-68.5 g; bill length, 23-31 mm; wing length, 106-118 mm) than the Tropical Kingbird (body mass, 31.5-44.5 g; bill length, 20-25 mm; wing length, 107-120 mm; data from Trinidad based on ffrench [1991], S. A. White and F. E. Hayes unpubl. data.).

Few studies have quantified the foraging behavior of the Great Kiskadee (Fitzpatrick 1980, 1981, Gorena 1995, 1997, Cintra 1997, Latino and Beltzer 1999, Brush and Fitzpatrick 2002) and Tropical Kingbird (Fitzpatrick 1980, 1981, Pearson 1971, Rosenberg 1990, Cintra 1997). Here we compare the niche partitioning of foraging behavior between the two species in Trinidad. Because interspecific competition generally precludes two similar species from occupying the same niche at the same time in the same place, we predicted that the two species would differ in their foraging behavior, and that the kiskadee would feed upon larger food items because of its larger bill and body mass.

METHODS

From February-May 2002 (dry season), we studied the foraging behavior of unmarked individuals of each species at elevations < 100 m above sea level in Maracas Valley and St. Augustine, north-central Trinidad. The study sites were relatively open urban or campus areas in close proximity to buildings, electrical wires, grass lawns, and trees often exceeding 20 m in height.

Binoculars (7-8×) were used to observe the behavior of focal birds. For each observation of foraging, we attempted to determine or estimate the following variables: type of substrate from which foraging was attempted (ground, vegetation, and air); height above ground at which foraging occurred (< 2 m, 2-4 m, 4-6 m, and > 6 m); size of food item captured (< 0.5 cm, 0.5-1.0 cm, 1.0-1.5 cm, and > 1.5 cm, as estimated against bill length); and type of prey (plant or animal). No more than ten observations were taken from a given individual.

Each foraging attempt was assumed to be an independent event. Two-sample chi-square tests (χ^2 statistic) were used to compare the proportions of foraging attempts on different substrates and food types between the two species. Mann-Whitney *U* tests (*z* statistic) were used to compare the foraging heights above ground and the relative sizes of food between each species. Each statistical test and its assumptions are described by Zar (1984). All tests were computed with Statistix 7 software (Anonymous 2000). Because multiple observations were taken from the same individual bird, caution is warranted in interpreting the results of these statistical tests.

RESULTS

The two species differed significantly in their use of foraging substrate; the kiskadee foraged more often on the ground (44.6%) and less often in the air (21.8%) than the kingbird, which foraged primarily in the air (56.0%) and only rarely on the ground

Table 1. Frequency of foraging attempts by the Great Kiskadee and Tropical Kingbird on prey with respect to substrate type, height of prey capture above ground, size of prey, and type of prey.

Variable	Great Kiskadee	Tropical Kingbird
Substrate[a]		
Ground	45	1
Vegetation	34	36
Air	22	47
Height above ground[b]		
<2 m	67	18
2-4 m	15	29
4-6 m	13	25
>6 m	1	12
Food type[c]		
Animal	68	65
Plant	13	15
Food size[d]		
<0.5 cm	51	37
0.5-1 cm	24	26
1-1.5 cm	9	16
>1.5 cm	16	4

[a] $\chi^2 = 50.06$, df = 2, $P < 0.001$
[b] $z = 6.42$, $P < 0.001$
[c] $\chi^2 = 0.06$, df = 1, $P = 0.81$
[d] $z = 0.21$, $P = 0.83$

(1.2%; Table 1). The kiskadee foraged at significantly lower levels (69.8% of time < 2 m) than the kingbird (78.6% of time > 2 m; Table 1). Both species foraged mostly on animal prey with roughly equal frequency (kiskadee, 84.0%; kingbird, 81.3%; Table 1), but both often foraged on fruits. Although a variety of prey sizes were taken, both species foraged primarily on prey < 1 cm long (kiskadee, 75.7%; kingbird, 75.9%) with no significant differences between the species (Table 1).

DISCUSSION

Fitzpatrick (1980) regarded the Great Kiskadee as a "supreme generalist...uniquely variable in its foraging behavior" (p. 49), and *Tyrannus* kingbirds (including Tropical Kingbird) as "Aerial Hawking specialists" (p. 54). Our results were consistent with these generalizations and were similar to those of previous studies on the foraging behavior of these species.

Although the kiskadee often uses aerial hawking to capture prey, a diversity of foraging methods and substrates have been documented in Texas and Peru, including perch-gleaning, sally-gleaning, hover-gleaning in vegetation, shallow plunge-diving and wading up to belly in water, and scavenging on the ground (Gorena 1997, Brush and Fitzpatrick 2002). In contrast, the kingbird was among the most specialized foragers of flycatchers in Peru and Brazil, where it foraged predominantly (> 75%) by aerial hawking (Fitzpatrick 1980, Rosenberg 1990, Cintra 1997, Stouffer and Chesser 1998); however, aerial hawking in our study was just 56%. Intraspecific kleptoparasitism has been observed in both species (Bentley 1991, Hayes 1992, 2000) but no instances were observed during this study, providing further evidence of its rarity.

The kiskadee forages from any height but usually hunts close to the ground, averaging 2.5 m above the ground in Texas (Gorena 1997), 6.5 m in forest edge and 3.4 m in nearby savanna in Brazil (Cintra 1997), and was 0-2 m above ground 69% of the time (nearly identical to our study) in Peru (Brush and Fitzpatrick 2002). In contrast, the Tropical Kingbird is a canopy specialist that typically hunts from the highest perches available, 76% of the time > 25 m and 24% from 12-25 m high in the canopy of dry forest in Peru (Pearson 1971), averaging 7.3 m in forest edge and 4.6 m in savanna in Brazil (Cintra 1997), and averaging about 6 m in 10 m scrub on Amazonian River islands in Peru (Rosenberg 1990). The kingbird only rarely descends to the ground or into low vegetation (Skutch 1954, 1960).

The kiskadee forages on a variety of fruits, insects, and small vertebrates (see review by Brush and Fitzpatrick 2002). Animal prey were taken more frequently than fruits by kiskadees in Texas (56% of diet; Gorena 1995, 1997) and Peru (63%; Brush and Fitzpatrick 2002), but in lower proportions than in our study (84%); in contrast, animal prey comprised only 40% of items in the stomachs of kiskadees in Argentina (Latino and Beltzer 1999). The kingbird consumes a wide variety of plant and animal prey (see review by Stouffer and Chesser 1998), but the relative contributions of each has not been documented previously.

The relative sizes of food items consumed has not been studied previously in the kiskadee and kingbird (Stouffer and Chesser 1998, Brush and Fitzpatrick 2002). Because the kiskadee possesses a larger bill and body, we predicted it would prey on larger food items on average. However, our data failed to support this prediction. Nevertheless, the kiskadee appears to be more predisposed for attempting to prey upon larger items of food, even if only rarely. In Trinidad, kiskadees have been observed feeding or attempting to feed on a variety of vertebrate prey including fish (Chadee et al. 1991), lizards (ffrench 1991, this study), nestling Bananaquits (*Coereba flaveola*; ffrench 1991, F. E. Hayes and N. A. Trimm pers. obs.), and mice (Bentley 1991, ffrench 1991). In contrast, the kingbird has been reported foraging on vertebrate prey only once, on a small frog in Central America (Skutch 1954, Stouffer and Chesser 1998).

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APPARENT NESTING OF SOUTHERN LAPWING ON ARUBA

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Abstract.—During late March and early April 2004, a pair of Southern Lapwings (*Vanellus chilensis*) on Aruba behaved in a manner that strongly suggested active nesting. This species was not previously known to nest on any Caribbean island outside of Trinidad and Tobago.

Key words: apparent nesting, Aruba, Southern Lapwing, Vanellus chilensis

Resumen.—NIDIFICACIÓN APARENTE DEL ALCARAVÁN EN ARUBA. A finales de marzo y comienzos de abril del año 2004, una pareja de Alcaraván (*Vanellus chilensis*) en Aruba se comportaron de forma tal que sugirió fuertemente una nidificación activa. No se conocia previamente de intentos de cría de esta especie en cualquier isla caribeña fuera de Trinidad y Tobago.

Palabras claves: Alcaraván, Aruba, nidificación aparente, Vanellus chilensis

THE SOUTHERN LAPWING (*Vanellus chilensis*) is a widespread and common species of open pastures and short grasslands in South America (Hayman *et al.* 1986). It has recently increased in numbers and expanded its range in South America (Delaney and Scott 2002). It spread into western Panamá during the 1980s (Ridgely and Gwynne 1989), and there has been a subsequent increase in Costa Rican records (Jones 2003). In the Caribbean, Southern Lapwings were first recorded on Trinidad in 1961 and on Tobago in 1974, and by 1990 they were well established as a resident species on these islands (ffrench 1991). Elsewhere in the Caribbean there are three previous records from Aruba on 6 June 1979 (Voous 1983), 30 May 2001 (Norton and White 2001), and 30 March 2003 (Mlodinow 2004), and one from Barbados on 29 July 1998 (Buckley *et al.* in press).

On 30 March 2003, Casey Beachell and I located two Southern Lapwings at the Tierra del Sol Golf Course, Aruba (Mlodinow 2004). These birds were placid upon encountering us. On 26 March 2004, we returned to the Tierra del Sol Golf Course and were surprised to find a pair of Southern Lapwings, roughly at the same place we found them a year before. Unlike 2003, however, these birds took immediate interest in our presence – calling loudly and flying aggressively towards us. At times, they passed within 1.5 m. Furthermore, they pursued us until we moved more than 100 m from the original point of interaction. This encounter was repeated on three later visits, despite our efforts to avoid agitating the birds. We last saw them on 3 April, the day we left the island. The pair's behavior suggested the presence of young or eggs nearby, and we did not press them for fear of disturbing them further. On 27 March 2004 we encountered a lone bird elsewhere on the golf course, and it seemed rather unperturbed by our presence, much like the birds we found the year before. Local residents suggested that several Southern Lapwings inhabited the golf course as a whole.

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ADICIONES A LA AVIFAUNA TERRESTRE DE CAYO SABINAL, CUBA

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Resumen.—Se realizaron inventarios en Cayo Sabinal en los meses de marzo y noviembre entre los años 2000 y 2003. Se hallaron 8 nuevos registros para esta localidad, seis de los cuales pertenecen a especies migratorias neárticas y otras dos a especies que crían en Cuba. Incluimos la lista actualizada de las especies de aves de Cayo Sabinal.
Palabras claves: Cayo Sabinal, Cuba, inventarios, nuevos registros

Abstract.—ADDITIONS TO THE LANDBIRD FAUNA OF CAYO SABINAL, CUBA. We made surveys in Cayo Sabinal in March and November between the years 2000 and 2003. We found 8 new records for this locality, six of them belong to migrant neartic species and other two to breeding species. We include the actual list of bird species to Cayo Sabinal.
Key words: Cayo Sabinal, Cuba, new records, surveys

POR LA CARACTERÍSTICA DE SER CUBA un archipiélago, sus ecosistemas poseen una alta fragilidad, lo cual es mas significativo en los pequeños cayos donde existen aún mayores peligros causados por la naturaleza y el hombre; por lo que las investigaciones sobre su flora y fauna son muy importantes para conocer sus valores y los riesgos de perder los mismos.

Cayo Sabinal está ubicado en la posición más oriental del Archipiélago Sabana-Camagüey con una extensión de 335 km^2. Limita al Norte con el Canal Viejo de Bahamas, al Sur con la Ensenada Sabinal y la Ensenada de Mayanabo, al Este con el Canal de acceso a la Bahía de Nuevitas y la propia bahía y al Oeste con el Canal de Carabelas, que lo separa de Cayo Guajaba. Además, este cayo se encuentra comunicado a la isla de Cuba por medio de un pedraplén de 2 km, construido en 1974.

Con anterioridad a nuestras investigaciones Morales y Garrido (1996) identificaron 141 especies de aves en observaciones de campo que realizaron entre 1981 y los primeros años de la década de los noventa. Barrio *et al* (2003) aportó nuevos registros de aves acuáticas durante sus investigaciones.

El objetivo del presente trabajo es dar a conocer nuevos registros de aves terrestres a la avifauna de Cayo Sabinal y actualizar la lista de especies de esta localidad.

MATERIALES Y MÉTODOS

Se realizaron siete expediciones durante los meses de marzo de los años 2000 y 2002 y los meses de noviembre de los años 2000 y 2003. Para los muestreos de aves terrestres se utilizaron los métodos de conteos en parcelas circulares y las capturas con redes ornitológicas (Hutto et al. 1986, Ralph et al. 2004). Para la captura de las aves se utilizaron redes ornitológicas de 9 m de largo, 2,5 m de alto y de 30 mm de paso de malla. Cada ave capturada era identificada y anillada con un anillo enumerado del Servicio de Pesca y Vida Silvestre (U.S. Fish and Wildlife Service).

La formación vegetal predominante de acuerdo a su extensión es el bosque siempreverde micrófilo y semideciduo mesófilo, abarcando gran parte de la llanura cársica central. Otra formación vegetal con importancia en el cayo la conforma el bosque de mangle en sus diferentes variedades, ocupando zonas bajas pantanosas, bordes de lagunas litorales, esteros, etc.

El complejo de vegetación de costa arenosa ocupa una franja sobre playas y dunas arenosas. Otros tipos de vegetación representados son el bosque de ciénaga, el matorral xeromorfo costero y subcostero y las comunidades halófitas.

RESULTADOS Y DISCUSIÓN

Durante los conteos y las capturas, así como las observaciones de campo se pudieron determinar ocho nuevos registros de especies de aves terrestres

para Cayo Sabinal. Dentro de ellas se detectaron 6 bijiritas migratorias neártica neotropicales: la Bijirita Gusanera (*Helmitherus vermivorum*), la Caretica (*Geothlypis trichas*), la Monjita (*Wilsonia citrina*), la Bijirita de Swainson (*Limnothlypis* swainsonii), la Bijirita de Garganta Negra (*Dendroica virens*) y la Bijirita de Alas Azules (*Vermivora pinus*). Llama la atención que no se hayan registrado con anterioridad dos especies que crían en Cuba como son el Boyero (*Geotrygon montana*) y el Guabairo (*Caprimulgus cubanensis*) (Anexo I). La primera fue vista y capturada en el bosque semideciduo y la segunda especie fue observada en los caminos que hay en el cayo.

Después de este trabajo y los realizados por Morales y Garrido (1996) y Barrio *et al* (2003), Cayo Sabinal tiene 157 especies de aves, de las cuales 67 son residentes permanentes, 24 son residentes bimodales, 7 residentes de verano y 59 corresponden a especies migratorias neárticas (Anexo I). Dentro de las residentes bimodales se consideró a la Gaviota de Pico Corto (*Sterna nilotica*) por el registro de nidificación de esta especie dado por Barrio (2001).

Estos resultados nos indican que este cayo del Archipiélago Sabana Camagüey es uno de los mas importantes en diversidad de aves de la región y como tal debe ser manejado para conservar estos recursos naturales

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Anexo I. Lista de aves de Cayo Sabinal. Estado: RP = residente permanente; RB = residente bimodal; RV = residente de verano; RI = residente invernal; T = transeúnte; A = accidental.

Nombre Científico	Nombre en español	Estado
Tachybaptus dominicus	Zaramagullon chico	RP
Podilymbus podiceps	Zaramagullon grande	RP
Phaethon lepturus	Contramaestre	RV
Pelecanus occidentalis	Alcatraz	RB
Phalacrocorax auritus	Corua de mar	RB
Phalacrocorax brasilianus	Corua de agua dulce	RP
Anhinga anhinga	Marbella	RB
Fregata magnificens	Rabihorcado	RP
Ardea herodias	Gracilote	RB
Ardea alba	Garzon	RB
Egretta thula	Garza real	RB
Egretta caerulea	Garza azul	RB
Egretta tricolor	Garza de vientre blanco	RB
Egretta rufescens	Garza morada	RB
Bubulcus ibis	Garcita bueyera	RP
Butorides virescens	Aguaitacaiman	RB
Nycticorax nycticorax	Guanaba de la florida	RB
Eudocimus albus	Coco blanco	RP
Plegadis falcinellus	Coco prieto	RP
Platalea ajaja	Sevilla	RP

Anexo I. (Continuación)

Nombre Científico	Nombre en español	Estado
Mycteria americana	Cayama	RP
Cathartes aura	Aura tiñosa	RP
Phoenicopterus ruber	Flamenco	RB
Dendrocygna bicolor	Yaguasin	RP
Dendrocygna arborea	Yaguasa	RP
Aix sponsa	Pato huyuyo	RP
Anas bahamensis	Pato de Bahamas	RI
Anas acuta	Pato pescuesilargo	RI
Anas discors	Pato de la florida	RI
Anas clypeata	Pato cuchareta	RI
Anas americana	Pato lavanco	RI
Aythya collaris	Pato cabezon	RI
Aythya affinis	Pato morisco	RI
Oxyura jamaicensis	Pato chorizo	RP
Pandion haliaetus	Guincho	RB
Rostrhamus sociabilis	Gavilán caracolero	RP
Accipiter striatus	Gavilancito	RB
Buteogallus gundlachii	Gavilán batista	RP
Buteo platypterus	Gavilán bobo	RB
Buteo jamaicensis	Gavilán de monte	RP
Caracara cheriway	Caraira	RP
Falco sparverius	Cernícalo	RB
Falco columbarius	Halconcito de palomas	RI
Falco peregrinus	Halcon de patos	RI
Colinus virginianus	Codorniz	RP
Rallus longirostris	Gallinuela de manglar	RP
Gallinula chloropus	Gallareta de pico colorado	RP
Fulica americana	Gallareta de pico blanco	RB
Aramus guarauna	Guareao	RP
Pluvialis squatarola	Pluvial	RI
Charadrius alexandrinus	Frailecillo blanco	RB
Charadrius wilsonia	Titere playero	RP
Charadrius semipalmatus	Frailecillo semipalmeado	RI
Charadrius melodus	Frailecillo silbador	RI
Charadrius vociferus	Titere sabanero	RP
Himantopus mexicanus	Cachiporra	RP
Jacana spinosa	Gallito de rio	RP
Tringa melanoleuca	Zarapico patiamarillo grande	RI
Tringa flavipes	Zarapico patiamarillo chico	RI
Catoptrophorus semipalmatus	Zarapico real	RP
Actitis macularius	Zarapico manchado	RI
Numenius phaeopus	Zarapico grande	RI
Arenaria interpres	Revuelvepiedras	RI
Calidris canutus	Zapapico de pecho rojo	T
Calidris pusilla	Zarapico semipalmeado	RI
Calidris alba	Zarapico blanco	RI
Calidris minutilla	Zarapiquito	RI
Limnodromus griseus	Zarapico becasina	RI
Gallinago gallinago	Becasina	RI
Catharacta maccormicki	Skúa del polo sur	A

Anexo I. (Continuación)

Nombre Científico	Nombre en español	Estado
Larus atricilla	Galleguito	RB
Larus argentatus	Gallego	RI
Larus marinus	Gallegón	A
Larus ridibundus	Galleguito raro	A
Larus delawarensis	Gallego real	RI
Sterna nilotica	Gaviota de pico corto	RB
Sterna caspia	Gaviota real grande	RI
Sterna maxima	Gaviota real	RB
Sterna dougallii	Gaviota rosada	RV
Sterna hirundo	Gaviota común	RI
Sterna antillarum	Gaviotita	RP
Sterna fuscata	Gaviota monja prieta	RP
Rynchops niger	Gaviota pico de tijera	RI
Patagioenas leucocephala	Torcaza cabeciblanca	RB
Patagioenas inornata	Torcaza boba	RP
Zenaida asiatica	Paloma aliblanca	RP
Zenaida aurita	Guanaro	RP
Zenaida macroura	Paloma rabiche	RB
Columbina passerina	Tojosa	RP
Geotrygon chrysia	Barbiquejo	RP
Geotrygon montana	Boyero	RP
Coccyzus americanus	Primavera	RV
Coccyzus minor	Arrierito	RI
Saurothera merlini	Arriero	RP
Crotophaga ani	Judío	RP
Tyto alba	Lechuza	RP
Gymnoglaux lawrencii	Siju cotunto	RP
Glaucidium siju	Siju platanero	RP
Asio flameus	Carabo	RI
Chordeiles gundlachii	Querequete	RV
Caprimulgus cubanensis	Guabairo	RP
Chlorostilbon ricordii	Zunzún	RP
Priotelus temnurus	Tocororo	RP
Todus multicolor	Pedorrera	RP
Ceryle alcyon	Martín pescador	RI
Melanerpes superciliaris	Carpintero jabado	RP
Sphyrapicus varius	Carpintero de paso	RI
Xiphidiopicus percussus	Carpintero verde	RP
Colaptes auratus	Carpintero escapulario	RP
Colaptes fernandinae	Carpintero churroso	RP
Contopus caribaeus	Bobito chico	RP
Myiarchus sagrae	Bobito grande	RP
Tyrannus caudifasciatus	Pitirre guatíbrere	RP
Progne cryptoleuca	Golondrina azul	RV
Tachycineta bicolor	Golondrina de arboles	RI
Petrochelidon fulva	Golondrina de cuevas	RV
Corvus nasicus	Cao montero	RP
Polioptila lembeyei	Sinsontillo	RP
Catharus ustulatus	Tordo de espalda olivada	RI

Anexo I. (Continuación)

Nombre Científico	Nombre en español	Estado
Turdus plumbeus	Zorzal real	RP
Dumetella carolinensis	Zorzal gato	RI
Mimus polyglottos	Sinsonte	RP
Vireo griseus	Vireo de ojo blanco	RI
Vireo gundlachii	Juan chiví	RP
Vireo altiloquus	Bien te veo	RV
Vermivora pinus	Bijiriat de alas azules	RI
Parula americana	Bijirita chica	RI
Dendroica petechia	Canario de manglar	RB
Dendroica magnolia	Bijirita magnolia	RI
Dendroica tigrina	Bijirita atigrada	RI
Dendroica caerulescens	Bijirita azul de garganta negra	RI
Dendroica virens	Bijiriat de garganta negra	RI
Dendroica dominica	Bijirita de garganta amarilla	RI
Dendroica discolor	Mariposa galana	RI
Dendroica palmarum	Bijirita común	RI
Mniotilta varia	Bijirita trepadora	RI
Setophaga ruticilla	Candelita	RI
Helmitherus vermivorum	Bijirita gusanera	RI
Limnothlypis swainsonii	Bijirita de swainson	RI
Seiurus aurocapilla	Señorita de monte	RI
Seiurus noveboracensis	Señorita de manglar	RI
Geothlypis trichas	Caretita	RI
Teretistris fornsi	Pechero	RP
Wilsonia citrina	Monjita	RI
Spindalis zena	Cabrero	RP
Passerina caerulea	Azulejón	RI
Passerina cyanea	Azulejo	RI
Passerina ciris	Mariposa	RI
Melopyrrha nigra	Negrito	RP
Tiaris canorus	Tomeguín del pinar	RP
Tiaris olivaceus	Tomeguín de la tierra	RP
Agelaius humeralis	Mayito	RP
Sturnella magna	Sabanero	RP
Dives atroviolaceus	Toti	RP
Quiscalus niger	Chichinguaco	RP
Molothrus bonariensis	Pájaro vaquero	RP
Icterus melanopsis	Solibio	RP

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PRIMER REGISTRO DE *STERNA SANDVICENSIS EURYGNATHA* PARA CUBA

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Resumen.— En Cayo Felipe de Barlovento fue encontrado nidificando un individuo de *Sterna sandvicensis eurygnatha* dentro de una colonia de *S. s. aciflavida*. Este hecho constituye el primer registro de la subespecie para Cuba y su observación más al norte dentro de su rango de distribución en el Caribe.

Palabras claves: Cuba, primer registro, Sterna sandvicensis eurygnatha

Abstract.— FIRST RECORD OF *STERNA SANDVICENSIS EURYGNATHA* FOR CUBA. We found a breeding individual of Cayenne Tern (*Sterna sandvicensis eurygnatha*) associated with a nesting colony of Sandwich Terns (*S. s. acuflavida*) on Felipe de Barlovento Key. This represents the first report of the subspecies for Cuba and the northernmost observation for the subspecies in the Caribbean.

Key words: *Cuba, first record,* Sterna sandvicensis eurygnatha

LA GAVIOTA DE SANDWICH (*Sterna sandvicensis*) tiene tres subespecies: (1) *S. s. sandvicensis* se localiza en Eurasia; (2) *S. s. acuflavida* se distribuye por casi toda la costa atlántica de América, Bahamas, Antillas Mayores y Menores (Harrison 1983, Shealer 1999), y (3) *S. s. eurygnatha*, se encuentra distribuida por la costa este de Sur América y el Mar Caribe (Harrison 1983, Shealer 1999, Norton 2000). En el Mar Caribe, *S. s. eurygnatha* ha sido registrada nidificando en las Antillas Mayores de Puerto Rico e Islas Vírgenes, y en las Antillas Menores (Norton 2000, Shealer 1999), donde se encuentran parejas mixtas con *S. s. acuflavida* (Norton 1984, Schaffner *et al*. 1986, Shealer 1999, Hayes 2004); aunque existen algunos registros de *S. s. eurygnatha* en la costa atlántica de América, fuera de su rango de distribución (Hayes 2004).

En Cuba la Gaviota de Sandwich fue registrada desde 1893 (Gundlach 1893) y Garrido y García (1975) determinaron que la subespecie cubana era *S. s. acuflavidus*. En la actualidad esta gaviota es considerada como un común residente de verano y transeúnte (Garrido y Kirkconnell 2000).

En cayo Felipe de Barlovento localizado al norte de Ciego de Ávila en el Archipiélago Sabana–Camagüey (22°36'41"N, 78°37'27"W), el 25 de junio de 2002 se observó y fotografió un individuo de Gaviota de Sándwich más corpulento con el pico completamente amarillo, características estas que coinciden con la descripción de la subespecie *eurygnatha* (Fig. 1). Este avistamiento constituye el primer reporte de *S. s. eurygnatha* para Cuba y es el registro de nidificación más al norte de su rango de distribución en el Caribe.

El individuo se encontraba nidificando con un pequeño grupo de *S. s. acuflavidus* y *S. maxima* que formaba parte de una colonia mixta que incluía otras especies de láridos como *S. fuscata, S. anaethetus, Anous stolidus* y *Larus atricilla*. La presencia de este individuo pudiera sugerirnos el establecimiento de una pareja reproductiva de *S. s. eurygnatha* o una posible hibridación entre ambas subespecies como plantean otros observadores (Norton 1984, Schaffner *et al.* 1986, Shealer 1999, Hayes 2004), hecho que por falta de tiempo no pudimos corroborar.

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Fig. 1. Individuo de *S. sandvicensis eurygnatha* encontrado nidificando en Cayo Felipe de Barlovento, Cuba, dentro de una colonia de *S. s. acuflavida.*

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BIRDS ON THE OUTER CAYS OF THE TURKS AND CAICOS ISLANDS

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Abstract.—We surveyed outer cays of the Turks and Caicos in June 2002, and found large proportions of the Caribbean breeding populations of Brown Noddy (*Anous stolidus*), Bridled Tern (*Sterna anaethetus*), and Sooty Tern (*Sterna fuscata*). Numbers of the first two species are the greatest known from the Caribbean. Internationally important numbers were found also of White-tailed Tropicbird (*Phaethon lepturus*), Magnificent Frigatebird (*Fregata magnificens*), Laughing Gull (*Larus atricilla*), Royal Tern (*Sterna maxima*), Sandwich Tern (*Sterna sandvicensis*), Roseate Tern (*Sterna dougallii*), and Least Tern (*Sterna antillarum*). Other bird species seen are noted. Comments are made on conservation requirements.

Key words: bird records, breeding seabirds, conservation, Turks and Caicos Islands

Resumen.—LAS AVES DE LOS CAYOS EXTERIORES DE LAS ISLAS TURKS Y CAICOS. En Junio del 2002, hicimos muestreos en los cayos más externos de las islas Turks y Caicos y se encontraron elevados valores poblacionales de *Anous stolidus*, *Sterna anaethetus* and *Sterna fuscata* con respecto a las poblaciones nidificantes en el Caribe. Los valores de las dos primeras especies son los mayores conocidos para el Caribe. Además se encontraron valores poblacionales importantes internacionalmente de *Phaethon lepturus, Fregata magnificens*, *Larus atricilla, Sterna maxima*, *Sterna sandvicensis, Sterna dougallii* and *Sterna antillarum.* También fueron observadas otras especies de aves. Se hacen comentarios sobre las necesidades de conservación.

Palabras claves: aves marinas nidificantes, conservación, registro de aves, Islas Turks y Caicos

THE AVIFAUNA OF THE TURKS AND CAICOS Islands (TCI) includes 204 recorded species, of which 57 are recorded as breeding and 110 as regularly occurring non-breeding species (Bradley 1995, updated by Pienkowski 2002 and additional records). Surveys of the water- and land-birds of the main islands have been conducted, largely to facilitate conservation management (Ground 2001, Pienkowski 2002).

The small cays of both the Caicos and the Turks Banks, as well as some cliffs, stacks, and wetlands of the main islands, are important breeding sites for substantial numbers of seabirds (Buden 1987, Bradley 1995, White 1998), but there has been no or little documentation of numbers. Although the Turks & Caicos Department of Environmental and Coastal Resources (DECR) made facilities available to student visitors to count seabirds in recent years, this unfortunately did not result in data available for conservation use. Both the need to have such data available and also the preparation of an Important Bird Areas analysis for Turks and Caicos (Pienkowski 2005) necessitated a survey of the seabird cays. In this paper we report results of a survey, which took place in early June 2002.

STUDY AREA

The Turks and Caicos Islands lie between the Bahamas, Cuba, and Hispaniola. Together with south Florida, the Bahamas and north Cuba, they are part of a platform of rocks formed as limestone deposited in shallow seas as the crust slowly subsided. Rocks of the area, to a depth of several thousand metres, are of marine origin, except for some fossil soils and sand□dune rock (aeolian limestone). The region has had a marine environment from the time of its formation until the present (Sealey 1994).

The Turks and Caicos Islands are on two shallow banks (Turks Bank of 254 km^2 and the larger Caicos Bank at 5334 km^2), with deep ocean between them. The maximum altitude is about 50 m asl. There are further shallow banks (Mouchoir, Silver, and Navidad) to the southeast, but without islands; some of these banks are within TCI territory. They are important for whales and probably for feeding seabirds. The Bahamas lie on separate banks to the northwest, and share some aspects of the geography. Substantial proportions of the submerged banks are less than 2 m deep. There are also about 38,000 ha of intertidal sand banks and mud flats. Of the 500 km^2 (50,000 ha) total dry land (dry most of the time) area of the Turks and Caicos Islands, 26,669

ha (>50% of the land area) are wetlands.

On the Caicos Bank, the largest islands lie along the northern edge (Fig. 1). Several very small cays important for breeding seabirds lie on the south edge of the Caicos Bank (about 30 to 50 km south of the larger islands on the north edge of the Bank). Providenciales, North, Middle, and South Caicos are inhabited. The smaller Turks Bank includes the inhabited islands of Grand Turk and Salt Cay, and numerous smaller, uninhabited cays, several of which are important for seabirds.

METHODS

Small power boats were used to visit the cays. All cays were viewed initially from the boat. In the case of some small, rocky cays with few birds, or with the birds essentially viewable on sea cliffs or slopes, numbers were estimated from the boat. In the case of larger cays, cays with large bird populations, and those with birds on land not viewable from the sea, landings were made and ground surveys undertaken. In the case of cays with few or moderate numbers of birds in relatively open ground, direct estimates were generally easily made. In these cases, two or three observers counted the same sections independently, and reached good agreement. The difficulties in counting large seabird colonies in (usually tropical) areas of ground cover are well known (Bibby *et al.* 2000). A combination of the methods indicated by Bibby *et al.* (2000) were used. These included:

(1) Direct counts of apparently occupied nests (hereinafter called "AONs") were made of small to medium colonies on open ground. The criteria we used for AON are detailed by Bibby *et al.* (2000) and essentially included occupied or recently occupied nests, as evidenced by the presence of eggs, remains, chicks, or adults sitting tight and apparently incubating eggs or brooding chicks.

(2) Mapping and quadrat counts were used in larger colonies. Nests in these colonies were usually under cover of vegetation, producing a severe case of the conflict identified by Bibby *et al.* (2000): keeping disturbance to less than half an hour but obtaining enough data for useful estimates. We mapped the distributions of different apparent densities or markedly different habitats, both in relation to published maps and charts, and by using a portable Global Positioning System (GPS) device. Use of the maps and charts was made easier because the nesting cays were small, and the areas of colonies large in relation to the cays. Sample counts of nests were then made within the areas of similar density. Because of low visibility through vegetation under which birds were generally nesting, quadrats were generally smaller than the examples given by Bibby *et al.* (2000).

(3) Flushing counts were used in some cases, generally in addition to one of the other methods. Bullock and Gomersall (1981) and Bibby *et al.* (2000) report a fairly reliable relationship, across several species, showing that three flushed terns equate to two breeding pairs. Observations during our study suggest that this will under-estimate the number of breeding pairs in the Turks and Caicos colonies because many terns did not leave their nests even when humans were a few metres away and many terns were already in the air giving alarm calls. We believe this was due to the density of the vegetation under which many birds were nesting. Numbers estimated are given to 1 or 2 significant figures, to avoid giving misleading implications of higher precision.

The following areas were visited on the dates indicated: 1 June 2002, cays in the vicinity of western Providenciales and West Caicos; 3 June 2002, SE Caicos Bank, including Ambergris, Bush and Seal Cays; 4 June 2002, SW Caicos Bank, including Fish Cay, and further checks on West Caicos and SW Providenciales; 5 June 2002, cays off northern North and NW Middle Caicos; 7 June 2002, cays south-east of Grand Turk, including Penniston Cay from the sea; 8 June 2002, Big Sand Cay, and landing on Penniston Cay.

Financial limitations precluded visits to all seabird sites, notably several cays near South Caicos. Priority was given to remote cays from which data were most lacking and which are most difficult to visit, as well as less remote cays known to be important. Totals given will consequently be underestimates for Turks and Caicos as a whole, although less so for priority seabird species than for others.

RESULTS

Appendix 1 summarizes results for those areas visited and which held significant numbers of birds. In addition, particular aspects of the coverage of other areas are noted below.

West Caicos.—The whole coast was viewed closely from the boat, and landings were made at several locations along the east coast, conditions on

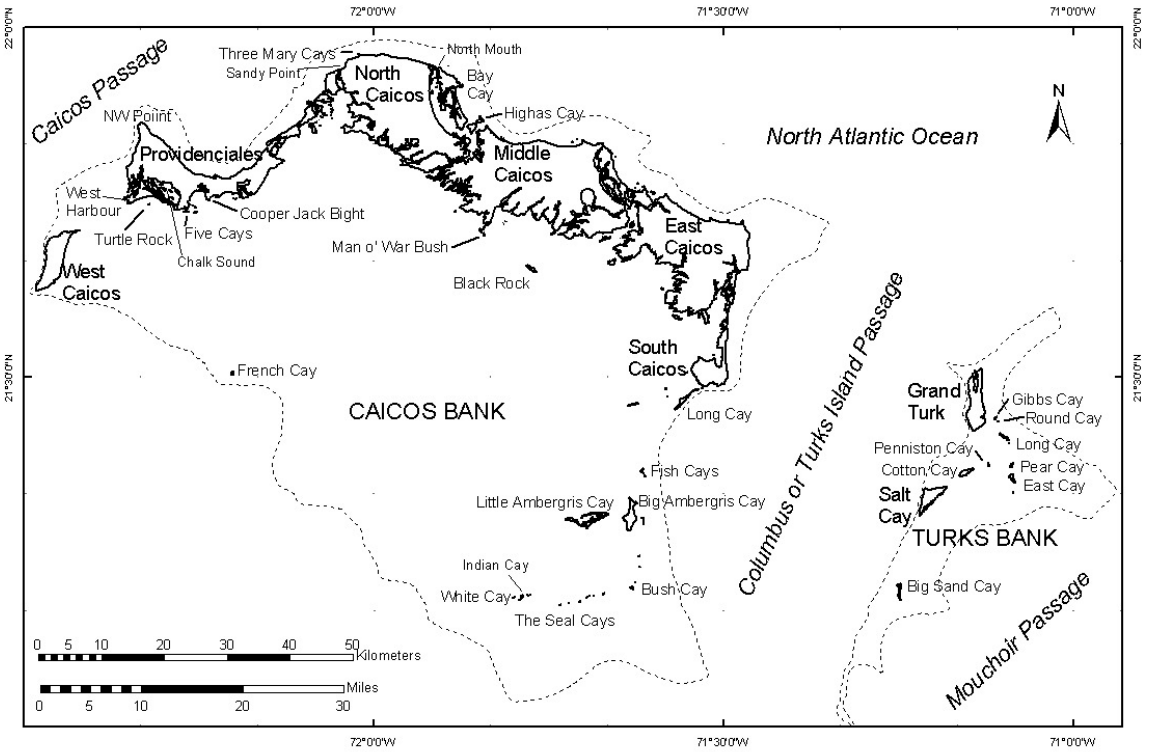

Fig. 1. Map of the Turks and Caicos Islands, showing Banks, main islands, and most of locations named in the text.

the west coast not being suitable. The interior of the island was not examined. Five Black-bellied Plovers (*Pluvialis squatarola*) were seen along the east coast, two Royal Terns (*Sterna maxima*) at the SW point, and a Laughing Gull (*Lars atricilla*) at Company Point. Single Ospreys (*Pandion haliaetus*) were seen along the east coast, Company Point, and Logwood Point.

West Providenciales.—At sea between West Caicos and Providenciales, eight Brown Noddies (*Anous stolidus)* were seen, with a Laughing Gull, a Bridled Tern (*Sterna anaethetus*) and ca 15 Brown Noddies on water and feeding west of Providenciales.

Along the west-facing shore of Providenciales, between North West Point and West Harbour, the following were seen: six Short-billed Dowitchers (*Limnodromus griseus*), six Royal Terns and singles of each of American Oystercatcher (*Haematopus palliates*), Laughing Gull and Brown Pelican (*Pelecanus occidentalis*). There was some concentration at the mouth of the Frenchman's Creek marsh complex, but sea conditions did not allow entry into the extensive marsh area, where numerous waterbirds were likely present.

Turtle Rock.—On this small rock lying about 2 km south of Providenciales, we saw one White-tailed Tropicbird (*Phaethon lepturus*) and three Bridled Terns (*Sterna anaethetus*) in hollows or ledges and they were probably nesting. Numbers could be somewhat higher. Landing was impracticable.

SW Providenciales.—From West Harbour eastward, along Froggin' Bay, Providenciales, 24 White-tailed Tropicbirds flew off cliffs, in situations suggesting nest sites. We also saw one Laughing Gull. Near the mouth of Silly Creek, we saw eight White-tailed Tropicbirds, four Laughing Gulls, and a Reddish Egret (*Egretta rufescens*), but saw no birds in the main body of Chalk Sound, despite passing close to the cays. We found eight White-tailed Tropicbirds and a Laughing Gull along Little Cay, Taylor Bay, and Sapodilla Bay, just west of Five Cays.

Five Cays.—At this group of small rocky cays lying near Providenciales, we saw the following: **William Dean Cay.**—We found a pair of White-tailed Tropicbirds and a young Laughing Gull. **Pusey Cay.**—We found one Laughing Gull, and one White-tailed Tropicbird. **Sim Cay.**—We saw four White-tailed Tropicbirds, two Bridled Terns, and one Laughing Gull. **Bay Cay.**—No birds were visible. **Middle Cay.**—At least ten Bridled Terns on

ledges and one American Kestrel (*Falco sparverius*) were seen.

Cooper Jack Bight and Rock.—We saw only two White-tailed Tropicbirds. We did not survey the other shores of Providenciales. However, visits on other occasions suggest little likelihood of significant numbers of breeding seabirds. The north shore, in particular, is mainly sea-washed beach, now much disturbed by people, and not a suitable habitat even for nesting terns.

North of North and Middle Caicos.—The north shore of North Caicos was viewed from a boat as far east as Highas Cay, off Middle Caicos. Sea conditions prevented visits farther east. We did not visit other coasts of the main islands of North, Middle, East, and South Caicos. Many of these have been the subject of detailed work (Pienkowski 2002), and major seabird colonies of the species on which this paper centres are not expected, except for those breeding in irregular marshlands.

We saw three Laughing Gulls at Sandy Point, an Osprey at a nest on the middle of the **Three Mary Cays,** small rocky cays, where we also saw a few Bridled Terns. Two Least Terns (*Sterna antillarum*) were at **Pumpkin Bluff.** An Osprey was at a nest west of **North Mouth**.

In **Bay Cay** and **East Bay Beach**, we recorded two Greater Flamingos (*Phoeni-copterus rubber*), nine Brown Pelicans, three Laughing Gulls, two Royal Terns, one Osprey, one Yellow-crowned Night-Heron (*Nyctanassa violacea*), and small numbers of shorebirds too distant for identification.

On a **rock off N of Highas Cay** there were 20 AONs (as defined in Methods) of Bridled Terns and 10 AONs of Brown Noddies. At the north point of **Highas Cay** there were ca 20 White-tailed Tropicbirds in the air off and on cliffs, one Green Heron (*Butorides virescens*), and one Brown Pelican.

South of North & Middle Caicos.—**Man o'War Bush**, an islet of red mangrove (*Rhizophora mangle*) lying off the southern marsh of Middle Caicos, is a traditional nesting site for Magnificent Frigatebirds (*Fregata magnificens*). There were ca 35 nests with young, mainly large but one small, with only 10 adults near. **Black Rock**, a low cay with a few patches of mangrove in the shallow water several km south of Middle Caicos, is probably too low to afford a safe nesting site. Here we recorded three Ospreys, ca 20 Laughing Gulls, and ca 100 Black-bellied Plovers. Although several herons and terns were resting, light and distance were too poor for species identification. We saw a Royal Tern, two Brown Noddies, and 12 Laughing Gulls feeding at various locations along our line of passage over the Caicos Bank.

Long Cay.—We inspected only the SE cliff side of Long Cay from the sea (near South Caicos, not to be confused with the cay of the same name on Turks Bank). At least 30 White-tailed Tropicbirds flew from the cliffs, and we saw 2 Brown Noddies at sea.

Fish Cays.—An Osprey was at the North end of the main cay and an old nest site in the centre of the cay, where we saw an American Kestrel and a pair of American Oystercatchers, a Laughing Gull, a juvenile Yellow-crowned Night-Heron and an adult Little Blue Heron (*Egretta caerulea*). On the bare rock slope on the east side of the cay we found a colony of ca 200 AONs of Roseate Terns (*Sterna dougalii*), with adults incubating. In dense vegetation north of the pool in the centre of the cay were at least 100 AONs of Brown Noddies, and probably rather more hidden in vegetation. At the southern end of the cay were at least 3 AONs of Brown Noddy, 25 AONs of Sooty Terns (*Sterna fuscata*), and 25 AONs Bridled Terns. There were dog tracks on the shore on the west side, indicative of a recent landing by humans with a free-running dog. Vegetation was mostly of prickly pear (*Opuntia stricta*), sand burr (*Cenchrus tribuloides*), railroad vine (*Ipomoea pes-caprae*), and seven-year apple (*Casasia clusiifolia*). A large part in the northeastern side was unvegetated rock. There was little sign of bird activity on the smaller SE Fish Cay, which was essentially bare rock.

Little Ambergris Cay.—This cay consists of several small cays surrounding a central lagoon, far removed from the larger cays of the Caicos Bank. An extremely long, shallow, submerged spit extends west from the Cay over the Bank. Resting on a sand spit were 30 Laughing Gulls, 30 Royal Terns, 200 Sandwich Terns (*Sterna sandvicensis*), and 300 Roseate Terns. Some terns, especially Sandwich, were in pair displays on the ground and in the air. In the same area we saw six Ruddy Turnstones (*Arenaria interpres*) and three Common Ground-Doves (*Columbina passerine*). Along the rest of the outer south shore of Little Ambergris Cay we saw a Brown Pelican and a Laughing Gull. We did not inspect the inner lagoon and marshes. In August 1999, these held a colony of Laughing Gulls.

Rocks between Big Ambergris Cay and Bush Cay.—There were no visible birds on these barren rocks.

Bush Cay.—Mangroves along southern shore, which probably gave the cay its name, were black mangrove (*Avicennia germinans*). Some buttonwood (*Conocarpus erectus*) were also present. The cay itself was largely covered in saltwort (*Batis maritime*), railroad vine (*Ipomoea pes-caprae*), and prickly pear (*Opuntia stricta*).

Almost all of this roughly triangular, mainly rocky cay, the longest axis of which is about 700 m, held ground-nesting terns of three species, with additional Brown Noddies nesting in mangrove bushes along part of the southern shore. Quadrat sampling of the ground nesting birds gave estimated AONs of 1750 Sooty Terns, 970 Bridled Terns, and 1750 Brown Noddies. A flush count of a section of this area gave minimum estimates of 1100, 670, and 1100. It was evident that a high proportion of the birds were not flushed from nests, so the quadrat-based estimate is probably more accurate. A further 1000 Brown Noddy AON were in the mangroves. Bridled Terns nested mainly in rocky hollows and towards edge of the cay. Sooty Terns and Brown Noddies were more generally spread, usually under some vegetation cover. Noddies also nested in mangrove bushes. Also recorded were 20 Laughing Gulls, nesting Common Ground-Doves, a pair of Gray Kingbirds (*Tyrannus dominicensis*), and a Green-tailed Warbler (*Microligea palustris*). Although this cay is a statutory sanctuary, with a permit required for landing, there were tracks of two dogs and one person on the beach – probably from earlier that day because they were fresh and unwashed by rain or tide.

Seal Cays.—There are numerous small rocks in the Seal Cays, which spread westwards from Bush Cay, to White Cay. Those with vegetation are dominated by prickly pear (*Opuntia stricta*) and sea oats (*Uniola paniculata*). The only ones on which significant numbers of birds were recorded (which tended to be the slightly larger, over about 1 ha, vegetated ones) were: **Pear Cay.**—There were 50 Brown Noddy AONs and a pair of Ospreys. **Shot Cay.**—We saw one Osprey on this small, bare rock. **Indian Cay.**—Landing on this rocky cay is not easy and was not attempted. However, much of it can be viewed well from the sea, from which it could be seen that the vegetation was essentially similar to White Cay (see below), which is only a few m away. This included correl (*Casasie calcisifolia*), wild guava, prickly pear, sand coast sedge (*Cyperus planifolius*), and seven-year apple. Sample counts from the boat suggested bird densities similar to those on adjacent White Cay, giving estimated AONs of 1200 for Sooty Tern and 2800 for Brown Noddy. In addition, we saw an Osprey. **White Cay.**—Sample counts estimated 1200 AON for Sooty Tern and 2800 for Brown Noddy, equating to a density of nearly 1 nest per 10 m^2 for the latter. Nesting birds were mainly on eggs, but a few had young up to about 2 days old. In addition, we recorded: one Bridled Tern, six Laughing Gulls, two Ruddy Turnstones, and one Osprey.

French Cay.—French Cay is a small sandy cay of about 8 ha, about 50 km to the north-west of White Cay along the southern edge of the Caicos Bank. It is vegetated mostly by bay cedar (*Suriana maritime*), Nash's tree cactus (*Opuntia nashii*), saltwort, railroad vine, bay tansy (*Ambrosia hispida*), and sea purslane (*Sesuvium portulacastrum*). The bay on the western side of the cay held an Osprey, 16 Laughing Gulls and one Bridled Tern. At the northern end of the cay were ca 200 Brown Noddies on nests in bushes, 20 AONs of Sooty Terns, at least 20 AONs of Laughing Gulls, together with one flying pair of Bridled Tern, and 60 roosting individuals of each of Sooty Terns and Brown Noddies. Along the northern part of the eastern beach were five Brown Pelicans, five Laughing Gulls, one Royal Tern, 80 Brown Noddies, and a Sooty Tern roosting on the beach. An area of Bay Cedar bushes along the eastern side of the island included ca 1000 AONs of Brown Noddies and 20 AONs of Sooty Terns. A nearby area of Bay Lavender supported ca 1000 AONs of Brown Noddies, at a similar density. Ground Doves, probably nesting, were also in the open parts of this area. Derelict boats at the southern part of the eastern beach provided loafing, resting, and roosting sites for three Ruddy Turnstones, one Brown Pelican, a pair of Ospreys and several thousand Brown Noddies. A total count was impracticable, but when the Ospreys flushed a small proportion of these, we estimated there were about 2000 in the air. The southern end of the Cay was an extensive bushy area, supporting an estimated 9000 AONs of Brown Noddies and 90 AONs of Sooty Terns. The average density of Brown Noddies in the nesting areas was about one AON per 2 m^2. A Green Heron was seen on shore rocks at the southwest of the cay. Sooty Terns were seen feeding and drinking offshore.

Gibbs Cay.—We saw three Cattle Egrets (*Bubulcus ibis*), one American Kestrel, two Ospreys with a nest on a rock on the eastern side, and two Royal Terns flying over. This cay is frequently vis-

ited by diving and picnicking parties.

Round Cay.—It was not practicable to land, but we had good views of this dome-shaped cay from the boat, with AONs totalling 100 for Brown Noddies and 1 for Bridled Tern.

Rock off NE of Long Cay.—Two American Oystercatchers were seen.

Long Cay.—This narrow cay is about 2 km long, with a rocky, low cliff edge and flat, sandy top, with some areas of scrub. At the northern end of the cay, low bushes held ten AONs of Brown Noddies and one AON of Bridled Tern, together with a Green Heron. On the low eastern side, we found one Bridled Tern AON and six Brown Noddy AONs. On the western side there were 16 Brown Noddy AONs in bushes. We found most nesting seabirds in an area of bush about 750 m long by 60-100 m wide in the south-west of the cay. This held Brown Noddy nests at an average density of about 1 per 10 m^2, a total of 5960 AONs, with a much smaller number of Bridled Terns (60 AONs).

Rock S of Long Cay.—No birds were present.

Pear Cay.—This is a sparsely vegetated cay, about 500 m long, with a rocky edge and a sandy northern end. We saw 50 Laughing Gulls flying east of Pear Cay and one Royal Tern flying over, but no breeding seabirds. A pair of American Oystercatchers was probably nesting, as was a Yellow-crowned Night-Heron. There was an old Osprey nest.

East (formerly Pinzon) Cay.—This is a roughly triangular cay, about 1.5 km NW-SE, by about 800 m at the NW end. On a sandy spit at the NE point, we saw ten Laughing Gulls and 12 Sandwich Terns. Most of this cay is sandy, with cacti, low vegetation, and some scrub. A marshy inland area in the north housed a Laughing Gull colony of at least 100 AONs. We recorded a further 50 AONs in another area SE of the central ridge. At least 30 Least Terns were nesting on the eastern shore. We saw also a Cattle Egret (*Bubulcus ibis*) and two Roseate Terns flying by.

Penniston Cay.—This is a small cay about 700 m long by up to about 100 m wide. It consists of very sharp, uneven water-dissolved rock, with low scrub in places. Landing is difficult. In the northern half of the island we estimated 1200 Brown Noddy AONs and 240 Bridled Tern AONs. Brown Noddy average density was about 1 AON / 10 m^2. At the southern end of the cay we recorded a further 100 AONs of Brown Noddy and 1800 AONs of Bridled Tern. A detached rock at the southern end held 40 further Brown Noddy AONs, and three Brown Boobies (*Sula leucogaster*) flew up from this area and remained in the vicinity, suggesting that they were nesting. Thirty Magnificent Frigatebirds took to the air from the western side of the southern part of the cay and remained over the cay throughout our visit. There were no signs of active nests in the area that they rose from, although this is apparently the traditional nesting area. We found here remains of at least six dead frigatebirds, half of these looking relatively recent (weeks, rather than months). There was an old Osprey nest on the cay.

South of Grand Turk.—We saw two West Indian Whistling Ducks (*Dendrocygna arborea*) flying south towards Cotton Cay.

South of Salt Cay.—We saw two Audubon's Shearwaters (*Puffinus lherminieri*) at sea.

Big Sand Cay.—This, the southernmost cay on the Turks Bank and one of the most remote in the country, is about 2.5 km north-south, and up to about 400 m east-west. A wide sand shore lies along the southern half of the west side. The northernmost third of the cay, north of Beacon Hill, was covered with low vegetation including prickly pear, and held only small numbers of Brown Noddies and Sooty Terns. There was an old Osprey nest on one of the small old buildings associated with the former navigation beacon. An area of bushes on the west side of the central part of the cay held Sooty Terns at a high nesting density of 1.25 AON per m^2, giving a total of 25000 AONs. We made a flush-count check when about half the birds from 10% of this area flew up; these 1200 birds equated to 1800 nests, or 36000 in the area of the 25000 estimated from quadrats. To the south of this area, three fairly distinct sub-colonies, two in low bushes and one in 15 cm high vegetation, totalled a further 1200 AONs, and a loafing area of 200 birds was nearby. Farther south an area of prickly pear cover held an estimated 16000 AONs of Sooty Terns. South of this, four further groups nesting in low vegetation totalled 1600 AONs, with a further 600 AONs on rocky outcrops at the southern end of the cay. Amongst the Sooty Terns, mainly at the rocky edges, we estimated 240 Bridled Tern AONs and, at the southern rocky outcrops, 20 Brown Noddy AONs and six White-tailed Tropicbird AONs. On the wide sandbank at the southwest of the cay were at least 20 Least Terns AONs, mostly with young. We found several Common Ground-dove nests. We recorded also eight Laughing Gulls, one Roseate Tern, a pair and one separate American Oystercatcher, one Ruddy Turnstone, and one Green

Heron. On our arrival in West Bay, a yacht was already present, with a dinghy and people ashore; these returned to the yacht as our boat approached. The statutory Sanctuary status of the island was clearly not being observed.

DISCUSSION

Audubon's Shearwater (*Puffinus lherminieri*).—Given the nature of the survey, these hole-nesting birds which visit their nests at night, were seen only at sea. There are breeding records for "a small islet off Providenciales", Long Cay and West Six Hill Cay, near South Caicos, and East Cay (Buden 1987), and local reports suggest significant breeding numbers on the small rocky cays off northwestern Middle Caicos, East Six Hill Cay, Middle Cay in the Five Cays, and NE East Caicos (Walsh-McGehee *et al*. 1998, Pienkowski 2002, 2005, 2006).

White-tailed Tropicbird (*Phaethon lepturus*).—The numbers recorded of this species will under-estimate totals for this species, because not all cliff areas likely to be used were covered, and because the survey method was not designed to detect all birds in nest burrows. There is some suggestion of distribution changes, as White (1998) advised birders to visit East Cay to see Tropicbirds, but we recorded none there.

Brown Booby (*Sula leucogaster*).—This species has been recorded from Penniston Cay since 1930 (Buden 1987) and breeding has long been suspected but not proved (Bradley 1995). The three birds flushed by this survey were probably nesting, but direct confirmation remains lacking. This is the only site in the country regularly used by this species.

Brown Pelican (*Pelecanus occidentalis*).—Brown Pelicans were widely recorded, but the numbers noted represent only a small proportion of the country's total, most occurring in the wetland areas on the larger islands (Pienkowski 2002, 2005).

Magnificent Frigatebird (*Fregata magnificens*).—The Penniston Cay colony has been known since a report of 25 pairs apparently breeding in 1966 (Buden 1987). The larger colony at Man o'War Bush on the south side of Middle Caicos was found (at least by ornithologists) more recently. Local opinion is that numbers there have been stable for many years. Our population estimates in 2000 and 2001 were about 60 AONs, and Walsh-McGehee et al. (1998) reported 100-200 pairs. However, the apparent decline to 35 in the present survey may be seasonal, as the earlier counts were in April, and the breeding season is prolonged. The absence of nesting birds, and the presence of dead bodies, at Penniston is somewhat concerning, but no reason is apparent.

Osprey (*Pandion haliaetus*) and American Kestrel (*Falco sparverius*).—The wide distribution of Ospreys throughout the cays is notable, as well as the fairly wide distribution of Kestrels, not normally associated with seabird cays.

Common Ground-Dove (*Columbina passerina*).—We found these commonly on many cays, and most were nesting, with nests with eggs found on several cays.

American Oystercatcher (*Haematopus palliates*).—Clearly territory-holding pairs were seen on several of the small cays, and the breeding population is evidently spread throughout the country.

Black-bellied Plover (*Pluvialis squatarola*) and Ruddy Turnstone (*Arenaria interpres*).—Summering, probably immature, birds of these arctic-breeding species were notable, especially the fairly large numbers of the Black-bellied Plover – despite most of the suitable habitat not being inspected. Numerous other personal observations also indicate high usage of shores throughout TCI by this species, especially in the non-breeding season.

Laughing Gull (*Larus atricilla*).—Although seen throughout the cays and islands, we found breeding colonies only on East Cay (internationally important at 2% of the Caribbean population; Anonymous 2003) and French Cay. A larger colony was found in north-eastern Little Ambergris Cay in 1999 (pers. obs.) but it was not possible to check this on this occasion.

Royal Tern (*Sterna maxima*), Sandwich Tern (*Sterna sandvicensis*), Gull-billed Tern (*Sterna nilotica*), and Common Tern (*Sterna hirundo*).—The first two species were recorded only in non-breeding situations (although in some cases in pairing displays) and the last two not at all. The breeding of the first three is thought to be fairly irregular, and in many cases using salt-pans and marshes on the larger islands. The irregularity is especially the case with the Gull-billed Tern (Pienkowski 2002, 2005). We found Little Ambergris Cay to be a resting area for internationally important proportions of the Caribbean populations of Royal Tern (2%), Sandwich Tern (4%) and Roseate Tern (3%; Anonymous 2003). Common Tern is on the edge of its breeding range but there have been frequent re-

cords in TCI for many years, probably resulting from the breeding colony found on East Caicos in 2004 (Pienkowski 2006).

Roseate Tern (*Sterna dougallii*).—The only breeding colony found was on Fish Cay, internationally important at 4% of the Caribbean breeding population (Anonymous 2003). White (1998) reported breeding on rocks south of Salt Cay.

Least Tern (*Sterna antillarum*).—We found two colonies on cays, but larger colonies occur on some of the larger islands (Pienkowski 2006).

Bridled Tern (*Sterna anaethetus*), Sooty Tern (*Sterna fuscata*), and Brown Noddy (*Anous stolidus*).—The general distribution of these three species in the area has been known for some time (*e.g.* Buden 1987), but a striking feature of the present survey was the number of the birds, as well as the differences between cays. For all three species, the numbers represented significant proportions of the Caribbean population. For Bridled Tern and Brown Noddy, the breeding numbers were of global significance and represented large proportions of the recorded Caribbean populations (Anonymous 2003).

Penniston Cay supported internationally important breeding numbers of Bridled Terns (1% of global and 33% of BirdLife International's estimate of Caribbean populations), with smaller, but still internationally important, numbers on other cays, primarily Bush Cay with some notably on Big Sand, Long, and Fish Cays.

Big Sand Cay's breeding Sooty Terns comprised an internationally important proportion of the Caribbean population (18% of the BirdLife figures), whereas Bush and Seal Cays (with smaller numbers on the other cays) held 2% of the Caribbean breeding population of Sooty Terns.

The cays held 5% of the global population of the Brown Noddy, with French Cay and Long Cay holding globally important numbers in their own rights. Internationally important breeding proportions, when viewed against the Caribbean population, were supported also on Penniston Cay and the Bush/Seal Cay group (particularly Indian and White Cays within the latter). The overall total was actually larger than BirdLife's estimate of the Caribbean breeding population, which therefore requires adjustment. On this basis, therefore, these Cays constitute numerically the most important breeding area for this species reported in the Caribbean.

Some nesting habitat differences between the species were evident. Bridled Terns favoured rocky hollows, normally found in the cliffs around cays. However, there are wider bands of this habitat on some cays such as Bush Cay, and almost the whole of Penniston Cay consists of this habitat, accounting for the exceptional numbers there. All three species nested on the ground, usually under cover of some sort, usually vegetation for Sooty Tern and Brown Noddy. In addition, Brown Noddies nested abundantly in bushes. The densities of nests tended to vary considerably between cays but rather little within a habitat type on any one cay. Average densities of Brown Noddy nests ranged from 0.01-0.5 per m^2, with most around 0.1 per m^2. Those of Sooty Tern ranged from 0.01-1.25 per m^2. All these figures are thought to be under-estimates, because of the difficult nature of the terrain and vegetation. The Sooty Tern colony on Ascension Island in the mid-Atlantic stood at 194,000 pairs in 1997, at an average density of 2.12 per m^2 (Rowlands 2001).

Variability.—The annual variability in nesting for several species has been noted above. It is not known how much this relates to the other species. Dean (1999) reported thousands of Sooty Terns on French Cay and hundreds of Brown Noddies sitting on eggs. This is the reverse of the relative proportions of species surveyed there by us. However, Dean's survey was in early March and ours in early June. It is not known, therefore, whether this reflects a difference between years, or sampling of a regular annual pattern at different seasons in different years, or some other difference. The breeding cycle of Sooty Terns at Ascension Island in mid-Atlantic famously averages a 9.6-monthly, rather than annual, cycle (Ashmole 1963); this is probably as rapid a cycle as is possible in this fairly seasonless environment. At St Helena, 1300 km south of Ascension, the same species has an annual cycle (Rowlands *et al.* 1998). Clearly, more information is required on the biology of these species in the Turks and Caicos Islands before a formal monitoring programme could be developed.

Conservation.—The importance to the conservation of these birds of these cays is not in doubt. On the Caicos Bank, Bush, Seal, and French Cays constitute a statutory Sanctuary, while Little Ambergris and Fish Cays are a nature reserve of the Turks and Caicos National Trust, a not-for-profit membership-based conservation organisation established by statute. On the Turks Bank, Big Sand Cay, and Long Cay are statutory sanctuaries. Other small cays near Grand Turk constitute Grand Turk Cays Land and Sea National Park (a recreational category); Penniston Cay and East Cay need transferring from this to

sanctuary status. The sanctuary status is not widely realised, and there are many unauthorised landings from yachts, and probably boats carrying illegal immigrants, etc. More signage, public information, and enforcement are needed to make the protection effective.

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Appendix 1. Numbers of main species of birds found in main area. AON = Apparently Occupied Nest; AOT = Apparently Occupied Territory; other numbers = individuals.

Cay	White-tailed Tropicbird	Magnificent Frigatebird	Osprey	Black-bellied Plover	American Oystercatcher	Laughing Gull
WEST CAICOS shores			3	5		1
PROVIDENCIALES						
West shore					1	1
Turtle Rock	1 AON					
Froggin' Bay	24 AON					
Silly Creek	8 AON					4
Taylor & Sapodilla Bays	8 AON					1
Five Cays						
William Dean Cay	1 AON					1
Pusey Cay	1 AON					1
Sim Cay	4 AON					1
Middle Cay						
Cooper Jack Bight and Rock	2					
N OF NORTH & MIDDLE CAICOS						
Three Mary Cays			1 AON			
N shore of North Caicos			1 AON			3
Bay Cay & East Bay Beach			1			3
Rock N of Highas Cay						
N pt of Highas Cay	20 AON					
S OF NORTH & MIDDLE CAICOS						
Man o'War Bush		35 AON				
Black Rock			3	100		20
Long Cay, S Caicos	30 AON					
CAICOS BANK OUTER CAYS						
Fish Cay			1		1 AOT	1
Little Ambergris Cay - W end						30
Bush & Seal Cays						
Bush Cay						20
Pear Cay			1 AON			
Shot Cay			1			

Appendix 1. (Continued)

Cay	Royal Tern	Sandwich Tern	Roseate Tern	Least Tern	Bridled Tern	Sooty Tern	Brown Noddy
WEST CAICOS shores							
PROVIDENCIALES	2						
West shore							
Turtle Rock							
Froggin' Bay	6						
Silly Creek					3 AON		
Taylor & Sapodilla Bays							
Five Cays							
William Dean Cay							
Pusey Cay							
Sim Cay							
Middle Cay							
Cooper Jack Bight and Rock					2 AON		
N OF NORTH & MIDDLE CAICOS					10 AON		
Three Mary Cays							
N shore of North Caicos							
Bay Cay & East Bay Beach							
Rock N of Highas Cay							
N pt of Highas Cay				2			
S OF NORTH & MIDDLE CAICOS	2						
Man o'War Bush					20 AON		10 AON
Black Rock							
Long Cay, S Caicos							
CAICOS BANK OUTER CAYS							
Fish Cay							
Little Ambergris Cay - W end							
Bush & Seal Cays							
Bush Cay							
Pear Cay							
Shot Cay							

Appendix 1. (Continued)

Cay	White-tailed Tropicbird	Magnificent Frigatebird	Osprey	Black-bellied Plover	American Oystercatcher	Laughing Gull
Indian Cay			1			
White Cay			1			6
French Cay			1 AOT			20 AON
TURKS BANK CAYS						
Gibbs Cay			1 AOT			
Round Cay						
Long Cay					1 AOT	
Pear Cay					1 AOT	
East Cay						150 AON
Peniston Cay		30				
Big Sand Cay	6 AON				2 AOT	8
TOTAL AON/AOT	103	35	5		4	170
TOTAL individuals (counting AON/AOT as 2), rounded to 2 significant figures	110	100	21	110	11	430

Appendix 1. (Continued)

Cay	Royal Tern	Sandwich Tern	Roseate Tern	Least Tern	Bridled Tern	Sooty Tern	Brown Noddy
Indian Cay			200 AON		25 AON	25 AON	100 AON
White Cay					1	1200 AON	2800 AON
French Cay	1				1 AON	130 AON	11000 AON
TURKS BANK CAYS	2						
Gibbs Cay					1 AON		100 AON
Round Cay					60 AON		6000 AON
Long Cay	1						
Pear Cay		12	2	30 AON			
East Cay					2000 AON		1300 AON
Peniston Cay			1	20 AON	240 AON	44000 AON	20 AON
Big Sand Cay							
TOTAL AON/AOT	44		200	50	3332	48305	26930
TOTAL individuals (counting AON/AOT as 2), rounded to 2 significant figures	44	210	700	100	6700	97000	54000

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FIRST CONFIRMED BREEDING OF THE WEST INDIAN WHISTLING-DUCK AT ABACO, BAHAMAS

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Abstract.—A pair of West Indian Whistling-Ducks (*Dendrocygna arborea*) with three chicks were found near Crossing Rock, Abaco, Bahamas, on 6 January 2001, providing the first confirmed breeding record for Abaco.
Key words: *Abaco, Bahamas, breeding,* Dendrocygna arborea*, West Indian Whistling-Duck*

Resumen.—CONFIRMADA POR PRIMERA VEZ LA CRÍA DE LA YAGUASA EN ABACO, BAHAMAS. Se observó una pareja de yaguasas (*Dendrocygna arborea*) con tres crias cerca de Crossing Rock, Abaco, Bahamas, el 6 enero del 2001, lo que constituye el primer registro de nidificación para Abaco.
Palabras claves: Abaco, Bahamas, Dendrocygna arborea*, nidificación, Yaguasa*

DURING A VISIT TO CROSSING ROCK, ABACO, Bahamas in the early morning of 6 January 2001, we saw two men wading in a brackish marsh adjacent to a road. They were looking for the carcass of a West Indian Whistling-Duck (*Dendrocygna arborea*) that was killed by a vehicle the previous evening while crossing the road with its mate and three chicks. Shortly afterward, one of the men retrieved the bird, which was decapitated. We learned that the other adult and chicks, stunned by the collision, had been captured and placed in a cage. We asked if we could see the other birds, and the man agreed to show them to us.

He explained that the ducks belonged to another man, who intended to eat them. Aware of the rarity of West Indian Whistling-Ducks in the Bahamas, we offered to buy them for $40. This offer was accepted, so we transported the ducks back to the marsh, and released them.

The adult immediately fled into the marsh and began to call to its chicks. As we released the chicks, two headed quickly toward the adult, but the third was disoriented and weaker than its siblings. We were uncertain whether the third chick would survive.

The West Indian Whistling-Duck occurs widely in the Caribbean and is found in the Bahamas, the Greater Antilles, Antigua, and Barbuda. Despite its large range, the status of the West Indian Whistling-Duck is "precarious" (Collar *et. al*. 1992) and populations are declining (Raffaele *et al*. 1998) due to widespread poaching, pesticide use, and habitat destruction. In the Bahamas, West Indian Whistling-Ducks now are "rare or very rare" throughout (Collar *et al*. 1992). Our observation seems to be the first that confirms breeding at Abaco (Collar *et al*. 1992, W. Bracey pers. comm.). Copies of our photographs have been archived at The Bahama Avian Records Committee, Bahamas National Trust, Nassau.

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PRÉCISIONS SUR CINQ ESPÈCES D'OISEAUX DONT LA NIDIFICATION A ÉTÉ DÉCOUVERTE EN GUADELOUPE (ANTILLES FRANÇAISES) DEPUIS 1997

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Résumé.—Des informations sont fournies sur 5 espèces nouvellement nicheuses en Guadeloupe. L'Erismature rousse (*Oxyura jamaicensis*) trouvée nicheuse en 2003 (au moins 3 couples) et en 2004. Un couple de Foulque d'Amérique (*Fulica americana)* a été trouvé en 2001 et deux en 2004. Un à quatre couples de Gravelot de Wilson (*Charadrius wilsonia*) nichent régulièrement depuis 1998. L'Engoulevent piramidig (*Chordeiles gundlachii*) est observé annuellement depuis l'an 2000 et le premier nid a été découvert en 2003. Le Merle à lunettes (*Turdus nudigenis*) a été noté nicheur en 1997 et plusieurs couples sont présents depuis.

Mots-clés: Charadrius wilsonia, Chordeiles gundlachii, Fulica americana, *Guadeloupe, nidification*, Oxyura jamaicensis, Turdus nudigenis

Abstract.—INFORMATION ON FIVE NEW BREEDING BIRD SPECIES DISCOVERED IN GUADELOUPE (FRENCH ANTILLES) SINCE 1997. Information is given on five new breeding species in Guadeloupe, French West Indies. The Ruddy Duck (*Oxyura jamaicensis*) has been found breeding in 2003 (at least 3 pairs) and 2004. One pair of American Coot (*Fulica americana*) was found in 2001 and two in 2004. One to four pairs of Wilson's Plover (*Charadrius wilsonia*) have been breeding annually since 1998. The Antillean Nighthawk (*Chordeiles gundlachii*) has been recorded annually since 2000 and the first nest was discovered in 2003. The Bare-eyed Robin (*Turdus nudigenis*) was found breeding in 1997, and a few pairs have been present ever since.

Key words: Charadrius wilsonia, Chordeiles gundlachii, Fulica americana*, Guadeloupe, new nesting species,* Oxyura jamaicensis, Turdus nudigenis

EN 1995, LA LISTE DES OISEAUX de Guadeloupe (Feldmann *et al*. 1996) ne mentionnait aucune des espèces citées ci-dessous en tant que nicheuses. Une mise à jour de cette liste (Feldmann, 1998) faisait apparaître le Merle à lunettes *Turdus nudigenis* et le Gravelot de Wilson *Charadrius wilsonia*, mais sans fournir de détail sur leur nouveau statut. Depuis cette date, l'avifaune nicheuse de Guadeloupe s'est encore enrichie de trois nouvelles espèces: l'Erismature rousse *Oxyura jamaicensis*, la Foulque d'Amérique *Fulica americana* et l'Engoulevent piramidig *Chordeiles gundlachii*. Nous fournissons ici des détails sur le statut reproducteur de ces espèces en Guadeloupe, les observations dues aux auteurs de cette note étant indiquées par leurs initiales.

Erismature rousse (*Oxyura jamaicensis*).—Le 16 février 2003 AL et FD observent une nichée de sept poussins sur le barrage de Gaschet à Port-Louis ; ce couple avait été signalé quelques jours auparavant par AR. Au cours de cette année 2003, au moins trois nichées différentes ont été comptabilisées pour un total d'au moins 19 poussins. En 2004, un nouveau cas de reproduction a été noté le 13 avril (un poussin de huit jours; AL et Pierre Yésou).

Aux Antilles, c'est la sous-espèce *jamaicensis* qui est présente où elle est sédentaire et considérée comme localement commune à New Providence (Bahamas) et dans les Grandes Antilles. Elle est seulement localisée et peu commune ailleurs aux Bahamas et rare aux Îles Vierges et à Barbade, elle est exceptionnelle aux Îles Caïman et ailleurs dans les Petites Antilles. Des migrateurs de la sous-espèce *rubida* en provenance d'Amérique du Nord viennent augmenter localement les effectifs d'octobre à mars. La sous-espèce des Antilles a décliné significativement aux Bahamas, à Porto-Rico et aux Îles Vierges au point d'être menacée dans ces îles. Cependant les populations de Cuba, de la Jamaïque et d'Hispaniola apparaissent relativement stables (Raffaele *et al*. 1998). Cette sous-espèce est en expansion dans les Petites-Antilles où elle a aussi été trouvée nicheuse à Saint-Martin depuis 2002 (Brown et Collier 2004). Cette espèce appartient à la liste des espèces protégées en Guadeloupe mais la pression de chasse dans notre département, notamment sur le barrage de Gaschet, et le braconnage dont elle est l'objet rendent très incertaine son installation durable en Guadeloupe; à moins d'être

réalimentée chaque année par de nouveaux arrivants.

Foulque d'Amérique (*Fulica americana*).—Le premier cas de nidification de cette espèce en Guadeloupe continentale a été découvert le 26 février 2001: la ponte a eu lieu vers la seconde quinzaine de janvier, aucun poussin n'a atteint l'envol (Levesque *et al*. 2002). Un suivi régulier du barrage de Gaschet a permis d'observer un nouveau cas de nidification le 13 avril 2004 (Pierre Yésou et AL): d'après l'état de leur plumage, les quatre poussins étaient âgés de quatre jours au plus (M. Fouquet, com. pers.) Une nouvelle visite le 25 mai 2004 a permis d'observer deux couples accompagnés de quatre et sept jeunes, tous âgés d'environ un mois et demi (AL). Le 13 juillet 2004, un nouveau cas de nidification est repéré sur ce même site avec la présence d'un jeune d'environ cinq jours. Ce jeune est probablement issu d'une seconde ponte d'un des deux couples ayant niché en début d'année.

Aux Antilles, cette espèce est un nicheur peu commun aux Bahamas, à Cuba, à la Jamaïque et à Hispaniola. Elle se reproduit occasionnellement aux Îles Vierges et est considérée comme rare ou égarée dans les Petites Antilles (Raffaele *et al*. 1998). Cette espèce semble donc en expansion mais la pression de chasse sur ce site de nidification et le braconnage dont elle est l'objet rendent aléatoire son installation durable en Guadeloupe.

Gravelot de Wilson (*Charadrius wilsonia*).—En 1998, un suivi de la Grande Saline à la Pointe des Châteaux, sur la commune de Saint-François, a permis de localiser trois nids plus un quatrième couple cantonné le 19 mai (AL). Cette même année, une nichée de deux poussins a été découverte le 11 juillet sur le marais de Port-Louis (AL et Erwan Le Cornec). Depuis, un à quatre couples nichent chaque année sur la Grande Saline. La période de ponte s'étale de début avril à la première décade de juillet.

Cette espèce dont la répartition va du sud de l'Amérique du Nord au nord de l'Amérique du Sud, en passant par l'Amérique centrale et les Antilles, niche communément aux Bahamas, dans les Grandes Antilles et dans le nord des Petites Antilles. Il est difficile de savoir si sa découverte en tant que nicheur en Guadeloupe est due à une expansion ou à un manque de prospection. Même si cette espèce est protégée, la pression de chasse en Guadeloupe et l'ouverture dès le 14 juillet induisent un dérangement qui compromet largement son implantation en dehors des zones interdites à la chasse comme la Pointe des Châteaux.

Engoulevent piramidig (*Chordeiles gundlachii*).—Le 21 juin 2000, l'Engoulevent piramidig a été observé pour la première fois en Guadeloupe, sur la commune de Baie-Mahault (Levesque 2001). La même année il était également repéré à Belle Plaine, commune des Abymes (Daniel Imbert, com. pers.). En 2001, des mâles chanteurs étaient vus et entendus sur ces mêmes sites. Il en fut de même en 2002, et cette année au moins un autre mâle chanteur était localisé sur la commune de Pointe-à-Pitre. Après deux années de recherche, la nidification a été découverte le 11 juillet 2003 à Belle Plaine: un nid contenant un œuf sera écrasé par un véhicule quelques jours plus tard (AL et FD). Un nouveau nid contenant un œuf sera découvert sur ce même site le 13 juillet 2004 (AL). Sur quatre années de suivi, la date d'observation la plus précoce a été le 23 avril (2002 et 2004, FD et AR) et la plus tardive le 15 octobre 2003 (AL).

L'Engoulevent piramidig niche aux Bahamas, dans les Grandes Antilles et aux Îles Vierges. Il hivernerait en Amérique du Sud (Raffaele *et al*. 1998). L'espèce semble en expansion car même si elle a pu passer inaperçue pendant quelques années, son chant est caractéristique et il est peu probable qu'elle ait pu échapper aux observateurs durant de longues années. Les milieux fréquentés ainsi que ses mœurs crépusculaires et nocturnes la rendent peu sensible à la chasse en Guadeloupe. On peut donc être confiant quant à son installation durable dans notre département.

Merle à lunettes (*Turdus nudigenis*).—Cette espèce a été signalée en 1987 dans les Grands Fonds (Bénito-Espinal et Hautcastel 2003), puis elle n'a plus été mentionnée jusqu'à ce que sa reproduction soit découverte le 12 juillet 1997 sur la commune de Capesterre Belle-Eau (Levesque 1997). Depuis, plusieurs couples sont présents chaque année sur ce site, et l'espèce semble étendre lentement sa répartition: Bénito-Espinal et Hautcastel (2003) ont noté sa présence en 1998 à Morne à l'Eau, un individu a été observé en décembre 2003 à Beautiran sur la commune de Petit-Canal (Mikaël Champion, com. pers.) et un autre le 10 septembre 2004 à la Pointe de la Verdure au Gosier (AL), alors que d'autres mentions en partie occidentale de Grande-Terre restent à confirmer.

Le Merle à lunettes est présent en Amérique du Sud et dans le sud des Petites Antilles jusqu'en Martinique où il a été observé pour la première fois en 1951 (Raffaele *et al.* 1998). L'espèce semble donc s'étendre lentement vers le nord des Petites Antilles. Depuis sa découverte en Guadeloupe, elle

a aussi été trouvée nicheuse en Dominique (Stephen Durand, com. pers.). Cette espèce serait à surveiller étroitement pour son impact possible sur la Grive à pattes jaunes *Cichlherminia lherminieri*, espèce classée vulnérable par BirdLife International (2000). En effet, cette espèce est très agressive à l'encontre des autres grives et il est suspecté qu'elle pourrait avoir joué un rôle dans la quasi disparition de la Grive à pattes jaunes à Sainte Lucie (Raffaele *et al*. 1998). Etant donné la dynamique de sa population et la menace possible sur la Grive à pattes jaunes, il devrait être envisagé de l'inscrire sur la liste des espèces chassables en Guadeloupe.

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ESTADO DE LA POBLACIÓN DEL FRAILECILLO BLANCO (*CHARADRIUS ALEXANDRINUS*) EN RÍO MÁXIMO, CUBA, DURANTE EL PERIODO 2002 – 2003

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Resumen.—El Frailecillo Blanco (*Charadrius alexandrinus nivosus*) se considera un playero amenazado en la región del Caribe y sureste de Norteamérica. Durante 6 meses de estudio en el Refugio de Fauna Río Máximo, Cuba, fue registrada una población de Frailecillo Blanco realizando actividades de alimentación y descanso. El tamaño promedio de la población fue de 36,2 ± 8,3 individuos (n = 18) y resultó mayor en la temporada no reproductiva (63,8 ± 19,2; n = 15) que en la reproductiva (34,8 ± 11,0; n = 5). Las mayores cantidades de frailecillos se registraron durante los meses con mayor proporción de área anegada (mayo y noviembre: 132 y 121 individuos, respectivamente). Junio fue el mes con menor cantidad de individuos, probablemente debido al periodo reproductivo de la especie. El tamaño promedio de la población de Frailecillo Blanco representó 5,3 % de la población regional, por lo que el Refugio de Fauna Río Máximo parece constituir un importante sitio para la conservación de la especie en el Caribe.

Palabras claves: Charadrius alexandrinus*, Cuba, estado poblacional, Frailecillo Blanco, Río Máximo*

Abstract.—SNOWY PLOVER POPULATION STATUS (*CHARADRIUS ALEXANDRINUS NIVOSUS*) IN RÍO MÁXIMO, CUBA, DURING THE 2002 - 2003 PERIOD. The Snowy Plover (*Charadrius alexandrinus nivosus*) is considered threatened in the Caribbean and southeastern North America. During 6 mo of surveys in Río Máximo Fauna Refuge, Cuba, we documented a population of Snowy Plovers feeding and resting in the area. The mean population size was 36.2 ± 8.3 birds (n = 18), with higher values during the non-reproductive season (63.8 ± 19.2; n = 15) than in the reproductive (34.8 ± 11.0; n = 5). Maximum plover numbers were during the months with the highest proportional flooded area (May and November, 132 and 121, respectively). June was the month with the minimum number of individuals, perhaps due to the breeding season of the species. The mean population size of Snowy Plover recorded represent about 5.3 % of the regional population; thus, Río Máximo Fauna Refuge can be considered as an important site for Snowy Plover conservation in the Caribbean.

Key words: Charadrius alexandrinus, *Cuba, population status, Snowy Plover*, *Río Máximo*

EL FRAILECILLO BLANCO (*Charadrius alexandrinus*) es una de las siete especies de la familia Charadriidae presentes en Cuba (Raffaele *et al*. 1998). Esta pequeña limícola, de amplia distribución mundial, ha sufrido una intensa disminución de sus poblaciones en gran parte de sus localidades de cría (Martínez-Vilalta 1985, Jönssón 1991, 1995, Wiersma 1996, Figuerola *et al*. 2001), llegando a un estado crítico en países como Gran Bretaña y Noruega (Cramp y Simmons 1983). La transformación del hábitat, el incremento de las actividades humanas en playas y zonas costeras y la introducción de depredadores, son reconocidos como los principales responsables de la disminución de sus poblaciones (Page *et al*. 1991, Canevari *et al*. 2001, Figuerola *et al*. 2001). Similares causas han conllevado a que la subespecie, *C. a. nivosus*, se considere amenazada en el sureste de Norteamérica y el Caribe, (Raffaele *et al*. 1998).

Aunque bien documentada la distribución y abundancia de la especie al oeste de Norteamérica, la información para el Caribe está limitada a nivel local (Gorman y Haig 2002). Particularmente en Cuba, el Frailecillo Blanco es considerado muy raro, de difícil localización y no se tienen datos sobre el estado de sus poblaciones (Blanco *et al*. 2001). Este autor refiere algunas observaciones de frailecillos blancos en cayos cercanos a la Isla de la Juventud, Cayo Cruz del Padre, cayos al este de Villa Clara, Cayo Sabinal y la costa norte de Holguín. Con el objetivo de contribuir a incrementar la información referente a las poblaciones del Frailecillo Blanco en el Caribe, y en particular en Cuba, hemos considerado de interés dar a conocer algunos datos poblacionales obtenidos en el Refugio de Fauna Río Máximo.

ÁREA DE ESTUDIO Y MÉTODOS

El Refugio de Fauna Río Máximo se localiza en-

tre la desembocadura de los ríos Máximo y Cagüey, al norte de la provincia Camagüey (77º27'W, 21º45'N). Es considerado un ecosistema costero - marino permanente o temporalmente inundado que incluye diversos tipos de humedales como ríos, esteros, ensenadas, cayuelos de mangle, lagunas salobres, llanuras de lodo, entre otros. Las observaciones fueron realizadas en un itinerario de censo con una longitud de 2,0 km y un tiempo de recorrido aproximado de 60 minutos. Los censos tuvieron lugar en la mañana (0700 - 0900 hr) y la tarde (1600 - 1800 hr) de los meses de mayo, junio, octubre, y noviembre del año 2002 y los meses de enero y febrero de 2003 (n = 18). Se calcularon los estadísticos de posición y dispersión de la media poblacional (media ± error estándar) para el periodo de estudio y la temporada del año (R: reproductiva, NR: no reproductiva). Para esto último se siguió el criterio de Raffaelle *et al.* (1998) quien ubica la temporada reproductiva entre los meses de enero a junio, quedando la no reproductiva entre julio y diciembre.

RESULTADOS Y DISCUSIÓN

La población de Frailecillo Blanco se mantuvo durante todos los conteos utilizando las zonas menos anegadas de una llanura de lodo de aproximadamente 80 ha. Este hábitat se caracterizó por su gran variabilidad hidrológica, dada principalmente por la acción de vientos provenientes del nordeste, las precipitaciones y el ciclo de mareas. Los individuos observados utilizaron el sitio como área de alimentación y descanso.

El tamaño promedio de la población durante los meses de muestreo fue de 36,2 ± 8,3 individuos (n = 18). En la Fig. 1 se muestran los valores poblacionales promedios para las temporadas reproductiva y no reproductiva, no detectándose diferencias significativas entre estos (prueba t de Student: t = -1,34, gl = 16, P = 0,19). Noviembre fue el mes de mayor abundancia promedio (59,0 ± 24,2 individuos, n = 4, rango = 6 – 121), seguido por el mes de mayo (50,3 ± 15,6 individuos, n = 8, rango = 3 – 132). En este último mes se realizó el mayor conteo de individuos durante el estudio (Fig. 2). Los menores registros de la población se realizaron en junio y febrero.

El tamaño poblacional encontrado en el área de estudio es mayor que el ofrecido por Goosen *et al.* (1994) para una localidad cubana durante la etapa no reproductiva. De igual forma, la población resulta mayor que la observada en Cabo Rojo, Puerto Rico (Collazo *et al.* 1995), sitio donde se encontraban los mayores reportes documentados de la región

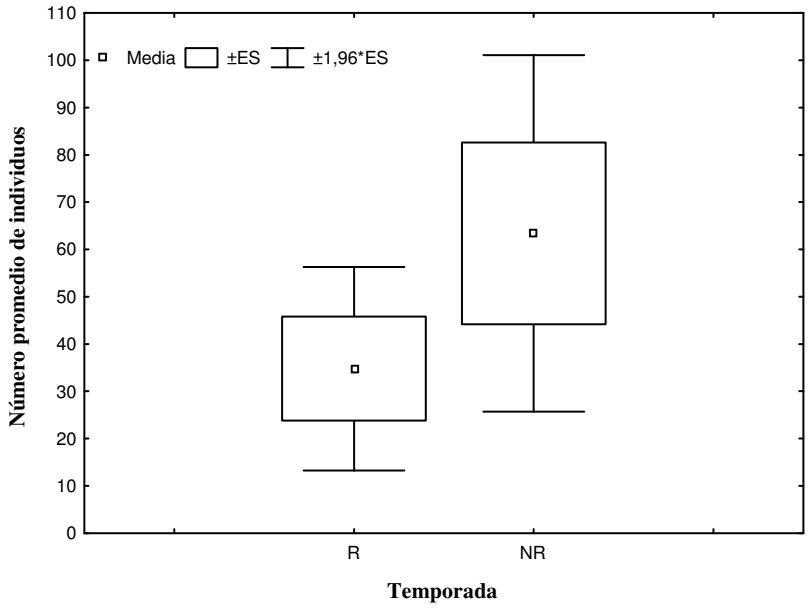

Fig. 1. Abundancia promedio de la población de Frailecillo Blanco (*Charadrius alexandrinus*) en las temporadas reproductiva (R: enero – junio, n = 13) y no reproductiva (NR: julio – diciembre, n = 5) del periodo 2002 – 2003, en el Refugio de Fauna Río Máximo.

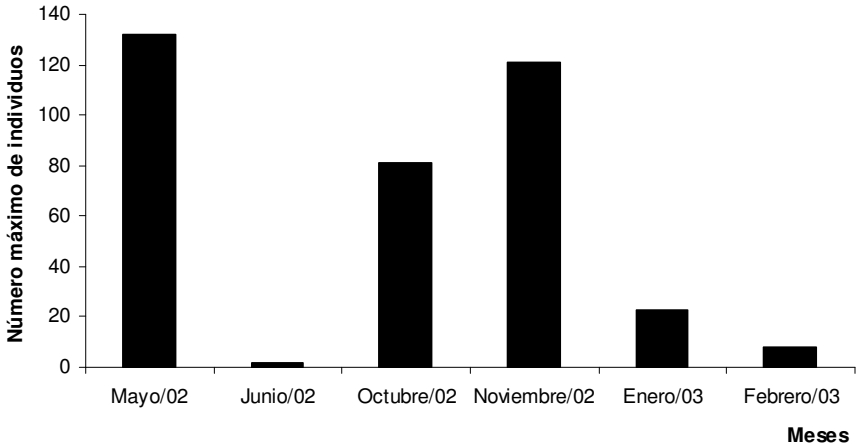

Fig. 1. Valores máximos de los conteos de Frailecillo Blanco (*Charadrius alexandrinus*) durante seis meses del periodo 2002 – 2003, en el Refugio de Fauna Río Máximo.

caribeña (Gorman y Haig 2002). El número total de Frailecillo Blanco estimado para el Caribe es de unos 2,200 a 2,800 individuos (Wetlands International 2000). Los valores encontrados en Río Máximo representan aproximadamente 5.3 % de la población regional, por lo que el Refugio de Fauna Río Máximo parece constituir un importante sitio para la conservación de la especie en la región.

Raffaele *et al.* (1998) sugiere que estas aves no permanecen en las costas cubanas una vez que culmina el periodo reproductivo. Sin embargo nuestros resultados demuestran la presencia de una población residente en el área de estudio, que aumenta sus efectivos poblacionales justamente durante el periodo no reproductivo. Los valores máximos encontrados en mayo y noviembre fueron muy similares, lo que podría indicar que se trata de la misma población. La alta variabilidad de la población dentro del área de estudio sugiere que los individuos se mueven a localidades cercanas y que son capaces de detectar y regresar al sitio de estudio cuando ocurren cambios favorables para ellos en el lodazal (disponibilidad de hábitat y/o alimento).

Aparentemente la abundancia de frailecillos blancos en la localidad estuvo relacionada con la disponibilidad de hábitat. Mayo y noviembre coincidieron con los periodos de muestreo donde el lodazal presentó una mayor superficie anegada por la acción de los vientos y las lluvias. En estos periodos fue común observar pequeños grupos dispersos, forrajeando activamente en la zona intermareal a través de métodos de captura visual. La reducción del nivel de agua sobre el lodazal alcanzó niveles críticos en febrero, cuando menos de 10 % se mantuvo anegado. En este mes los escasos registros de frailecillos blancos, provienen de individuos observados en actividades de descanso, independientemente de la hora del día. Esta actividad fue favorecida por las características propias del sustrato. Las capas de lodo más superficiales al secarse se despegan de las capas más húmedas, de tal forma que los frailecillos encuentran protección contra el viento bajo ellas. Estas capas de lodo superficial presentan la ventaja adicional de que al secarse, los sedimentos salinos toman una coloración gris cenizo, muy similar al dorso de estas aves, lo cual las hace pasar inadvertidas tanto para un observador terrestre como aéreo.

Por otra parte, la drástica disminución poblacional de junio pudo estar relacionada con el periodo reproductivo de la especie. Garrido (1993) documentó una pareja criando en Cayo Sabinal; dicho cayo se caracteriza por presentar extensas playas de arena poco frecuentadas por el hombre, que pueden servir como hábitat reproductivo. Los individuos de esta especie tendrían que desplazarse entre 12 y 35 km entre los sitios que explotan en Cayo Sabinal y Río Máximo. Esta distancia relativamente corta entre ambas áreas, hace posible que Río Máximo constituya un sitio de forrajeo para la especie durante el año. Estudios subsecuentes en el área podrían confirmar si se trata de la misma población que nidifica en Cayo Sabinal, lo cual brindaría una valiosa información para el manejo y conservación del *C. alexandrinus* en el Caribe.

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RECENT BIRD OBSERVATIONS FROM DOMINICA, WEST INDIES

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Abstract.—We report observations from December 2002 to January 2004 of Greater Shearwater (*Puffinus gravis*), American Wigeon (*Anas americana*), and Yellow-throated Vireo (*Vireo flavifrons*), plus some less rare pelagic species, from Dominica, Lesser Antilles.

Key words: distributional records, Dominica, Lesser Antilles

Resumen.—OBSERVACIONES RECIENTES DE AVES EN DOMINICA, ANTILLAS MENORES. Reportamos las observaciones de *Puffinus gravis*, *Anas americana* y *Vireo flavifrons*, además de algunas otras especies pelágicas menos raras, hechas desde diciembre del 2002 hasta enero del 2004 en Dominica, Antillas Menores.

Palabras claves: *Antillas Menores, Dominica, registros de distribución*

DOMINICA LIES NEAR THE MID-POINT (15°20'N, 61°22'W) of the Lesser Antillean arc, a series of islands each stemming from a volcanic center. Dominica rises abruptly to 1,447 m, with near-shore deep water (almost 1000 m within few km) on the northern, western (Caribbean), and southern sides and somewhat shallower Atlantic coast depths to the east. Its 785 km^2 includes dry scrub woodland along the west coast, and upland montane and lush tropical rainforests further inland that give way to elfin forest at Morne Trios Pitons and Morne Diablotin. The montane forests are home to some of the region's unique endemic fauna, including two Amazons—Red-necked (*Amazona arausiaca*) and Imperial (*A. imperialis*). The shoreline lacks extensive beaches or mangrove bays, and supports only a few small wetlands, although heavy annual rains sustain several permanent rivers. This paper records no new species of birds from Dominica, but provides details on several seen only infrequently, including seabirds recorded a few km west of the island during whale-watch trips.

OBSERVATIONS

Greater Shearwater (*Puffinus gravis*).—On 21 June 2003, up to five were photographed at sea with Brown (*Sula leucogaster*) and Red-footed (*S. sula*) boobies feeding over schools of fish being hunted by dolphins (NJL). Several photos were submitted to the voucher section of VIREO (VIREO ref. no. V06/54/003-005; Fig. 1). Both Evans (1990 and Raffaele *et al*. (1998) consider Greater Shearwater 'very rare or a vagrant' to Dominica, yet recent data from nearby Guadeloupe (Levesque and Yésou 2005) indicate that it is most likely an annual northbound migrant in June and July, with an estimated 14,000 passing there annually. It is thus equally likely in Dominican waters, even if still essentially undetected.

American Wigeon (*Anas americana*).—From 7–21 December 2002, a male and a female were found feeding and resting on the Blenheim River estuary, the male remaining until 4 Feb 2003 (NJL, BJB). Both observers had previous experience with the species in life. While Raffaele *et al* (1998) record it as 'rare,' Evans (1990), who has worked extensively on Dominica, lists it as 'unknown.' In 10 yr of active fieldwork, BJB has seen no others, so the species seems at best to be very rare on Dominica

Yellow-throated Vireo (*Vireo flavifrons*).—One was studied closely and digitally photographed through a 30× telescope at Savane Paille, 22 April 2003 (NJL, MH); two photos have been submitted to the voucher section of VIREO (ref. no. V06/54/001-002; Fig. 2). NJL has previously observed this species in the USA. The only other known Dominica record was one caught at 'Beauso Jour' on 30 September 1904 (Verrill 1905).

Seabirds.—A recent paper by Keith and Keith (2003) calls for more pelagic observations from the Caribbean. In response, we report the following observations, all from a whale watch boat and all by NJL except as noted. On 25 January 2003, a Red-footed Booby was in the bay south of Roseau and a

Fig. 1. Greater Shearwater (*Puffinus gravis*) west of Dominica, 21 June 2003. Photo by Niels J. Larsen.

Fig. 2. Yellow-throated Vireo (*Vireo flavifrons*) at Savane Paille, Dominica, 22 April 2003. Photo by Niels J. Larsen.

Pomarine Jaeger (*Stercorarius pomarinus*) was about 1 km from the beach. On 20 April 2003, a Red-billed Tropicbird (*Phaethon aethereus*) was seen from shore near Douglas Point. During the early mornings of 23-30 April 2003, seabirds seen from shore at Savane Paille included: ten Bridled Terns (*Sterna anaethetus*) on 24 April (MH); 24 tropicbirds of which only two were identified as Red-billed Tropicbirds (*Phaethon aetherus*; MH), and although White-tailed *P. lepturus* breeds on Dominica, none were seen with certainty from Savane Paille during 2 yr NJL lived there; five Brown and 14 Red-footed boobies on 24 April (MH); and two Pomarine Jaegers on 30 April 2003 (MH). On 8 June 2003, seven jaegers (probably Pomarines; plumage characters could not be seen due to distance and poor light) were seen flying south from the harbor in Roseau in mid- to late afternoon. On 21 June 2003, during the same whale watch where the shearwaters described above were observed, one Sooty Tern (*Sterna fuscata)*, minima of 15 Brown and 10 Red-footed Boobies, and three probable Pomarine Jaegers were seen. On 13 September 2003, one adult Brown Booby, one Bridled Tern, and one Brown Noddy (*Anous stolidus*) were observed during a whale watch. On 10 January 2004, one Brown Booby was in the bay south of Roseau. On 31 May 2003, minima of 30 Brown Noddies and 25 Roseate Terns (*S. dougallii*) were fishing at Douglas Bay; most of the Roseate Terns continued to frequent the area through June (not checked during July), but Brown Noddy numbers tapered off during the first few days of June. Except for the jaegers, all of these seabirds breed widely in the Lesser Antilles and so are likely to turn up almost anywhere, at any time.

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MORFOMETRÍA Y ALIMENTACIÓN DE LA CODORNIZ (*COLINUS VIRGINIANUS*) EN DOS ÁREAS DEL OCCIDENTE DE CUBA

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Resumen.—La Codorniz (*Colinus virginianus*) es una especie de la familia Odontophoridae, común en América del Norte y muy utilizada en la actividad cinegética. En Cuba contamos con una subespecie *C. v. cubanensis*, que se encuentra distribuida por todo el territorio nacional y según Garrido y García (1975) ha sufrido hibridación con ejemplares introducidos de la subespecie *C. v. virginianus*. En este trabajo nos proponemos realizar un estudio morfológico, así como de la alimentación de la especie en dos municipios de nuestro país, para lo cual se colectaron 44 ejemplares en Artemisa y 62 en Varadero. Los ejemplares colectados presentaron pesos que variaron entre los 153 y los 158 g, con los mayores valores para los machos, aunque no de manera significativa, estos mostraron a su vez una alta variabilidad en el patrón de color negro presente en el pecho, lo que pudiera ser un indicador del cruzamiento entre las dos subespecies. Los mayores pesos se registraron hacia mediados de la época de seca cuando las codornices han consumido en gran medida las semillas producidas durante las lluvias. En el estudio de la dieta se detectaron 96 tipos de semillas diferentes, de las cuales la hierba de Guinea (*Panicum maximum*), de la familia Poaceae fue la mas utilizada. Poáceas y fabáceas fueron las dos familias preferidas por la Codorniz. Además fueron incluidos como alimentos algunas familias de invertebrados.

Palabras clave: alimentación, cinegética, Codorniz, Colinus virginianus*, hibridación*, *morfología*

Abstract.—MORPHEMETRICS AND DIET OF THE NORTHERN BOBWHITE (*COLINUS VIRGINIANUS*) IN TWO AREAS OF WESTERN CUBA. The Northern Bobwhite (*Colinus virginianus*) is a species from the family Odontophoridae and it is a common resident of North America and very important as game bird. The Cuban subspecies, *C. v. cubanensis*, is distributed throughout the country. This subspecies, according Garrido and García (1975), has suffered a hybridization process in the fields with *C. v. virginianus,* a species introduced in Cuba. In this paper we conducted a morphological and feeding analysis in two municipalities of our country. We collected 44 Northern Bobwhites in Artemisa and 62 in Varadero. The body mass of collected specimens varied between 153-158 g, averaging greater but not significantly for males. Males varied greatly in the breast black patch, which may be an indicator of crossing between both subspecies. The highest weights were detected by the middle of the dry season when Northern Bobwhites had consumed a great quantity of food produced during the wet season. Seeds of 96 species of plants were recorded in the stomach and crop contents of this species. The most important seed was the Guinea grass (*Panicum maximum*), of the family Poaceae. In general, Poaceae and Fabaceae were the two families preferred by this species. Some families of invertebrates were used as feeding items as well.

Key words: Colinus virginianus*, food, game birds, hybridization, morphology, Northern Bobwhite*

LA CODORNIZ (*Colinus virginianus*) es la única gallinácea autóctona de nuestro territorio y tradicionalmente ha despertado gran interés entre los cazadores dado lo emocionante de su cacería por el empleo de perros de muestra. Se encuentra distribuida por Norte y Centro América, con poblaciones importantes en el sureste de los Estados Unidos. Ha sido además introducida con éxito en varios países como Haití, República Dominicana y Nueva Zelanda (Departamento de Agricultura, 2002).

Existen 22 subespecies dentro de las cuales *C. v. cubanensis* es endémica de Cuba (García 1987, del Hoyo *et al.* 1994). La subespecie *C. v. virginianus* ampliamente distribuida en Virginia, Estados Unidos, ha sido introducida en Cuba varias veces y Garrido y García (1975) mencionan que ambas subespecies, pueden haberse cruzado, por lo que en toda la Isla se observan ejemplares intermedios en sus patrones de coloración y solo en la Isla de la Juventud se conserva la subespecie nativa.

Uno de los aspectos determinantes en el desarrollo de las poblaciones es la posibilidad de uso de los recursos tróficos, por lo que el estudio de la dieta se ha convertido en uno de los aspectos principales de la autoecología de las especies animales (Denis 2000). Además, esta información resulta imprescindible para conocer la función que tiene cada especie en los ecosistemas, así como para tomar medidas concretas para su manejo (González *et al.* 2001). En este sentido se han desarrollado investigaciones ecológicas sobre otras especies de aves cinegéticas cubanas (Acosta y Berovides 1982, Acosta y Torres

1984a, Godinez 1993), pero no existe ninguno que aborde a profundidad el estudio de la dieta de las codornices, a pesar de que representa un importante recurso cinegético con una larga tradición de uso en nuestro país. Por estas razones los objetivos de este trabajo son:

Describir y caracterizar morfométricamente a los individuos adultos y juveniles. de *Colinus virginianus* en la región occidental de Cuba, así como estudiar la composición y estructura de la dieta en individuos adultos.

Para esto seleccionamos poblaciones de codornices que habitan en varias localidades del Municipio Artemisa, Provincia Habana, donde tradicionalmente ha sido utilizada en la actividad cinegética, y además se realizó un estudio puntual en el Municipio Varadero, Provincia Matanzas.

ÁREA DE ESTUDIO Y MÉTODOS

Área de estudio.—El estudio se realizó en varias localidades del Municipio Artemisa, Provincia Habana, desde marzo de 2003 hasta diciembre de 2004. Para el trabajo se seleccionaron dos tipos de áreas, una donde no hay actividad cinegética nombrada "Finca la Mariquita", la cual se utilizó como control y otra área con tamaño y estructura similar donde sí se efectúa la cacería, la que se utilizó con fines comparativos. Además, se realizó un estudio puntual los días 11 y 12 de diciembre de 2004 en áreas del Municipio Varadero, Provincia de Matanzas, donde también se practica la caza.

La Finca la Mariquita se encuentra a 6 km al N de la localidad de "Las Cañas" y cuenta aproximadamente con 20 ha de extensión. En ella hay terrenos destinados al cultivo de frijoles, maíz, maní y caña; otros son utilizados como áreas de pastoreo y están cubiertos por diferentes plantas herbáceas como el romerillo de costa (*Viguiera helianthoides*), la hierba hedionda (*Cassia* sp.) y la hierba de Guinea (*Panicum maximum*). Muchos de estos terrenos están delimitados por las llamadas "cercas vivas", formadas fundamentalmente por almácigo (*Bursera simaruba*) y piñón de cerca (*Eritrina berteroana*).

Todas las demás áreas muestreadas son muy parecidas y están principalmente dedicadas a las actividades de pastoreo, incluidas las de Varadero.

Muestreos, colectas y procesamiento de datos.—Las colectas se efectuaron en las primeras horas de la mañana (7:00-11:00 hr) y las últimas de la tarde (17:00-20:00 hr) que son en las que las codornices se alimentan y por tanto tienen mayor actividad y se realizaron empleando perros de muestra de raza Braco Alemán.

En total se colectaron al azar 106 codornices adultas, 44 en Artemisa entre los meses de septiembre a marzo y 62 en Varadero en diciembre. La composición de la muestra por municipio, sexo y época (lluvia o seca) se especifica en la tabla 1. Se consideraron los meses de mayo a octubre como los meses de lluvia y los restantes como los de seca.

Entre junio y agosto se capturaron en Artemisa 17 pichones, utilizando un jamo de 60 cm de diámetro. A estos se le tomaron las medidas morfométricas en el campo para luego liberarlos en el mismo lugar donde fueron capturados.

Los ejemplares colectados fueron debidamente marcados y se les midió la longitud total; el largo, ancho y altura del pico; la longitud del tarso y del ala plegada. Esta última en el caso de los pichones se omitió, midiéndoles solo la longitud de las remeras primarias. En los machos se tomó el largo y el ancho de cada testi, para después determinar el "área testicular" según Acosta y Torres (1984b). En ellos se realizaron también medidas para precisar la longitud de la mancha negra del pecho y se confeccionaron varios esquemas con el fin de esclarecer los diferentes patrones de coloración que se observan. Además, se tomaron las medidas (largo y ancho) de 15 huevos.

Todas estas mediciones se realizaron con un pie

Tabla 1. Distribución por municipio, sexo y época, de las Codornices (*C. virginianus*) capturadas fuera del período de cría durante los años 2003 y 2004. Solo aparecen los individuos adultos.

Localidad	Hembras	Machos	Lluvia	Seca
Artemisa (n = 44)	16	28	17	27
Varadero (n = 62)	32	30	—	62
Total (n = 106)	48	58	17	89

de rey y una regla de 0,01 y 1 mm de precisión respectivamente. Posteriormente los ejemplares se pesaron utilizando una balanza de dinamómetro marca Pesola de 2 g de error. Luego se procedió a la extracción del buche y la molleja, los cuales fueron rotulados con un número de orden y congelados para su posterior análisis. De la muestra de Varaderos se analizaron 15 hembras y 16 machos.

En el laboratorio se pesó el contenido de cada buche y molleja y se separaron los artículos ingeridos para luego ser pesados y contados individualmente. También los gastrolitos encontrados sufrieron el mismo procesamiento. Para esto se utilizó una balanza con 0,1 g de precisión. A cada artículo se le asignó una letra diferente y se confeccionó un muestrario para posteriores identificaciones. Los artículos de origen animal fueron clasificados hasta el nivel de orden y los de origen vegetal hasta el de familia. Para la clasificación de las leguminosas se siguió el criterio que considera a Fabaceae como una única familia compuesta por tres subfamilias (León y Alain 1951).

Se tomó una muestra representativa de la semilla más importante en la dieta de la Codorniz para determinar sus medidas lineales, empleando un pie de rey de 0,01 mm de error.

Para el análisis morfométrico se calcularon los estadísticos de tendencia central y variabilidad a cada variable y se realizaron comparaciones entre los sexos por una prueba *t* de Student una vez comprobada la normalidad por la prueba de Kolmogorov–Smirnov.

Para el análisis de la dieta se determinó la proporción numérica y la proporción en peso que representa cada recurso en la dieta, así como la frecuencia de aparición de cada artículo para poder valorar el Índice de Importancia Alimentaria de Acosta (1982). La evaluación del subnicho trófico se efectúo mediante la utilización del índice de diversidad de Shannon y Weaver (1949) y su varianza asociada, calculándose también el índice de equitatividad de Pielou (1966) para los diferentes tipos de recursos ingeridos. La amplitud del nicho (Levins 1968) se calculó para analizar comparativamente los resultados y compensar las deficiencias del primer índice. Todos estos índices se tuvieron en cuenta para comparar la dieta entre sexos en cada municipio y entre épocas (lluvia y seca para las codornices de Artemisa y ambos municipios durante la seca). Para el cálculo de todos ellos se utilizó el número de artículos. El grado de superposición de la dieta de las hembras y los machos en cada municipio se determinó por el índice de Schoener (1970). La similitud de la dieta entre sexos, épocas y municipios desde el punto de vista cualitativo, se calculó utilizando el índice de Czchanovsky (Sorensen, 1948), mientras que para el análisis cuantitativo se empleó el Índice de Similitud Cuantitativa de Acosta (1987). También se aplicó una prueba *t* de Student para comparar el peso del contenido de la molleja, del buche y de los gastrolitos ingeridos entre sexos y épocas luego de comprobar que cumplían con los requisitos de normalidad y homogeneidad de varianzas. Todas las pruebas se realizaron utilizando el programa Statistica para Windows versión 6.0.

RESULTADOS Y DISCUSIÓN

Análisis morfométrico.—El estudio de las variables morfométricas puede ser en ocasiones un indicador de diferencias en la posibilidad de utilización de los recursos. Los valores promedios en el peso corporal de la Codorniz en nuestras áreas de trabajo (Tabla 2) presentaron valores inferiores a los presentados por Tejaden y Kays (2003) (172,2 y 229,6 g) para algunas áreas de los Estados Unidos, y a los expuestos por Stoddard (1950) en la misma época para las codornices de Thomasville, Tallase y Santa Helena y están muy cercanos a los expuestos por el Departamento de Recursos Naturales (2001) para la Florida (160,7 g), lo que sugiere una disminución del peso corporal para latitudes mas bajas como sugieren del Hoyo *et al*. (1994).

No obstante los valores referidos a la longitud total se encuentran enmarcados dentro de los citados para la América del Norte (150 – 275 mm) (Wildlife Division 1999, Georgia Wildlife 2000, Fergus 2003) que a su vez denotan una alta variabilidad posiblemente relacionada con la notable cantidad de subespecies que presenta *C. virginianus.*

Una comparación de las principales variables arrojó diferencias estadísticamente significativas entre los sexos, para la longitud del tarso y el largo del pico, en ambos casos a favor de los machos.

Al parecer, el tarso más largo les garantiza a los machos cierta ventaja a la hora de huir ante un depredador si tenemos en cuenta que su locomoción fundamental es terrestre, lo que concuerda con lo planteado por Stoddard (1950). Por otra parte el pico más largo puede conducir a que su rango de explotación de recursos sea diferente y utilice artículos que quizás las hembras no pueden consumir, lo que facilitaría la segregación intraespecífica en el uso de los recursos tróficos. El resto de las variables mostraron un comportamiento muy similar

Tabla 2. Mediciones de las variables morfométricas en ambos sexos y su comparación estadística (*n* = tamaño de la muestra, $\bar{x}$ = media, S = desviación estándar, CV = coeficiente de variación, *P* = probabilidad asociada a la prueba *t* de Student, * = diferencias estadísticamente significativas ($P < 0.05$).

Variables	Sexo						
	Hembras			Machos			
	n	$\bar{x} \pm S$	CV	*n*	$\bar{x} \pm S$	CV	*P*
Peso corporal (g)	46	153,83 ± 15,40	10,01	57	158,05 ± 21,95	13,89	0,2720
Longitud total (mm)	45	218,82 ± 8,53	3,90	54	218,26 ± 12,70	5,82	0,8004
Ala plegada (mm)	48	105,04 ± 3,32	3,16	57	105,84 ± 3,45	3,26	0,2312
Tarso (mm)*	47	35,70 ± 1,51	4,22	58	36,45 ± 1,18	3,23	0,0048
Largo del pico (mm)*	47	14,24 ± 0,73	5,12	56	14,66 ± 0,58	3,93	0,0018
Ancho del pico (mm)	48	8,64 ± 0,55	6,31	57	8,84 ± 0,61	6,94	0,0873
Altura del pico (mm)	48	8,56 ± 0,62	7,29	57	8,74 ± 0,53	6,05	0,1188

entre ambos sexos. En general todos los caracteres medidos presentaron una variabilidad muy baja, lo que aboga por un fenotipo muy estable para la especie, muy bien adaptado a las condiciones de vida terrestre.

Esta variabilidad baja se elevó un tanto en el peso corporal quizás por las variaciones en la disponibilidad del alimento, la cantidad de alimento acumulado en el estómago, la hora de colecta, etc. Resultados similares han sido expuestos para *Bubulcus ibis* (Mugica *et al*. 1987), *Columba leucocephala* (Godinez 1993) y *Butorides virescens* (Denis *et al*. 2000).

Al comparar la longitud promedio de los tarsos de las codornices con la encontrada por Acosta y Mugica (1990a, b) para la Golondrina de Árboles y para trece especies de bijiritas respectivamente, puede apreciarse que se cumple la tendencia mencionada por Dilger (1956) acerca de que las especies que forrajean en el suelo tienen los tarsos proporcionalmente mayores que las que lo hacen en los troncos o en el espacio aéreo. Además, estos presentaron valores de coeficiente de variación bajos como plantean Acosta *et al.* (2002), basado en que es una estructura ósea que depende principalmente de la composición genética de los individuos y juega un papel crucial en la locomoción de esta especie, principalmente terrestre.

En ambos sexos se observó un incremento del peso a medida que avanza el período de seca, dado el uso que pueden realizar, en este periodo, de numerosas semillas que fueron producidas durante la temporada de lluvias y que en este momento están aun dispersas en el área de forrajeo y se vuelven mas asequibles por la disminución en la vegetación que caracteriza a esta etapa. Ya en marzo los recursos comienzan a escasear y las codornices reducen su peso al mínimo (Fig. 1). Esto ha sido registrado para otras aves no migratorias como el Títere Playero (*Charadrius wilsonia*) en Sur América (McNeil, 1968) y para las Cachiporras (*Himan-topus mexicanus*) en Venezuela (McNeil, 1970). Este autor encontró dos momentos en que el peso de las Cachiporras se elevaba, uno al comienzo de la etapa reproductiva, antes de la puesta de los huevos y otro al final de la época de lluvia, y planteó que esto puede tener valor adaptativo ya que les permite enfrentarse al período de seca.

Al parecer, el hecho de haber introducido en Cuba otra subespecie de *C. virginianus* desde la época colonial ha producido una alta variabilidad en el patrón de coloración que presentan los machos en la región ventral, sobre todo en la extensión de la mancha negra que presentan en el pecho (Tabla 3) por lo

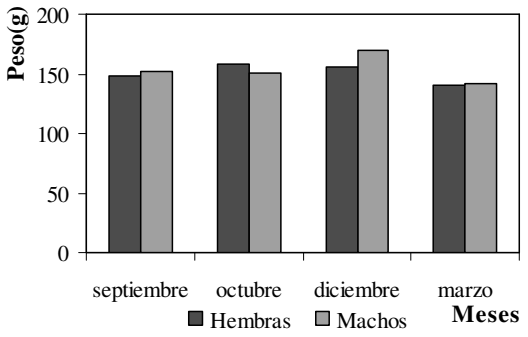

Fig. 1. Variación en el peso de las codornices adultas, previo y durante el período de seca en Artemisa.

Tabla 3. Longitud de la mancha negra (mm) del pecho de los machos *C. virginianus* para toda la muestra y para los dos municipios estudiados (*n* = tamaño de la muestra, $\bar{x}$ = media, S = desviación estándar, CV = coeficiente de variación).

	n	$\bar{x} \pm$ S	CV
Total	45	32,72 ± 16,92	51,72
Artemisa	15	42,03 ± 14,81	35,25
Varadero	30	28,07± 16,17	57,61

que se encontraron ejemplares adultos sin esta mancha o donde mide escasamente 10 mm de longitud y otros en los que llega a medir hasta 70 mm y con patrones totalmente inestables.

En Artemisa este carácter varió menos y tuvo una longitud promedio mayor, es decir, los machos de esta población tienen la mancha negra más extendida y de una manera más uniforme. A pesar de esto y de ser en Varadero donde se encontraron los ejemplares que no tenían esta mancha, fue allí donde se halló un número mayor de individuos (9) con la descripción que ofrece del Hoyo *et al.* (1994) sobre la subespecie cubana: la mancha negra extendida y vientre rojizo oscuro; en Artemisa se encontraron solo cuatro. El resto de los machos tenían el vientre moteado, más parecidos a las subespecies de la Florida (*C. v. floridanus*) y de Virginia (*C. v. virginianus*). Llama la atención cómo a pesar de ser la muestra de Varadero mayor que la de Artemisa, se presentó una variabilidad mayor, en lugar de una mayor homogeneidad en los datos, esto pudiera estar condicionado al hecho de que la subespecie *C. v. virginianus* fue introducida, durante la época de la colonia, en las afueras de la ciudad de la Habana, y al ser una especie de escasa movilidad ha tenido mas tiempo de entrecruzamiento con la subespecie cubana y de ahí la menor variabilidad en el patrón de coloración.

Al parecer, los machos están aptos para iniciar la época reproductiva sin haber alcanzado el máximo desarrollo de sus gónadas, por lo que los valores superiores en el tamaño de los testículos se detectaron hacia el final de la temporada (Fig. 2). A partir de septiembre comienza el período de regresión con una notable reducción de estas estructuras. Morales (1980) encontró en *Colinus cristatus* un comportamiento similar. Este proceso ocurre en todas las especies de reproducción estacional y representa un mecanismo de ahorro de energía para el desarrollo del resto de las actividades vitales que corresponden a diferentes períodos del año. La alta variabilidad

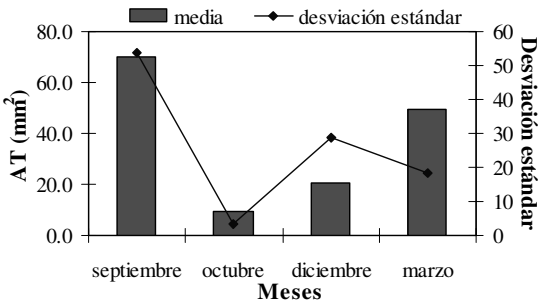

Fig. 2. Área testicular (AT) y variabilidad de los testis de *C. virginianus* adultos capturados, previo y durante la época no reproductiva en Artemisa.

encontrada en el mes de septiembre quizás se deba a un defasaje entre los machos a la hora de comenzar la regresión de sus testis, ya que los machos más jóvenes pueden comenzar el período reproductivo y terminarlo en una fecha un poco más tardía que los adultos de la temporada anterior.

El crecimiento de las crías se puede evaluar de manera tentativa, a través de los incrementos de cada una de las variables durante los estadios de desarrollo (Godínez 1993). Las remeras primarias mostraron un desarrollo más acelerado que el resto de las variables analizadas (Fig. 3), lo que ha sido registrado también por Bent (1932), ya que de ellas depende en gran medida la supervivencia de los pichones en sus primeros estadios, al ser aves principalmente terrestres. Acosta y Mugica (1992) encontraron la misma tendencia en el Sabanero (*Sturnella magna*) en el Jardín Botánico Nacional.

El peso de los pichones fue menor a lo encontrado por Stoddard (1950) en Georgia y Virginia, por lo que parece disminuir con la latitud al igual que ocurre en los adultos. No obstante, presenta un desarrollo acelerado debido a que estas aves en muy poco tiempo alcanzan la condición de adultos.

Las medidas realizadas a los huevos coincidieron con las encontradas por Valdés (1984). La mayor variabilidad (CV = 3,27 %) fue hallada en el largo de los huevos, cuya amplitud fluctúa entre 29,4 y 32,7 mm para un valor promedio de 30,7 mm. El ancho promedio fue de 23,8 mm y varío entre 23,1 y 24,5 mm.

Análisis de la dieta.—La dieta de la Codorniz consistió fundamentalmente en semillas de las que se encontraron 96 tipos diferentes. Pudieron ser identificadas 69 % y quedaron agrupadas en nueve familias. También se hallaron insectos en estadio adulto y larval, los cuales estaban mayormente des-

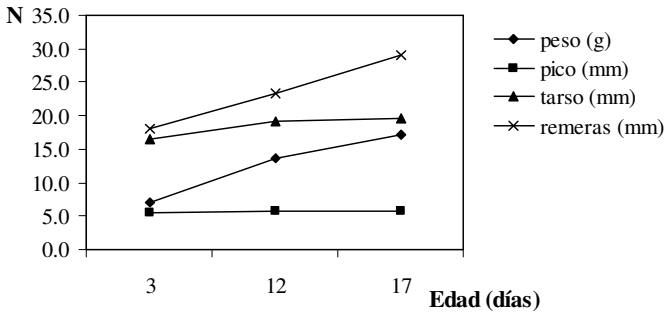

Fig. 3. Desarrollo de algunas variables morfométricas en pichones de *C. virginianus* en Artemisa.

membrados y se agruparon en seis órdenes diferentes. Otros artículos encontrados fueron restos de hojas, tallos, tierra y cuatro tipos de frutos, un opilión (orden Phalangida) y un molusco terrestre (*Prayicolella griseola*; Polygyridae), los que también han sido señalados por Stoddard (1950). Para las comparaciones solo se incluyeron las semillas y los insectos, ya que fueron los grupos más representativos en la dieta de la Codorniz.

La semilla de mayor importancia fue la de la hierba de Guinea (*Panicum maximum*), que es una semilla pequeña (3,37 × 1,20 mm) perteneciente a la familia Poaceae (Fig. 4). Es muy probable que esto se deba a una mayor disponibilidad en el medio, además de que esta planta produce abundantes semillas durante el período de lluvias. Roig (1962) plantea que es una planta perenne que crece espontáneamente en terrenos fértiles y húmedos, además de que se considera el mejor pasto del país. Según Wiseman (1977), esta fue también la semilla más frecuente en la dieta de las codornices en Oklahoma (10,9 %). Las siguientes 19 semillas en orden de importancia aportaron de forma individual entre 5 y 2 % a la dieta de semillas de la Codorniz y las 76 restantes 1 % o menos.

De todas las semillas consumidas, solo tres pertenecieron a plantas de cultivos (arroz, maíz y frijol) y representaron menos del 3 % de la dieta, por lo que estas aves no parecen depender de la presencia de los cultivos para el desarrollo de sus poblaciones. El resto perteneció a plantas silvestres. Este resultado concuerda con Bent (1932) quien planteó que las codornices consumen preferencialmente los granos de los cultivos después de pasada la cosecha.

Las semillas de la familia Fabaceae fueron el artículo más frecuente (Tabla 4), y aparecieron en el 93,3 % del total de los individuos analizados, además aportaron la mayor biomasa. Stoddard (1950) también clasificó a estas semillas como el alimento preferido de las codornices de Norteamérica. Le siguieron en orden las de la familia Poaceae, con 73,3 % de aparición y un aporte de 32,4 % a la biomasa total, pero fueron las que más contribuyeron al aporte numérico con un 60,2 %.

Dentro del grupo de los insectos los más frecuentes fueron los coleópteros y los hemípteros (27 y 23 % respectivamente) pero tuvieron un aporte numérico muy bajo. Las larvas de lepidópteros fueron las que más contribuyeron al aporte en biomasa.

La frecuencia de aparición de los restos de hojas fue menor a lo registrado por Wiseman (1977). No obstante es de cierta importancia al compararlo con los demás elementos que forman la dieta. Los artículos más raros, que aparecieron en menos del 10 % de las muestras, fueron los himenópteros, las frutas,

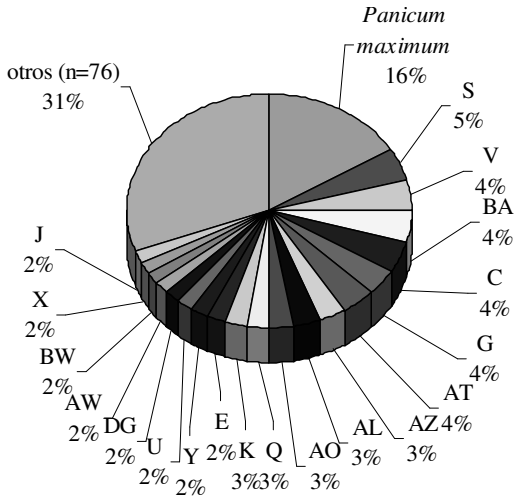

Fig. 4. Composición de la dieta de semillas consumida por *C. virginianus* en los dos municipios de estudio durante los años 2003 y 2004. Cada letra representa una semilla diferente.

Tabla 4. Frecuencia de aparición, proporción en peso y en número de cada grupo taxonómico y artículo identificado en la dieta de *C. virginianus* en los dos municipios de estudio durante los años 2003 y 2004 (L = larvas).

Grupo	Frecuencia de aparición (%)	Proporción en peso (%)	Proporción en número (%)
Semillas			
Fabaceae	93,3	38,9	31,2
Poaceae	73,3	32,4	60,2
Convolvulaceae	49,3	1,9	1,9
Euphorbiaceae	40,0	3,2	0,8
Verbenaceae	36,0	2,8	2,6
Cyperaceae	29,3	3,3	0,9
Passifloraceae	17,3	0,8	1,0
Solanaceae	4,0	0,1	0,2
Malvaceae	2,7	0,2	0,2
Insectos			
Lepidoptera (L)	10,7	8,7	0,2
Coleoptera	26,7	0,2	0,1
Hemiptera	22,7	0,2	0,1
Homoptera	15,0	-	-
Hymenoptera	8,0	-	-
Orthoptera	1,3	0,3	-
Otros			
Opiliones	1,3	-	-
Moluscos	1,3	-	-
Frutas	5,0	6,4	0,2
Restos de hojas	25,3	0,3	0,2
Restos de tallos	3,0	-	-
Tierra	1,3	-	-

las semillas de las familias Solanaceae y Malvaceae, así como los restos de tallos, los ortópteros, los opiliones, moluscos y tierra.

Como resultado de esto, las poáceas y las fabáceas fueron los grupos de mayor importancia alimentaria, marcando una gran diferencia con el resto de los artículos consumidos que presentaron valores inferiores a 0,6 (Fig. 5).

No se encontraron grandes diferencias en cuanto al aporte energético de las semillas pertenecientes a las familias botánicas más utilizadas por la Codorniz (Tabla 5), aunque vale destacar que las dos familias más importantes en su dieta son la que menos calorías poseen. Esto sugiere que no existe una selección en términos de energía por parte del ave en cuanto a los recursos que consume, ya que aunque otras semillas presentan mayor contenido energético ellas hacen un uso diferencial de las fabáceas y poáceas. Esto pudiera ser un indicador de que estas son las semillas más abundantes en su hábitat y necesitan un menor gasto energético para su obtención. Por otro lado hay que tener en cuenta que aunque estas dos familias son las que menos calorías aportan quizás les sea suficiente para las actividades que realizan, ya que son bastante sedentarias y solo realizan cortos vuelos en momentos de necesidad.

Teniendo en cuenta los valores de los índices ecológicos calculados para todos los artículos que conformaron la dieta de la Codorniz (H' = 2,52; Bij = 4,15; J' = 0,54), así como los datos obtenidos respecto a sus preferencias alimentarias, puede plantearse que el tipo de alimento ingerido por esta especie responde en primer lugar a la cantidad y distribución en que se encuentre disponible en su hábitat, más que a una selección por parte del animal, lo que implica un comportamiento oportunista. Esto garantiza la supervivencia de la especie al permitirle una utilización más amplia de los recursos presentes en su hábitat. Godinez (1993) encontró valores de diversidad (H' = 2,63) tan alto como los hallados en este trabajo durante el estudio de la Torcaza Cabeciblanca (*Columba leucocephala*), especie que es considerada también oportunista para la alimentación.

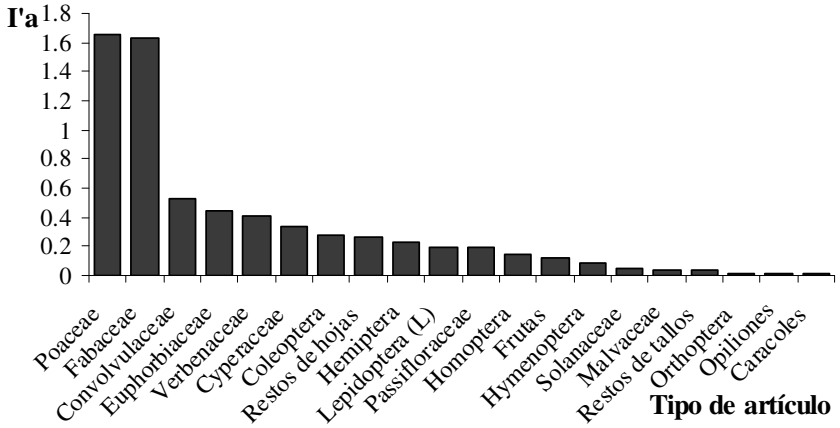

Fig. 5. Importancia alimentaria (I'a) de los grupos identificados en la dieta de *C. virginianus* en los dos municipios de estudio durante los años 2003 y 2004 (L: larvas).

En general, el número promedio de artículos por buche fue de 7,3 y estos contenían 4,04 g de alimento (n = 60) con un mínimo de 0,1 g y un máximo de 10,4 g. Ambos valores fueron superiores a los encontrados por Wiseman (1977).

En el buche no se encontraron gastrolitos, mientras que en la molleja estos constituyeron el 17 % del total de su contenido (Fig. 6). Esto hace pensar que el ave no los consume constantemente, sino que hace uso de ellos solamente cuando los necesita y probablemente lo haga en las primeras horas de la mañana, cuando el tracto digestivo se encuentra aún vacío y por tanto pasan directamente a la molleja sin ser acumulados en el buche. Es decir, hay un consumo diferencial de acuerdo con la capacidad y necesidad de trituración para moler el alimento ingerido. En general, se encontraron gastrolitos en el 72 % de las mollejas analizadas y nemátodos en el buche de cinco codornices (cuatro hembras y un macho), lo que ha sido también detectado por Díaz-Ungría (1965) y por Morales (1980) para *Colinus cristatus* en Venezuela.

Tabla 5. Aporte energético de las principales familias botánicas incluidas en la dieta de la Codorniz. Tomado de Cummins y Wuycheck (1971).

Familia	Aporte energético (Cal/ gramo)
Fabaceae	4678
Poaceae	4357
Convolvulaceae	4945
Euphorbiaceae	5326
Verbenaceae	5490
Cyperaceae	4870

Alimentación por sexo en cada municipio.—En Artemisa no se encontraron diferencias en cuanto al número de grupos representados en la dieta de cada sexo (Tabla 6). Sin embargo, se observó en los machos cierta tendencia a consumir más semillas que las hembras, mientras que en estas incluyeron más insectos en su dieta que los machos. Esto puede estar dado por diferencias en los requerimientos nutricionales basadas en las principales actividades que realizan. Las hembras, al ser las encargadas de la producción de huevos, necesitan comer más insectos para suplir sus necesidades proteicas. Los machos por su parte consumen más alimentos ricos en carbohidratos ya que estos les proporcionan la energía necesaria para cantar, defender su territorio y correr para alejar a los predadores del nido durante la cría, entre otras actividades.

No se encontraron diferencias estadísticamente significativas en el peso del contenido del buche ni en la molleja entre hembras y machos (Tabla 7). No obstante, se observó cierta superioridad por parte de las hembras en cuanto al peso del contenido del buche. Esto quizás se deba a que dedican más tiempo a la alimentación manteniendo el buche más lleno y esto les permite contar con el alimento necesario para garantizar el desarrollo de estructuras reproductivas tan costosas como la producción de huevos, mientras que los machos parecen dedicarle más tiempo a otras actividades posiblemente relacionadas con la defensa del territorio, la vigilancia ante los depredadores, etc.

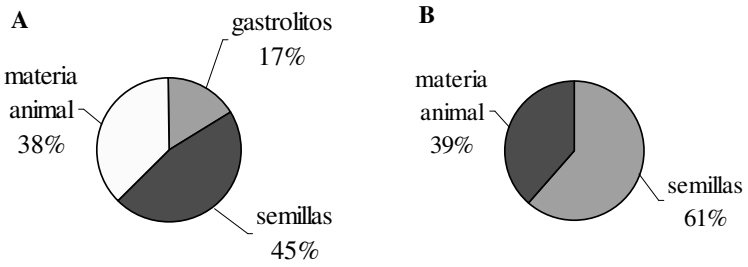

Fig. 6. Representación general de cada tipo de artículo en la molleja (A) y en el buche (B) de *C. virginianus* en los dos municipios de estudio durante los años 2003 y 2004.

En ambos sexos se puso de manifiesto un mayor uso de las semillas de fabáceas y poáceas, aunque no en el mismo orden ni en la misma proporción (Fig. 7). Siguieron en orden en el caso de los machos los hemípteros y en el caso de las hembras los lepidópteros. Esto último resulta de importancia si se tiene en cuenta que todos los lepidópteros encontrados estaban en estadio larval y pertenecían a la familia Geometridae, cuyas mariposas suelen tener hábitos nocturnos. Además, algunas de estas polillas pueden constituir plagas para algunos sembrados (Metcalf y Flint 1966), por lo que la Codorniz pudiera ser considerada como un controlador biológico en algunas áreas de cultivos. El resto de los artículos presentaron valores bajos y similares.

La variedad de artículos consumidos por los machos fue mayor que el de las hembras (Tabla 8). Estos son capaces de utilizar algunos artículos que las hembras pasan por alto, lo cual pudiera estar relacionado con las diferencias planteadas anteriormente en la estructura del pico. La amplitud del nicho y el índice de diversidad mostraron valores altos para los dos sexos por lo que ambos utilizan una gran variedad de recursos en su alimentación; aunque vale destacar que en todos los casos estos índices fueron mayores para los machos y que H' mostró diferencias estadísticamente significativas. El índice de equitatividad mostró valores muy parecidos y fue relativamente alto, justificándose bien su valor por el hecho de que esta especie presenta un comportamiento generalista en el uso de los recursos y los consume en la medida en que se encuentran presentes en el medio.

Sin embargo, el grado de superposición del nicho trófico fue 49 %, por lo que hay cierta tendencia a que la dieta entre los sexos sea diferente. Es posible que esta diferencia esté marcada por los artículos menos abundantes en su hábitat, ya que al calcular la similitud cualitativa entre los artículos que forman la dieta arrojó un valor de 71 % y desde el punto de vista cuantitativo ascendió a 77 %. Esta cercanía en ambos valores puede ser un indicador de que los artículos utilizados en mayor proporción, por ambos sexos, son los comunes y solo los utilizados de manera esporádica diferencian las dietas.

No se encontraron diferencias estadísticamente significativas en cuanto al peso promedio de los gastrolitos en las mollejas de cada sexo (P = 0,4214), aunque al parecer, las hembras tienden a consumir un mayor número de ellos (Tabla 9).

En Varadero tampoco se encontraron grandes diferencias en cuanto a los grupos consumidos por cada sexo (Tabla 10). Igualmente se registró la tendencia en los machos a consumir más semillas que las hembras y de estas a consumir más insectos que los machos, aunque las diferencias aquí fueron mucho más discretas que en Artemisa, debido a que el muestreo se efectuó solo en un momento del año.

Tampoco se presentaron diferencias estadísticamente significativas al analizar el peso del contenido del buche y de la molleja entre sexos para las codornices de Varadero (Tabla 11). Vale señalar que los valores promedios de las mollejas son muy

Tabla 6. Número de grupos y de artículos alimentarios identificados, por sexo, en la dieta de *C. virginianus* en Artemisa durante los años 2003 y 2004.

	Número de grupos		Número promedio de artículos	
	Semillas (familias)	Insectos (órdenes)	Semillas	Insectos
Hembras	9	5	456,4	4,7
Machos	9	5	548,0	3,8

Tabla 7. Peso del contenido del buche y de la molleja de *C. virginianus* por sexo en Artemisa durante los años 2003 y 2004 y su comparación estadística ($\bar{x}$ = media, S = desviación estándar, CV = coeficiente de variación, *P* = probabilidad asociada a la prueba *t* de Student).

	Buche			Molleja		
	$\bar{x}$ ± S	CV	*P*	$\bar{x}$ ± S	CV	*P*
Hembras	5,6 ± 2,4	41,8	0,065	2,9 ± 0,7	23,5	0,120
Machos	3,9 ± 2,6	68,7		2,6 ± 0,6	24,2	

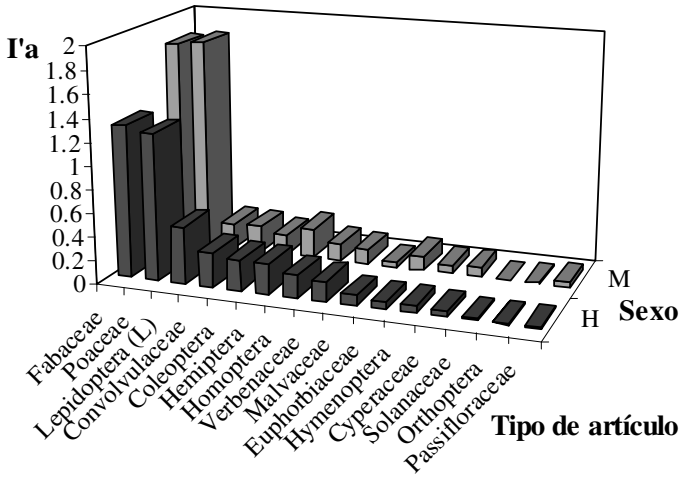

Fig. 7. Valores del Índice de Importancia Alimentaria (I'a) de los artículos consumidos por la Codorniz (*C. virginianus*) según el sexo en Artemisa durante los años 2003 y 2004 (H: hembras, M: machos, L: larvas).

parecidos a los encontrados en Artemisa y con coeficientes de variación bajos, debido a que el buche mantiene a la molleja con un volumen constante para el proceso de trituración.

En ambos sexos los mayores valores del Índice de Importancia Alimentaria se encontraron nuevamente para las poáceas y las fabáceas (Fig. 8). A diferencia de lo ocurrido en Artemisa, aquí las proporciones consumidas por los machos sobrepasaron a las hembras solo en el caso de las poáceas. Siguieron en orden las semillas de euforbiáceas mientras que el resto de los artículos consumidos tuvieron valores inferiores a 0,3.

Los valores aportados por los índices ecológicos para la dieta de cada sexo en este municipio fueron semejantes y el índice de diversidad no mostró diferencias significativas (Tabla 12). En este caso se encontraron los mayores valores en las hembras. Sin embargo, la variedad de artículos se mantuvo mas elevada en los machos. Todos los valores fueron inferiores a los encontrados en Artemisa debido a que aquí nada más se analizó la dieta en diciembre y en Artemisa está incluida la dieta en diferentes momentos del año.

El grado de superposición del nicho trófico entre ambos sexos fue 69 %, valor bastante bajo si tene-

Tabla 8. Variedad de artículos consumidos (S), diversidad (H'), amplitud (Bij) y equitatividad (J') del subnicho trófico de *C. virginianus* por sexo en Artemisa durante los años 2003 y 2004. * = diferencias estadísticamente significativas ($P < 0.05$).

	S	H'	Bij	J'
Hembras	61	2,53*	5,60	0,60
Machos	69	2,59*	5,83	0,61

Tabla 9. Contenido de gastrolitos en la molleja de *C. virginianus*, por sexo en el Municipio Artemisa durante los años 2003 y 2004.

	Hembras	Machos
Número promedio	28,14	18,12
Peso promedio de piedras por molleja (g)	0,41	0,34
Frecuencia de aparición (%)	88	93

Tabla 10. Número de grupos y de artículos alimentarios identificados en la dieta de *C. virginianus* por sexo en Varadero en diciembre de 2004.

	Número de grupos		Número promedio de artículos	
	Semillas (familias)	Insectos (órdenes)	Semillas	Insectos
Hembras	7	4	716,5	1,1
Machos	8	4	734,7	0,7

Tabla 11. Peso del contenido del buche y la molleja de *C. virginianus* por sexo en Varadero en diciembre de 2004 y su comparación estadística entre sexos ($\bar{x}$ = media, S = desviación estándar, CV = coeficiente de variación, *P* = probabilidad asociada a la prueba *t* de Student).

	Buche			Molleja		
	$\bar{x}$±S	CV	*P*	$\bar{x}$±S	CV	*P*
Hembras	3,11 ± 2,23	71,8	0,387	2,66 ± 0,68	25,5	0,2120
Machos	3,89 ± 2,49	63,9		2,31 ± 0,79	34,2	

mos en cuenta que todos los individuos fueron capturados en el misma área y durante dos días consecutivos. La similitud cualitativa y cuantitativa fue 75 % y 83 % respectivamente. Todo esto ratifica que hay una tendencia a la presencia de ligeras diferencias entre la dieta de los machos y las hembras.

No se encontraron diferencias estadísticamente significativas en cuanto al peso promedio de las piedras en las mollejas de cada sexo (*P* = 0,1607), aunque las hembras tienden a consumir un mayor número de piedras (Tabla 13), igual que sucedió en Artemisa.

Alimentación por época.—En Artemisa, durante la época de lluvia las codornices consumieron un mayor número de artículos comparado con la época de seca (Tabla 14), lo cual debe estar condicionado a una menor disponibilidad de alimento durante la seca. Además, el grado de utilización de los insectos pudiera estar determinado por el incremento en las necesidades de proteínas que se producen durante esta etapa para poder asumir el gasto reproductivo, además pudiera representar también un consumo oportunista ya que en este período se presenta el pico reproductivo de la mayoría de los insectos y por tanto se encuentran más disponibles en el medio. Durante el período de seca el número de grupos de artículos consumidos en los dos municipios fue semejante entre sí y a la cantidad encontrada durante la lluvia en Artemisa. En Varadero se apreció una mayor utilización de las semillas debido quizás a una mayor disponibilidad en el medio.

En el municipio Artemisa, durante el período de lluvia las poáceas fueron el artículo más importante de la dieta, seguidas por las fabáceas con valores

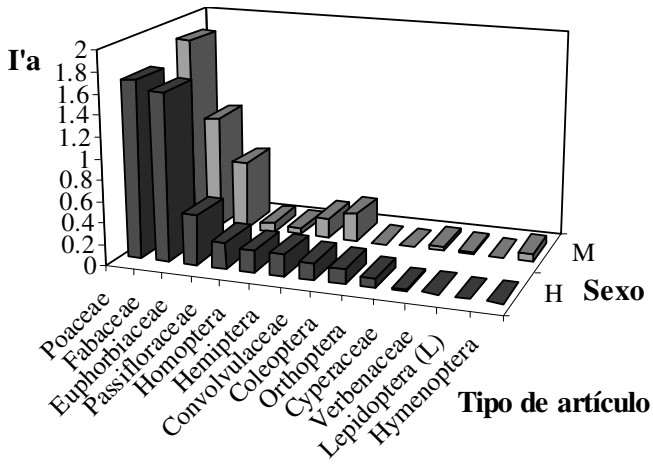

Fig. 8. Valores del Índice de Importancia Alimentaria (I'a) de los grupos consumidos por la Codorniz (*C. virginianus*) según el sexo en Varadero en diciembre de 2004 (H: hembras, M: machos, L: larvas).

Tabla 12. Variedad de artículos consumidos (S), diversidad (H'), amplitud (Bij) y equitatividad (J') del subnicho trófico de *C. virginianus* por sexo en Varadero en diciembre de 2004.

	S	H'	Bij	J'
Hembras	48	1,85	2,84	0,48
Machos	56	1,83	2,68	0,45

Tabla 13. Análisis del contenido de piedras en la molleja de *C. virginianus* por sexo en Varadero en diciembre de 2004.

	Hembras	Machos
Número promedio	21,20	5,33
Peso promedio de piedras por molleja (g)	0,60	0,15
Frecuencia de aparición (%)	33	56

mucho más bajos (Fig. 9). Esto se invirtió completamente durante la seca al ser las fabáceas el grupo más importante marcando una diferencia aún mayor con las poáceas. Sin embargo, en Varadero durante la época de seca ambas familias tuvieron valores de importancia muy similares y altos. Si se compara el período de seca en Artemisa con el período de seca de Varadero se observa que en los dos casos siguen en importancia las mismas familias de semillas. El resto de los artículos no tuvieron una importancia relevante. El Índice de Importancia Alimentaria fue mayor durante la época de lluvia para todos los insectos, destacándose las larvas de mariposas y los coleópteros.

Las variaciones numéricas de los grupos de semillas consumidas en cada época del año solo fueron relevantes para las fabáceas y poáceas (Fig. 10A). En la estación de lluvia disminuyó notablemente el consumo de fabáceas y aumentó el de las poáceas lo cual debe estar condicionado por los cambios estacionales de disponibilidad de estas semillas en su hábitat. Las poáceas son un grupo que generalmente está presente durante todo el año, pero se observa un incremento en su producción de semillas cuando comienza el período de lluvia ya que en él florecen y fructifican (Pedro Herrera, com. pers). Este resultado coincide con los de Morales (1980) y ratifica el carácter oportunista de esta especie, al tomar del medio lo que abunde en cada momento demostrando de esta forma su gran adaptabilidad a ambientes cambiantes, como los destinados a la agricultura. Posiblemente el aumento en el consumo de fabáceas durante la estación de seca esté ocasionado por una disminución en la abundancia de poáceas, aunque muchas de ellas fructifican y florecen en este momento. Lo mismo ocurre con los insectos (Fig. 10B).

Desde el punto de vista cualitativo la dieta de la Codorniz arrojó en ambos períodos un índice de similitud del 71 %, el cual se basa en diferencias en las semillas consumidas en cada época ya que todos los grupos de insectos estuvieron presentes en los dos períodos. La diferencia más grande se presentó en el número de cada artículo, aspecto en que la similitud cuantitativa fue de un 33 %, lo que debe estar condicionado por la disponibilidad de los artículos en cada época.

Los mayores valores de diversidad se registraron durante el período de seca en Artemisa, esto responde fundamentalmente a un uso más equitativo de los recursos alimentarios (Tabla 15). Las diferencias encontradas en cuanto a los artículos ingeridos en cada municipio durante la época de seca pudieran explicarse teniendo en cuenta la posible variabilidad en las ofertas nutricionales en cada uno de ellos, además de por los diferentes momentos en que se realizaron las colectas.

Durante el período de lluvia las codornices consumieron un mayor número de gastrolitos pero de menor tamaño (Tabla 16). Aunque el peso promedio de gastrolitos por molleja no mostró diferencias estadísticamente significativas al compararlo entre épocas (P = 0,2053), hubo una tendencia a que las piedras fueran mayores durante la seca, probablemente por la necesidad de triturar una mayor cantidad de semillas. Es decir, durante la lluvia consumieron muchos gastrolitos pero de pequeño tamaño y durante la seca consumieron menos pero de mayor tamaño. No se observaron grandes diferencias en cuanto a la frecuencia de consumo.

Tabla 14. Número de grupos y de artículos identificados en la dieta de *C. virginianus* por época (A: en Artemisa, V: en Varadero).

	Número de grupos		Número promedio de artículos	
	Semillas (familias)	Insectos (órdenes)	Semillas	Insectos
Hembras	7	4	716,5	1,1
Machos	8	4	734,7	0,7

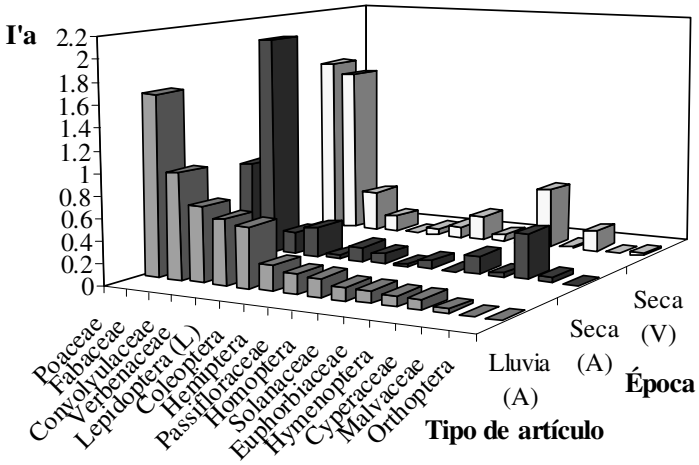

Fig. 9. Valores del Índice de Importancia Alimentaria (I'a) de los grupos consumidos por la Codorniz (*C. virginianus*) según la época del año y el municipio (A: en Artemisa, V: en Varadero, L: larvas).

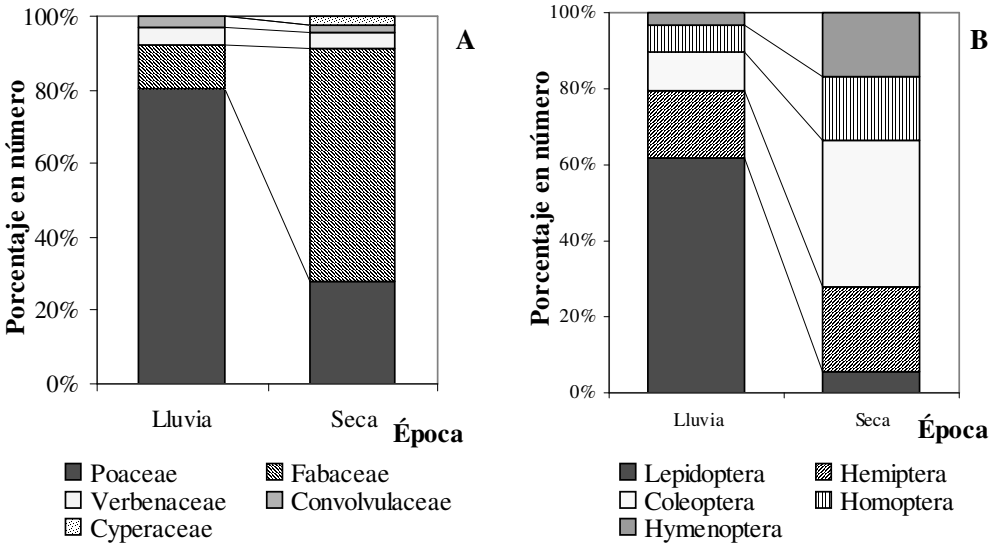

Fig. 10. Variaciones numéricas de los artículos consumido por la Codorniz (*C. virginianus*) durante la época de lluvia y seca en Artemisa para las familias botánicas (A) y para los insectos (B).

CONCLUSIONES

Aunque el dimorfismo sexual se presenta principalmente en relación con las diferencias en coloración de hembra y machos existen otros caracteres como el largo del pico y el tarso, que son ligeramente mayores en los machos.

El patrón de color presente en el pecho de los machos es sumamente variable, al parecer por los cruzamientos ocurridos con *C. v. virginianus.*

Los pichones son nidífugos y crecen rápidamente. El carácter con desarrollo más acelerado fue el tamaño de las alas, lo que les permite volar desde muy temprano favoreciendo su supervivencia.

La Codorniz es una especie que consume fundamentalmente semillas, con un amplio espectro trófico que no depende de una selectividad específica, sino de la disponibilidad y abundancia de los recursos existentes. Las semillas más utilizadas fueron las pertenecientes a las familias Poaceae y Fabaceae.

Existe una tendencia a que ambos sexos utilicen los recursos alimentarios en proporciones diferentes, lo que debe ayudar a la disminución de la competencia intraespecífica.

Tabla 15. Variedad de artículos consumidos (S), diversidad (H'), amplitud (Bij) y equitatividad (J') del subnicho trófico de *C. virginianus* por época (A: Artemisa, V: Varadero). * = diferencias estadísticamente significativas ($P < 0.05$).

	S	H'	Bij	J'
Lluvia (A)	65	1,97*	2,90	0,47
Seca (A)	66	2,97*	11,80	0,71
Seca (V)	67	1,89*	2,73	0,45

Tabla 16. Análisis del contenido de gastrolitos en la molleja de *C. virginianus* por época durante la lluvia y la seca en Artemisa.

	Hembras	Machos
Número promedio	37	12,4
Peso promedio de piedras por molleja (g)	0,42	0,32
Frecuencia de aparición (%)	88	93

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FIRST RECORDS OF WHITE-EYED VIREO, BLUE-WINGED WARBLER, AND BLUE-WINGED WARBLER × GOLDEN-WINGED WARBLER HYBRID FOR ST. MARTIN

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Abstract.—We observed a single White-eyed Vireo (*Vireo griseus*), banded a Blue-winged Warbler (*Vermivora pinus*), and banded a Blue-winged Warbler × Golden-winged Warbler (*Vermivora chrysoptera*) hybrid on Pic Paradis, St. Martin, FWI, during January of 2005. These are the first records for these species on St. Martin and the White-eyed Vireo observation constitutes the first record for this species in the Lesser Antilles.

Key Words: Blue-winged Warbler, *Golden-winged Warbler*, *hybrid*, *Lesser Antilles*, *St. Martin*, Vermivora chrysoptera, Vermivora pinus, Vireo griseus, *White-eyed Vireo*

Resumen.—PRIMEROS REGISTROS DE *VIREO GRISEUS*, *VERMIVORA PINUS*, Y *VERMIVORA PINUS* × *VERMIVORA CHRYSOPTERA* EN ST. MARTIN. Observamos un individuo de *Vireo griseus,* un individuo anillado de *Vermivora pinus* y un híbrido anillado de *Vermivora pinus* × *Vermivora chrysoptera* en Pic Paradis, S. Martín, Antillas Francesas, durante enero del 2005. Estos son los primeros registros de estas especies en S. Martín y la observación del *Vireo griseus* es la primera de esta especie en las Antillas Menores.

Palabras claves: Antillas Menores, *Cigüita Ala Azul*, *Cigüita Ala Oro*, *Julían Chiví Ojiblanco*, *St. Martin*, Vermivora chrysoptera, Vermivora pinus, Vireo griseus

DURING JANUARY 2005, while conducting standardized mist-netting and point counts on St. Martin, we observed or captured two species and a hybrid previously unrecorded on the island: White-eyed Vireo (*Vireo griseus*), Blue-winged Warbler (*Vermivora pinus*), and a hybrid Blue-winged Warbler × Golden-winged Warbler (*Vermivora chrysoptera*). The White-eyed Vireo represents the first record for the Lesser Antilles.

OBSERVATIONS

White-eyed Vireo.—At approximately 11:00 hr on 11 January 2005, while conducting point counts in the xerophytic forest dominated by Thorn Acacia (*Acacia tortuosa*), Buttonwood (*Platanus hispanica*), and ficus (*Ficus* sp.) below Pic Paradis, A. Brown first heard an unfamiliar vireo song and then observed the bird within 5 m for 20 min through 10× binoculars. It was about 3 m high in a Thorn Acacia (*Acacia tortuosa*) and constantly moved between branches. A. Brown and Karla Falk relocated it later that day and observed it for an additional 20 min, but we were unsuccessful in obtaining a photograph. An attempt to relocate the bird the following day was unsuccessful.

The bird was identified by its bright yellow supraloral area connected with a bright yellow orbital ring. The pale iris indicated it was an adult (Pyle 1997). The bill and lores were black, the forehead and crown olive green, and the nape was pale gray extending down the sides of the neck onto the upper breast. The throat, breast, and belly were white with the flanks a bright lemon yellow. The back and upper tail were the same shade of olive green as the crown. The wings had two white wing bars separated by a black bar, and olive green primaries and secondaries tipped with black and edged with yellow. The tail was blackish gray, with the outer rectrices edged with yellow. The legs were gray.

White-eyed Vireo is a regular over-wintering migrant through the northern Caribbean. The species is considered uncommon in the Bahamas, Cuba, and the Caymans. It is rare in Turks and Caicos, Jamaica, and Puerto Rico, and is a vagrant on Hispaniola and the Virgin Islands (St. John) (Bond 1987, Pashley 1988a, 1988b, Faanes and Haney 1989, Pashley and Hamilton 1990, Bond 1993, Raffaele *et al.* 1998). The species also overwinters from southeastern North America through Central America to Panamá. The species breeds in eastern North America (Hopps *et al.* 1995). Although there are no records from the Lesser Antilles, there is one remarkable record farther south from Tobago (Petersen and McRae 2002, White and Hayes 2002).

Blue-winged Warbler.—We mist-netted an individual (Fig. 1) in secondary dry forest dominated by mature mango (*Mangifera indica*), gum tree (*Acacia nilotica*), and ficus (*Ficus* sp.) at 16:00 hr on 19 January 2005**.** It was banded with United States Bird Banding Lab (BBL) number 2360-64326, sexed as a male based on plumage, and aged as a 2CY male based on complete ossification of the bird's skull and the shape of the outer rectrices and primary coverts (Pyle 1997). There was no fat store, no body molt, no flight feather molt and no flight feather wear. Wing chord was 61.0 mm and body mass was 9.0 g. The bird was photographed and released following the data collection**.** It did not call in the hand and was not observed again following release.

The bird was yellow on the crown, throat, and sides of the neck, with the auriculars and nape a duller yellow, tinged blue. A thin black line extended from the bill through the lores to a point between the eye and nape. The iris was black. The breast, belly, and flanks were lemon yellow, and the undertail coverts were white. The back, scapulars, and uppertail coverts were yellowish blue. The wings had two white wing bars separated by a bluish bar, and blue-gray primaries and secondaries with some yellowish edging. The tail was blue-gray and the legs were black.

Fig. 1. Male Blue-winged Warbler (*Vermivora pinus*) at Pic Paradis, St. Martin, 19 January 2005. Photo by Adam Brown.

Blue-winged Warbler × Golden-winged Warbler.—We mist-netted a bird (Fig. 2) in secondary dry forest at 10:00 hr on 2 January 2005. It was banded with BBL 2360-49702, sexed as a male based on plumage, and aged as a second year bird based on complete ossification of the bird's skull and the shape of the outer rectrices and primary coverts (Pyle 1997). It had no fat store and no body molt or flight feather molt but some flight feather wear. Wing chord was 61.0 mm and body mass was 8.7 g. The bird did not call in the hand and was not seen again after release.

The bird was bright yellow on the forehead and throat. A bold black eye line connected the black lores to the orbital ring and continued to a point between the eye and nape, and also spread below the eye onto the auriculars, extending about halfway down the cheek. The nape and back were blue yellow. The breast, belly, and flanks bright yellow, and the undertail coverts were white. The wing had two yellow-white wing bars and a small amount of blue-gray, with blue-gray primaries and secondaries, and many small yellow feathers randomly scattered on the upperwing. The tail was blue-gray with long white patches on the inner web of the outer rectrices. The legs were black.

This bird did not fit the classic "Brewster's" or "Lawrence's" hybrid phenotypes, so it was most likely a second or higher generation back-cross hybrid with a Blue-winged. However, it looked more like a Blue-winged Warbler except for the more extensive black below the eye and the extensive yellow wash on the wingbars. The dark facial pattern, especially in the auricular area, suggests a Lawrence's type back-crossed individual.

There are very few records for Blue-winged War-

Fig. 2. Male Blue-winged Warbler (*Vermivora pinus*) × Golden-winged Warbler (*V. chrysoptera*) hybrid at Pic Paradis, St. Martin, 2 January 2005. Photo by Adam Brown.

bler and no records of either Golden-winged Warbler or Blue-winged Warbler × Golden-winged Warbler hybrids for the Lesser Antilles (Pashley and Hamilton 1990, Confer 1992). Blue-winged Warblers are rare in the Bahamas, Turks and Caicos, the Greater Antilles, and the Virgin Islands, with the exception of Puerto Rico where there are no records (Raffaele *et al*. 1998). The species is considered a vagrant on St. Barthelemy and Guadaloupe in the Lesser Antilles (Gochfield 1974, Bond 1987, Pashley 1988a, 1988b, Faanes and Haney 1989, Pashley and Hamilton 1990, Bond 1993, Raffaele *et al.* 1998). It is a common overwintering migrant in Central America to Panama. The two species breed in eastern North America (Confer 1992, Curson *et al.* 1994, Dunn and Garrett 1997, Gill *et al.* 2001).

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CONSERVATION IMPLICATIONS OF MULTIPLE HABITAT USE BY NORTHERN WATERTHRUSHES DURING THE NONBREEDING SEASON

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Abstract.—Using evidence from individually-marked birds and radio-telemetry, we studied daily and seasonal habitat use of Northern Waterthrushes (*Seiurus novaboracensis*) in Puerto Rico during the nonbreeding season from 1999 to 2001. Our study was conducted in mangrove habitats along the southwest and east coasts and near ponds and washes in mesquite savanna in the southwest. Of 29 radio-equipped birds we found a dominant pattern of overnight roosting (87.8% of radioed birds) in coastal red mangroves (*Rhizophora mangle*), regardless of the habitat used for daytime feeding. Birds left feeding areas just before dusk, sometimes flying as far as 1.8 km to coastal red mangroves. These same birds returned to their feeding areas over a broader range of times the following morning. We also observed individuals shift feeding areas (60.0% of birds followed for 3 or more days) over the course of days, weeks, and months. The combination of daily movements between habitats and longer term shifting of feeding areas suggests that this species selects multiple habitats that meet daytime feeding and night-time roosting requirements. Due to these movements, habitat preferences of individual birds cannot be inferred from short-term diurnal censuses or mist net data alone. These findings document the need to consider multiple habitats as well as habitat mosaics when conserving Northern Waterthrushes and other species.

Key words: habitat use, Northern Waterthrush, Puerto Rico, Seiurus novaboracensis

Resumen.—IMPLICACIONES CONSERVACIONISTAS DEL USO DE MÚLTIPLES HÁBITAT POR *SEIURUS NOVABORACENSIS* DURANTE LA ESTACIÓN NO REPRODUCTIVA. Estudiamos mediante individuos marcados y radiotelemetría, el uso de hábitat diario y estacional *de Seiurus novaboracensis* en Puerto Rico, durante las estaciones no reproductivas de 1999 al 2001. Nuestro estudio se desarrollo en manglares a lo largo de las costas este y suroeste y en lagunas de las sabanas del suroeste. De 29 individuos marcados con radio encontramos un patrón dominante de descanso nocturno en áreas costeras de mangle rojo (*Rhizophora mangle*) (87,8% de las aves con radiotransmisores), independientemente del tipo de hábitat empleado para la alimentación durante el día. Las aves abandonaron sus áreas de alimentación justo antes del atardecer; en ocasiones volando hasta 1,8 km hacia las áreas costeras de mangle rojo. Estos mismos individuos regresaron a las áreas de alimentación en la mañana siguiente en un rango más amplio de tiempo. También observamos individuos que cambiaron sus áreas de alimentación (60,0% de las aves monitoreados por tres o más días) durante los días, semanas y meses. La combinación de los movimientos diarios entre los hábitat y los cambios a largo plazo de las áreas de alimentación sugiere que esta especie selecciona hábitat múltiples que cumplimentan sus requerimientos de alimentación durante el día y de descanso durante la noche. Debido a estos movimientos, las preferencias de hábitat de aves individuales no pueden ser inferidas a partir de censos diurnos a corto plazo o de las capturas en las redes ornitológicas solamente. Estos hallasgos apoyan la necesidad de considerar los hábitat múltiples y los mosaicos de hábitat cuando hablamos de la conservación de *Seiurus novaboracensis* y otras especies.

Palabras claves: Puerto Rico, Seiurus novaboracensis*, Señorita de Manglar, uso de hábitat*

NEARCTIC-NEOTROPICAL migratory birds show a diversity of habitat-use patterns among species. These differences include season-long territory occupancy (Holmes and Sherry 1992), often with social dominance hierarchies (Marra *et al.* 1993). Other species use ephemeral and discreet habitats (i.e. floaters; Winker *et al*. 1990) or nomadic foraging on short-lived food sources (Greenberg 1984), or alternatively, consistent, if temporary, occupancy of sites within a season (Lefebvre and Poulin 1996, Reitsma *et al*. 2002). These habitat use patterns may also be combined with off-site roosting behavior (M. Baltz, pers. comm., Staicer 1992, Reitsma *et al*. 2002, this study). The factors that lead to these habitat use differences are only partially understood, yet they have clear management and conservation implications regarding the differing importance of single and multiple habitats for each species.

The Northern Waterthrush (*Seiurus novaboracen-*

sis) over-winters in the southern United States, Caribbean, Central America and northern South America (Eaton 1995). This species is generally found in coastal wetland habitat, especially mangroves, where they are often abundant (Lefebvre *et al.* 1992, Wunderle and Waide 1993). We found more than half of all migrant passerines in Puerto Rican mangroves were Northern Waterthrushes (Reitsma and Hunt, unpublished data). Individual Northern Waterthrushes are found in well-defined locations (e.g., feeding areas), during daylight hours for days, weeks, and months (Schwartz 1964, Reitsma *et al.* 2002). However, birds usually move to different locations for nighttime roosting, even from habitats that support high densities of feeding areas (Reitsma *et al.* 2002).

Individual birds also shift to new feeding areas in an unpredictable manner. Coastal wetland habitats in much of the Caribbean Basin become progressively drier from September to April due to extended periods of low precipitation from January through March. This may be the primary reason individual birds relocate to moister areas (e.g., Lefebvre and Poulin 1996). However, our evidence indicates factors in addition to habitat moisture level are operating on Northern Waterthrush behavior.

Our objective was to better understand habitat use of Northern Waterthrushes during the nonbreeding season. We used radio-telemetry to monitor Northern Waterthrush movements and habitat occupancy in locations in eastern and southwestern Puerto Rico. We documented the daily movement to and from roost sites, and the locations and shifts of feeding areas during continuous short (several days) and discontinuous longer (months and seasons) time periods.

STUDY AREAS AND METHODS

This study was conducted at the Cabo Rojo National Wildlife Refuge (CRNWR) on the arid southwest coast, and at the Roosevelt Roads Naval Station (RRNS) on the eastern shores of Puerto Rico during the three nonbreeding seasons, 1999-2001. CRNWR's dominant plant community is mesquite-savanna but there are also ephemeral ponds and wet washes that flow into red mangroves (*Rhizophora mangle*) on the nearby coast. Washes generally have standing water through the first half of the nonbreeding season (October into January). Ponds usually contain standing water throughout the season, although not in all years. Due to our interest in the use of red mangroves as roosting sites for birds that used other habitats for feeding areas, we attached radio transmitters to 17 birds (15 individuals) along the washes and ponds during January and March 1999 and 2000.

Roosevelt Roads Naval Station has extensive areas of mangroves, but relative abundance of white (*Laguncularia racemosa*), black (*Avicennia germinans*), and red mangrove differs among the numerous mangrove forest areas. Unlike red mangroves, black and white mangroves grow in areas that are not constantly flooded with salt water. Our radio-telemetry study sites included a predominately mature white mangrove area, a mixed age and density black mangrove area, and an area with red and black mangrove and scrub habitat. We collected location and movement data on 12 radio-equipped birds (11 individuals) during October, January and March 2000 and 2001.

All Northern Waterthrushes were captured in mist nets. Each bird was weighed, color-banded, and scored for furcular fat. Wing chord, tarsus, and tail length were also measured. When possible, we determined sex using a combination of wing chord and molecular techniques as described in Reitsma *et al*. (2002) and age using plumage criteria as in Pyle (1987). We attached radio transmitters on the upper back by trimming scapular feathers and using five-minute epoxy. Transmitters (Holohil Ltd.) averaged 0.78 g and a 3 wk battery life. The range of reception was $\geq$ 1 km in open habitat but was restricted to a few hundred meters in thick vegetation. When possible, we increased our detection range by using hilltops and towers near the study areas. With telemetry, we were able to follow individual Northern Waterthrush movement between feeding and roosting areas.

RESULTS

During the three nonbreeding seasons from 1999-2001, we followed 29 Northern Waterthrushes (26 individuals) on 34 days for a total of 123 bird-days (range 3-10 days, $\bar{x}$ = 4.2 days/bird). We observed behavioral changes associated with handling, banding and applying a radio transmitter only immediately after release. One bird roosted near its release site adjacent to feeding area after being released just before dark. Otherwise, within one hour all birds appeared to be behaving normally. We observed or suspected no mortality related to this study. Birds were only temporarily encumbered because radio transmitters fell off all birds within 2 weeks of application. Of the 29 radio-equipped birds, 27

Table 1. Northern Waterthrush movements among habitats from radio-telemetry studies in two locations in Puerto Rico: Cabo Rojo National Wildlife Refuge (CRNWR) and Roosevelt Roads Naval Station (RRNS), 1999-2001. Number (percentage).

Variable	CRNWR	RRNS	Total
# of birds with radio transmitters			
1998/1999	9	0	9
1999/2000	8	3	11
2000/2001	0	9	9
Total[a]	17	12	29
# of days of telemetry data	21	13	34
# of bird-days	79	44	123
# of bird-nights roosted			
in red mangroves	72 (91.1)	36 (81.8)	108 (87.8)
not in red mangroves	7 (8.6)	8 (18.2)	16 (12.2)
# of bird-days moved to red mangrove roost site			
from non-red mangrove feeding area	66 (83.5)	31 (70.5)	97 (78.9)
# of birds (of 29) that roosted in red mangroves	16 (94.1)	11 (91.7)	27 (93.1)
# of birds that shifted feeding areas[b]	8 of 14 (57.1)	4 of 6 (66.7)	12 of 20 (60.0)

[a]Three individuals had a radio-transmitter in two seasons (two at CRNWR, one at RNS).
[b]Birds with 3 or more days of data.

(93.1%) regularly used roost sites in red mangroves distinct from feeding areas (Table 1). Using data of birds from CRNWR where we have the most accurate measurements, the distance traveled from feeding areas not in red mangroves to roost sites in red mangroves varied depending on habitat distribution from 600 m to over 1800 m ($\bar{x}$ = 1.3 km, n =16). Birds typically departed for roost sites 10 to 20 min before dark. Return from roost sites was more variable, especially later in the season, but usually occurred within a few hours of sunrise. Only two birds (6.9%) in our study that had a feeding area away from red mangroves did not roost in red mangroves. One bird remained on its feeding area on a pond in CRNWR, the other moved from its feeding area to a roosting site in black mangroves in RRNS. Three birds (10.3%) had both feeding areas and roosting sites in red mangroves. We observed no seasonal differences in the use of red mangroves for roosting from October to March. We were unable to determine age of 10 or sex of 17 of 29 birds with radio-transmitters. However, seven were males and five were females. Five birds were in their first year, 14 were older than their first year. Our limited data suggest no age, or sex differences in use of red mangroves for roosting.

Although individual birds consistently used well-defined feeding areas both in the short term (days) and seasonally (months), they did not aggressively defend these areas. However, of those we monitored for more than three days, 12 of 20 (60.0%) shifted their feeding areas from one location to another (Table 1). Birds were sometimes absent from their feeding areas for days or weeks but later returned. In the case of the birds using the washes and ponds within the mesquite savanna in CRNWR, we noted a clear shift from washes with standing water to partially dried ponds between January and March

(at which time the washes were completely dry). At RRNS, although the habitat moisture was not measured, it did not obviously change.

DISCUSSION

Northern Waterthrushes in Puerto Rico clearly demonstrate two distinct movement patterns in coastal habitats: (1) movement between daytime feeding areas to nighttime roosts, the latter usually in coastal red mangroves; and (2) shifting of daytime feeding areas from one location to another within a single nonbreeding season, and often within the period of a single week. Collectively, these patterns have several implications concerning how this species uses habitat during the nonbreeding season.

Most Northern Waterthrushes we studied in Puerto Rico used red mangroves for roosting, usually moving from other habitats used for feeding. This was documented using radio telemetry as reported here and from a previous study of color-banded birds at a site in southwestern Puerto Rico (Reitsma *et al.* 2002). In that study, Northern Waterthrushes captured in mist nets (aligned along a distinct boundary between red and black mangroves) suggested mass movement into red mangroves from black mangrove and presumably other feeding areas in the evening and the reverse in the morning (Reitsma *et al.* 2002). Adaptive and non-adaptive genetic predisposition may be alternatively suggested as possible explanations for the use of red mangroves for roosting; however, our study did not address proximate or ultimate causes. Nevertheless, the predominance of this behavior indicates that coastal red mangrove habitat is important to this species. Because of the high density of Northern Waterthrushes in red mangroves and their widespread use of this mangrove type for roosting, it is important to preserve this valuable and disappearing habitat.

The consistent use of small non-territorial feeding areas suggests some advantage to certain areas, presumably in response to food availability. However, the use of these feeding areas varies over time. This species feeds primarily on the ground by probing and turning over litter, except for birds whose feeding areas are in red mangroves. Birds in red mangrove forage on near-horizontal roots near the surface of the water. We have evidence from other mangrove forests in southwestern Puerto Rico (Reitsma *et al.* 2002) that Northern Waterthrushes leave black mangrove sites when they are flooded and return when the water level recedes. At CRNWR there was an obvious link to moisture levels along washes in scrub/mesquite uplands. Data from the washes and ponds in the southwest suggests they desert feeding areas that dry out. Drying conditions in March 1999 at CRNWR resulted in many Northern Waterthrushes ($\geq$ 10) occupying overlapping feeding areas within a single 0.33 ha semi-dry pond.

Not all birds followed a predictable pattern. At RRNS, our data suggest a pattern of Northern Waterthrushes abandoning areas that dry, but certain individuals shifted into scrub habitat that remained dry most of the year (Reitsma pers. obs.). Thus, the ability to move to new areas may be an adaptive response to ephemeral habitats that change over short time intervals.

In addition to Northern Waterthrushes, we observed a pattern of daily movement to roost sites in red mangroves from a small sample of Prairie (*Dendroica discolor*) and Prothonotary Warblers (*Protonotaria citrea*) using mist netting and radio telemetry at RRNS (Reitsma and Smith, unpublished data). Large flocks of Gray Kingbirds (*Tyrannus dominicensis*) also moved to and from red mangroves for roosting (pers. obs.). In an earlier study, we documented a consistent pattern of movement of Northern Waterthrushes between a black mangrove site and a large adjoining red mangrove area in southwestern Puerto Rico (Reitsma *et al.* 2002). These patterns indicate the need to consider habitat at multiple scales when managing for some species. This result carries implications when considering which habitats to conserve. Northern Waterthrushes use multiple habitat types for different functions. While Northern Waterthrushes may occupy and successfully over-winter in a variety of habitats, most select feeding areas that are in close proximity to red mangrove roost sites (Hunt *et al.* 2005). Northern Waterthrushes occupy a range of habitat types during the day, but most shift their feeding areas as conditions change over the season.

Finally, our data from telemetry indicate that Northern Waterthrushes move considerable distances and often through multiple habitats, some of which are used only when passing to and from roost sites. Therefore, one must use caution when inferring patterns of relative abundance or habitat preference from census or mist net data. Although the relative importance of the multiple habitat types used is unknown, each habitat may provide essential requirements. This suggests that although preserv-

ing mangrove habitat should be the highest priority, preserving other habitat types would likely enhance the overall survival of this species over the nonbreeding season, especially if these habitats are contiguous with coastal red mangroves. Comments from anonymous reviewers and the editors improved this paper.

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THE AMERICAN WHITE PELICAN (*PELECANUS ERYTHRORHYNCHOS*), A WINTER RESIDENT IN CUBA

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Abstract.—We report for the first time a population of 400 American White Pelicans (*Pelecanus erythrorhynchos*) as winter residents in the Maspoton Lagoon in the South coast of Pinar del Rio Province, Cuba.

Key words: American White Pelican, Cuba, Pelecanus erythrohyncus, *winter resident*

Resumen.—EL PELÍCANO BLANCO (*PELECANUS ERYTHROHYNCHOS*), UN RESIDENTE INVERNAL EN CUBA. Se registra por primera vez una poblacion de 400 pelicanos blancos (*Pelecanus erythrorhynchos*) como residentes invernales en la laguna de Maspoton en la costa sur de Pinar del Rio, Cuba.

Palabras claves: Cuba, Pelecanus erythrohyncus, *Pelícano Blanco, residente invernal*

THE AMERICAN WHITE PELICAN (*Pelecanus erythrorhynchos*) has been described by Raffaele *et al.* (1998) as a very rare non breeding resident on Cuba and Puerto Rico and a vagrant elsewhere in the west Indies. These authors reported a flock of eight birds in one occasion. On the other hand Bond (1993) mentioned that the bird is casual in the West Indies. Garrido and Kirkconnell (2000) considered the bird as a vagrant, and reported eight records for Cuba, one last century (1838) and six recent records in 1940, 1954, 1989, and 1997, usually in January, February, or April in the localities of Yumury in the North of Matanzas province and Zapata Swamp in the south of the same province. In the Handbook of the Birds of the World (Del Hoyo *et al.* 1992) the West Indies are not included in the range for this bird, perhaps due to the few records reported for the region. Their normal winter distribution is along the Pacific and Atlantic coasts from USA to Costa Rica.

Early in the morning (6:00 – 9:00) of 27 March 2004, we visited the Maspoton lagoon, in the coastal wetlands south to Los Palacios Rice Paddies in the west of the country in Pinar del Río province, as part of a project to monitor the birds using both coastal wetlands and nearby rice culture in three Cuban provinces.

As we arrived at the lagoon we observed small groups of American White Pelicans (between 5-15 individuals) feeding together with other seabirds including Brown Pelicans (*Pelecanus occidentalis*) and Double-crested Cormorants (*Phalacrocorax auritus*). A few min later more White Pelicans arrived to form a flock of at least 400 feeding in the lagoon.

After feeding the flock soared over the lagoon for about 2 hr; this behaviour has been described for other migrant birds just before the spring migration (Todd 1996).

Local guides Antonio Morejón and Javier Medina, who have fished regularly in the lagoon sfor many years, report that the species is common in these coastal wetlands during winter. They both confirmed that during the last 6 years the same population size had been using the lagoon during winter residency, from October to March.

Although Del Hoyo *et al.* (1992) pointed out that all migration occurs over land, thus avoiding long sea crossings, it is evident in this case that this statement is not valid. Undoubtedly the birds migrated to Cuba flying over the Florida Strait to winter in our coastal lagoons. The same authors stated that the species is very susceptible to disturbance by humans, so perhaps these remote and inaccessible areas provide them not only with a wide offer of feeding resources but with an optimal area for resting without disturbance during their winter residency in the largest island of the West Indies.

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TWO OBSERVATIONS OF ALPINE SWIFT (*APUS MELBA*) ON BARBADOS

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Abstract.—An Alpine Swift (*Apus melba*) observed at St. Bernards Village from 21 June to 9 July 2003 and another at Newcastle on 31 July 2005 represent the second and third occurrences on Barbados. These are the sixth and seventh observations for the Western Hemisphere.

Key words: *Alpine Swift*, Apus melba, *Barbados*, *observations*

Resumen.—DOS OBSERVACIONES DEL VENCEJO COMÚN (*APUS MELBA*) EN BARBADOS. Un Vencejo Común (*Apus melba*) fue observado en la villa de St. Bernards del 21 de junio al 9 de julio del 2003 y otro en Newcastle el 31 de julio del 2005. Estos constituyen el segundo y tercer reportes en Barbados y el sexto y séptimo del hemisferio occidental.

Palabras claves: Apus melba*, Barbados, observaciones, Vencejo Común*

TWO RECENT OBSERVATIONS of Alpine Swift (*Apus melba*) on Barbados are presented in this note, together with a summary of other Western Hemisphere occurrences.

OBSERVATIONS

The first observation occurred while Frost was watching up to six Black Swifts (*Cypseloides niger*) feeding over the valley adjacent to St. Bernards Village, St. Joseph (13°12'N, 59°34'W, ca 300 m elevation) in the late afternoon of 21 June 2003. He was surprised to observe, at 18:25 hr for several seconds, a much larger swift fly close over the tree tops nearby. His initial impression was of a bird almost one and a half times the size of a Black Swift, with proportionately longer wings and tail, and chest area which appeared paler than the darker anterior and posterior underparts. The viewing conditions were poor with fading light and the sun behind the bird. However, Alpine Swift immediately sprang to mind as a possible candidate. About 3 min later the large swift reappeared, this time flying much higher over the trees and then almost overhead. The large white oval area on the underparts, which contrasted with the chocolate-brown breast and vent areas, gleamed as it flew along a shaft of sunlight for several seconds. The bird was clearly an Alpine Swift. The bird made two more passes overhead in the next five minutes but it was getting too dark to make out further details. Frost left at 18:40 hr wondering whether it would be there in the morning.

Frost and Edward Massiah visited the site the following morning and spent several hours watching and photographing the Alpine Swift. The bird often obliged, making a circuit which brought it within a range of 10-15 m, including close overhead, before flying down into the valley below allowing good dorsal views. The large white patch on the underparts extending onto the flanks was prominent, visible at a considerable range in good viewing conditions, with the remaining underparts ap-

Fig. 1. Alpine Swift (*Apus melba*) at St. Bernards Village, St. Joseph, Barbados, 22 June 2003. Photo by Martin D. Frost.

pearing dark brown at a distance. At very close range the white throat area was discernible although this feature was difficult to see unless the bird was almost directly overhead. The upperparts were gray-brown, palest in the mantle and rump area and slightly darker on the wings. Its flight appeared more powerful and direct than that of the Black Swifts, with shallower wing beats giving an overall more graceful impression. The tail was usually closed, giving an attenuated appearance, but when opened was moderately forked.

The Alpine Swift was observed on 7 out of 8 subsequent days that this site was visited. It was present on 3 July when Frost and Burke visited the site together and was last seen on 9 July, making its stay at least 19 days long. It and the Black Swifts were absent from this location on 7 July when a moderately strong tropical wave was affecting the island with the swifts presumably feeding at lower elevations. Initially, the Alpine Swift loosely associated with the Black Swifts, but eventually settled into a different routine, feeding closer to the tree tops, farther down in the valley. It came less frequently to the ridge at the top of the valley than the Black Swifts.

The second observation was at 17:43 hr on 31 July 2005 at Newcastle, St. John (13°11'N, 59° 29'W, ca 180 m elevation). Burke and Renata Goodridge were watching for the Black Swift flight when an Alpine Swift appeared, passing within 10 m to the northeast. The large size, flight aspect and plumage characteristics were seen well—backlit in the afternoon light. The bird was observed through ca 150 m of flight as it continued on a direct path to the southeast.

DISCUSSION

These are the second and third observations of Alpine Swift for the island and the sixth and seventh occurrences for the western hemisphere. The first occurrence for the island was a specimen (ANSP 169868) assigned to the African race *tuneti*. The front of the specimen tag is labeled "Barbados 9/55 after hurricane Janet" while the back of the tag provides further details: "at Gibb's on west coast of Barbados; 1st seen on 20 Sept., collected 27 Sept 1955 by Mr. Webster." The other western hemisphere occurrences are from the Caribbean region with one exception and also involved single individuals: Grande Anse, Guadeloupe, on 18 April 1987 (Feldmann and Pavis 1995), Desecheo Island, Puerto Rico, on 20 July 1987 (Meier *et al* 1989); Moule a Chique, St. Lucia, on 19 August 1992 (Burke 1994), and St. Laurent, French Guiana, on 16 June 2002 (Ottema 2004).

Given the wide-ranging daily movements of Alpine Swift estimated to be 600 to 1,000 km (Snow and Perrins 1998), the recent spate of New World records is perhaps not altogether surprising.

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REPORTS OF THE 15TH REGIONAL MEETING OF THE SOCIETY FOR THE CONSERVATION AND STUDY OF CARIBBEAN BIRDS

Edited by LISA SORENSON

BELOW ARE REPORTS from the workshops, roundtable discussions, and Working Group meetings convened during the 15th Regional Meeting of the Society for the Conservation and Study of Caribbean Birds, held in Guadeloupe, French West Indies, 1-5 August 2005. The scientific program and all abstracts from the meeting can be downloaded from www.scscb.org.

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LONG-TERM CAPACITY BUILDING IN THE CARIBBEAN—STRENGTHENING LOCAL CAPACITY FOR CONSERVATION THROUGH TRAINING OF WILDLIFE PROFESSIONALS

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THIS WORKSHOP ADDRESSED CAPACITY BUILDING as it relates to the Society rather than the needs of the Caribbean as a whole (contrary to the title of the workshop). Specifically the question discussed during this session was, "What actions should the SCSCB take to enhance the involvement of local islanders in its core activities, particularly the biannual meetings and ultimately leadership positions in the Society?"

Participants were divided into five sub-groups. These were organized by language to facilitate conversation. Groups included two Spanish, two English and one French. A facilitator directed each subgroup discussion and a second individual recorded on flip charts the ideas put forward. Each group met for approximately an hour and one half. Near the close of the sub-group segment each sub-group prioritized its recommendations via a vote by the subgroup participants. These priority recommendations were then presented by each of the five facilitators to the entire plenary assemblage. No attempt was made to further prioritize the recommendations of the five sub-groups. Rather, all of the priority recommendations were put forward to the Executive Committee for their consideration. These have been categorized by theme by Andrew Dobson and are included in Table 1 below. The primary categories include: communication, information, networking/ partnership, management, membership, and funding.

A number of innovative ideas came out of this discussion. It is anticipated that many of these could be adopted by the Executive Committee so that the Society might establish a more proactive strategy to better involve local islanders in its future development.

Special thanks are owed to the facilitators who included: Maurice Anselme, Yvonne Arias, Patricia Bradley, Brandon Hay, and Lourdes Mugica.

Table 1. Priority recommendations for actions SCSCB can take to enhance the involvement of local islanders in its core activities.

CONCERNS	POSSIBLE ACTIONS
Communication	
Better web site	Find funding to employ web designer to create dedicated SCSCB web site
Electronic newsletter	Working Group chairs and society members contribute news items, C. Wardle will produce 2 times per year

Table 1. (Continued)

CONCERNS	POSSIBLE ACTIONS
Communication (Cont.)	
Why join SCSCB?	Need to get the message out!
Language barrier for French speaking islands	Translate web and newsletter text to French
Individual island involvement	Expand ways to engage local islanders in the society (e.g., through projects and/or research)
Meeting attendance and involvement	Tie financial support for meeting attendance to playing a more active role, require local co-leaders and co-presenters for all papers, workshops and initiatives
Information	
Provide greater information on the activities of the various SCSCB Working Groups and current projects	Through newsletter, website and reports
Need information on skills required	Through a workshop or questionnaire
Offer workshops, especially in the 'off years' between conferences	Design and run workshops
Skills training (e.g., monitoring, outreach, habitat restoration)	Hold training workshops for local islanders
More publications (posters, books, outreach and educational materials, etc)	Produce in three languages
Journal required to encourage exchange of information and scientific research	Continue publication of Journal of Caribbean Ornithology (JCO)
Strategic plan to be implemented	Distribute plan to members
Methodological help in defining priorities (especially French Antilles)	SCSCB assist by offering a priority setting workshop
A joint education/awareness program for all the French Caribbean areas	SCSCB to assist in developing with local French leadership
Concern over writing standards, especially Journal of Caribbean Ornithology	Sponsor writing workshops
Networking/Partnerships	
Increase inter-island cooperation	Channel and coordinate efforts through SCSCB, especially on regional topics and issues of shared concern (e.g., monitoring and conservation of migratory species, protected areas management, nature tourism)
Develop increased partnerships	Expand our partnerships with other groups in the Caribbean to involve them further in the society, establish formal links with BirdLife, SPAW, Waterbird Council, etc
Internships could take place	SCSCB partner with local NGOs, colleges and universities to develop internships offering training/ experience in applied research, management, and conservation
Management	
Appoint a development officer – prior to a paid secretariat	Employ someone from one island
Employ a paid secretariat	Apply for funding
Hire an intern	Island intern to help with one or more key activities of the society
Have a mentoring program to allow seamless transition during Board changes	Document job descriptions and include mentoring
Leadership training required	Sponsor leadership training workshops
French representative needed on Board	Co-opt to Board?
Membership	
Lack of locals joining SCSCB	Better promotional material, offer opportunities to become involved

Table 1. (Continued)

CONCERNS	POSSIBLE ACTIONS
Membership	
Membership too narrow	Attract members and groups with diverse interests; increase continental membership
Encourage local organisations and groups to join and become involved	e.g., Puerto Rican Ornithological Society
Target teachers, students and artists	Better advertising, offer materials to teachers, and activities for students; promote wildlife artists
Concerns over lack of younger members	Identify younger members and form local youth groups and birding clubs, (e.g., Angela Ramsey willing to try in Tobago), offer summer internships
Funding	
Develop more SCSCB-funded projects to support local people and projects	Identify potential projects (based on local needs and priorities) and raise funds
More individuals writing grant proposals	Provide training in proposal writing (e.g., SCSCB workshop), list grant opportunities and funding agencies on website and in newsletter
Attract funding to support society	Identify major doners (funding agencies, foundations, corporate and business sponsors) and pursue support

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BIRD MONITORING SYMPOSIA AND WORKSHOP: STRATEGIES FOR MONITORING BIRDS IN THE CARIBBEAN—HOW TO DESIGN AND CARRY OUT A MONITORING PROGRAM

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MANY INTERNATIONAL, REGIONAL, AND LOCAL organizations have agreed to the need to establish long-term bird monitoring programs. Habitat-specific data on birds is required because conservation and management activities are related to the population size of a species. The challenge of developing monitoring programs is difficult, however, often because of the lack of qualified biologists or other resources in key regions, and more fundamentally because of confusion over how to compare monitoring data across large areas, especially when local organizations often have their own goals and locally defined monitoring objectives. In this workshop we explored different types of monitoring programs, including inventories; defining population size and habitat relationships based on a broad-scale set of point counts; censuses based on repeated counts; constant effort mist-netting; the determination of reproductive success and reproductive rate through nest monitoring; and the estimation of population composition, survivorship, and site fidelity through a comprehensive program of mist netting and/or color-band resighting.

Following oral presentations, we explored through discussion a variety of monitoring topics. Discussion groups were formed based on an individual's interest in monitoring various types of habitats or species. Thus we had groups discussing the monitoring of West Indian Whistling-Ducks, wetlands and waterbirds, seabird colonies, and forested habitats. Each group informally reviewed monitoring efforts for these species or habitats in the Caribbean, and then explored how a monitoring program could be designed that allowed more inter-island cooperation. Little concrete headway was made on this latter point, but groups also discussed resources needed in order to expand monitoring in the region. All groups expressed an enthusiastic desire for more training in monitoring methods, and some identified existing (albeit limited) opportuni-

ties for training in monitoring techniques.

Because so many participants expressed interest in monitoring training and an on-going monitoring working group, a dinner meeting was held to explore the needs and goals of such a working group. More than a dozen participants evaluated the need for a monitoring working group, and presented their vision of the role of such a group. We then agreed by consensus that a Monitoring Working Group would be formed. Steven Latta of Point Reyes Bird Observatory (slatta@prbo.org) and Jon McCracken of Bird Studies Canada (jmccracken@bsc-eoc.org) agreed to coordinate the working group. We agreed to proceed with the drafting of a vision statement defining the role of the Monitoring Working Group, with an emphasis on training SCSCB members in monitoring techniques, and encouraging inter-island cooperation in monitoring shared species and habitats. We also agreed to prepare a regional report on bird monitoring that will include existing monitoring programs, existing training opportunities, and recommendations for standardized monitoring protocols. Finally, we are exploring options for funding training programs in the region.

J. Carib. Ornithol. 18:84-86, 2005

EDUCATION, AWARENESS, AND COMMUNITY TRAINING INITIATIVES—EXPANDING ON WHAT WORKS AND IDEAS FOR NEW INITIATIVES

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CONSERVATION OF NATURE begins with education—an understanding and awareness of our dependence on intact ecosystems and an appreciation for the many values of biodiversity. There has been much progress in recent years in environmental outreach and education in the Caribbean. SCSCB has developed several innovative and successful programs including the Caribbean Endemic Bird Festival and WIWD and Wetlands Conservation Project. Local NGOs and government agencies partner with us to develop and deliver these programs as well as engage in their own outreach and advocacy projects. The Important Bird Areas Program and recent advent of Site Support Groups has presented new opportunities to engage the public in the conservation of local sites. In this symposium and workshop, we heard excellent presentations about the programs and activities taking place in different countries. Symposium contributors included Lynn Gape (Sorenson presented for Gape), Florence Sergile, Eliezer Nieves, Adrianne Tossas, Susan Bonfield, Yvonne Arias, and Lisa Sorenson. Presenters discussed the results and outcomes of their activities, difficulties and challenges faced and how they were/were not overcome, and ideas for how workshops and other activities could be improved and sustained in the future.

Discussion questions.—Following the oral presentations, we explored, in breakout discussion groups (organized by language spoken), means of improving and expanding project activities and outcomes. Each of the discussion groups addressed 5 questions regarding outreach, education and awareness initiatives. The questions and results from the discussion groups are compiled below.

1. What are the key ingredients for success?

a. Strong leadership—highly motivated, organized and enthusiastic leaders.

b. Funding—adequate funds to support the development of materials and good quality workshops .

c. Well-defined objectives (identify the main problems and determine priorities for the project).

d. Great materials and fun, hands-on activities.

e. Field component to the workshop.

f. Good organization and communication.

g. Involving local people in the organization and implementation of the project.

h. Follow-up monitoring and reinforcement of efforts (ensure repetition of the messages).

i. Creativity.

j. Consistency—which includes a commitment to nature and people, good follow-through.

k. Network of collaborators.

l. Publicize the results (use the media).

2. How do we convince people of the importance of the resource (e.g., wetlands, forests, birds)?

a. Educate about the many benefits of environmental services; e.g., coastal mangrove wetlands lessen the impacts and damage from hurricanes. b . Assess the economic value of the resource (especially important for decision makers), in other words, determine the $$ value of forests and wetlands for tourism, biodiversity, fresh water, carbon sequestration, hunting, recreational activities, etc.; the value of wetlands for fisheries, flood damage control, etc. Involve NGOs and government in the assessment.

c. Have a clear idea of the values and be able to explain them in terms that people understand; e.g., hunting, fishing, leisure activities, the intrinsic value of nature, etc. The message will vary depending on the audience you are trying to reach, so tailor your message to your audience; e.g., policymakers, the general public, local stakeholders, and school children will understand and appreciate the value of the resource in different ways.

d. Give people first-hand experiences outdoors with nature, confirm their knowledge and encourage further explorations.

e. Convey information with hands-on activities.

f. Describe case studies showing the unintended and negative consequences of habitat loss (but be positive about what can still be done).

g. Gain trust by establishing relationships with local people.

h. Link theory and practice; use local examples wherever possible.

i. Organize debates (contradictory if possible) on this question.

j. Be professional in your advocacy. Make sure that you (or scientists) can back up your claims with data from scientific research and/or peer-reviewed papers in scientific journals.

3. What were the major problems and challenges faced in education and awareness programs and how were they solved?

PROBLEMS OR CHALLENGES	POSSIBLE SOLUTIONS
Unforeseen circumstances such as time constraints during a workshop	Be flexible; be prepared to make scheduling changes and adjustments as needed.
Lack of funding	Be on the lookout for funding opportunities; network. Become skilled at proposal writing. Ask for support from local businesses.
Set curriculum in schools	Tailor your program to existing requirements, learn to "speak the language." Go through the proper channels to incorporate your materials into the schools' curriculum.
Imminent threat (e.g., to a bird, wetland, forest or other habitat)	Arm yourself with the facts about your case (e.g., species is threatened, wetland serves xx functions). Take a direct approach to community leaders, policy makers, and general public. Alert the media; write letters to the editor of your local paper.
Gaining trust	Always accomplish what you promised in order to gain trust and credibility.
Lack of capacity/personnel	Recruit local volunteers/college students and train them. Look for funding for paid education staff.

4. How do we follow up with people that have participated in the program?

a. Establish initial commitments (e.g., people that were trained will, in turn, go out and train or teach a certain number of people).

b. Require progress reports (including local projects and results).

c. Promote the interchange between local people receiving the program.

d. Support the work of the local people in schools.

e. Recognize the work of local people.

f. Use the media to communicate results.

g. Revisit and offer new or supplemental training workshops to people that have already participated (e.g., offer a bird identification workshop to teach-

ers that have already taken a wetlands education workshop).

h. Assign follow-up activities to a local representative or organization; e.g., check in with people to see if they have questions or need more materials, talk with them about how they can use the information and materials they received if they are having difficulties.

i. Offer continuing education through a newsletter, quizzes, new materials, your website.

j. Administer evaluations (at the beginning and end of the workshop and/or program).

k. Establish Site Support Groups with local leadership.

5. How can we best measure conservation outcomes or success from education and awareness initiatives?

a. Conduct interviews or administer quizzes before and after your workshop or program to assess what has been learned and if attitudes have changed.

b. Determine if those that have been trained are continuing to teach others.

c. Look for and document anecdotal examples of positive conservation outcomes in the community or individuals; e.g., someone that has taken your wetlands workshop has successfully advocated for the conservation of a local mangrove; e.g., a student that has taken your program decides to pursue a career in an environmental field. (These are real examples from Cuba!).

d. Your program and materials are incorporated in schools' curriculums.

e. Local people and/or Site Support Groups are advocating for the protection of the resource; someone takes on grassroots organizing.

f. Creation of a protected area, such as a Ramsar site, National Park, Watchable Wildlife Pond.

Conclusion.—We learned a great deal from one another in both the presentations and discussions. Many new insights and ideas were put forth for increasing the effectiveness of education and awareness initiatives in the Caribbean. It is recommended that anyone embarking on (or already engaged in) an education and awareness project follow, as much as possible, the recommendations outlined above. In addition, the French group noted that in the French Antilles, many structures and agencies exist which should be involved in education and awareness projects, but in fact, there is no "culture" for such projects and no real coordination between the actors. The French group therefore recommended that an outreach and education project (e.g., wetlands education) be initiated in the French Antilles. The project should be collaborative in order to develop synergism among the various groups.

J. Carib. Ornithol. 18:86-87, 2005

BIRD CONSERVATION IN HAITI: IT'S NOW OR NEVER TO SAVE HAITI'S BIRDS

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THIS ROUNDTABLE DISCUSSION was focused on how the international community might help advance ongoing efforts to conserve Haiti's bird populations. The problem is obvious: Haiti is teetering on the brink of ecological collapse and consequent loss of biodiversity. Resources to achieve conservation are scarce or nonexistent, the resolve and capacity of government agencies are weak at best, and the number of committed in-country players is extremely few. The Société Audubon Haiti stands virtually alone, with Florence Sergile and Philippe Bayard engineering current efforts. They have the commitment and vision, but they need the backing, at all levels (conceptual, technical, human resource, and financial), of the international conservation community. The goal of the roundtable was to draw on the extensive experience of the participants to collectively think through some of the issues and possible solutions.

Many people, including Florence Sergile, offered their perspectives, and several ideas were proposed. These included:

1. Drafting a resolution from SCSCB to the Haitian Ministries of Agriculture and Environment, urging strong and community-based measures to protect the country's remaining forest habitats, to restore damaged habitats within currently protected areas, and to work closely with local communities to develop sustainable land use practices. This resolution was subsequently drafted and approved by

the SCSCB Executive Committee.

2. The possibility that a similar resolution could also be signed by multiple international conservation groups was also raised.

3. Establishment of a Haitian Bird Habitat Conservation Steering Committee, whose role would be strictly advisory in helping Société Audubon Haiti and the Ministries of Agriculture/Environment implement bird conservation. Such a group might lend legitimacy, increase international visibility, and help ensure oversight and accountability to in-country conservation efforts. It was pointed out that such a committee must be composed largely of Haitians, with a small but select representation of committed participants from other countries.

4. Establishment of a Haiti Bird Habitat Conservation Fund, administered by Société Audubon Haiti with oversight from the above Steering Committee. Such a fund could essentially be a "trust fund" to help implement needed conservation measures, ranging from enhancing the capacity of Société Audubon Haiti through increased staffing to providing infrastructure for protected areas management. Most likely, initial funds would target the Macaya Biosphere Reserve and might complement anticipated funds from other sources. The Vermont Institute of Natural Science has agreed to launch a fundraising drive in the Northeast, with a goal of raising $100,000. It is hoped that this "seed" money could be used to leverage additional funding of $900,000 from the international community.

5. While an influx of funding is crucial to achieve avian conservation in Haiti, roundtable participants agreed that the bottom line is creating capacity (human resources) to deliver conservation. Bird conservation *must* be linked to the Haitian people and their socioeconomic conditions. Integration and local buy-in are key.

6. Involving and investing Haitians currently living outside Haiti in conservation of their home country could provide critical resources. The means of accomplishing this pose a significant challenge, but it should be investigated.

7. The exploratory nature of this roundtable discussion precluded the identification of formal follow-up actions or the creation of actual working subgroups. Société Audubon Haiti, in cooperation with Chris Rimmer of the Vermont Institute of Natural Science, will pursue the ideas and potential actions identified above. An immediate goal is to secure funding to enable the Société Audubon Haiti to increase its staffing and devote resources to promoting a cohesive bird conservation agenda in Haiti. Longer-term goals include coordinating a multi-taxa field expedition to Macaya Biosphere Reserve in February of 2006, and beginning implementation of a locally-based program to achieve sustainable conservation of Macaya.

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CARIBBEAN ENDEMIC BIRD FESTIVAL WORKING GROUP

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THE CARIBBEAN ENDEMIC BIRD FESTIVAL (CEBF) completed its fourth edition in 22 May 2005 with the participation of 17,072 persons from 12 countries. During the 15th meeting of the Society for the Conservation and Study of Caribbean Birds held in Guadeloupe from 1-5 August, 2005 the results of this year's event were presented by the regional coordinator Adrianne Tossas. Certificates of appreciation were awarded to coordinators or their representatives from nine countries by the regional coordinator and SCSCB president Andrew Dobson during the general meeting of the society. A meeting with the coordinators was held on 4 August in which the outcomes of the first four editions of the festival and ideas for further improving the event were discussed. Changes for the 2006 CEBF include a new regional coordinator, Sheylda Díaz (otoarina77@yahoo.com), and the participation of five new islands/countries (Haiti, Trinidad & Tobago, Montserrat, British Virgin Islands, and Venezuela).

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TOWARDS A GLOBALLY THREATENED BIRD PROGRAM FOR THE CARIBBEAN

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OVER 10% OF THE CARIBBEAN'S AVIFAUNA (57 of 560+ species) is considered globally threatened following the IUCN Red List criteria. Twelve of these are Critically Endangered, 21 Endangered and 24 Vulnerable, with an additional 18 species Near Threatened (see Table 1). These birds will be the next to go extinct (due to a number of different threat factors), and thus it is our collective responsibility to focus our attentions on their conservation. While conservation actions and monitoring activities are focused on some of these birds, for many we have no idea on a year to year basis whether their status is improving or declining, or whether anyone is addressing any of their conservation needs. While site protection may be the answer for the majority of the birds (e.g., through the Important Bird Area program which identifies sites for globally threatened birds), a number will need species-specific actions to address threats such as illegal trade, hunting, invasive alien species, etc. The focus of species conservation provides an excellent opportunity for the SCSCB to engage all of its members in monitoring, evaluating and conserving these most threatened of our Caribbean species.

The workshop, which continued after the Guadeloupe meeting via email, focused on a number of critical issues related to Threatened Caribbean birds and what the SCSCB response could be. The aim was to start investigating ways of engaging more people, stimulating urgent research, identifying "species champions," reviewing the threatened species list and the conservation actions proposed, and also establishing a monitoring scheme.

Questions.—The following questions were discussed:

1. Does the current list of threatened birds in the Caribbean need revision in terms of the species and the status of the species listed?

2. Are there obvious species champions (or advocates) for each of the 57 Caribbean threatened species?

3. Are there any priority actions that need to be added to the published conservation action list for each species, and what level of funding would be required to implement the identified activities?

4. Would it be valuable for SCSCB to form a Threatened Bird Working Group?

5. What would be the focus of such a group, and how would this relate to existing Working Groups?

Outputs.—The following outputs were discussed:

1. There are 57 globally threatened and 18 near threatened species on the IUCN Red List for the Caribbean (Table 1). The workshop identified 17 species that should be reassessed with a view to them being listed as globally threatened and 9 species (already listed) that should be reviewed in terms of their category of threat. For 8 of these it was suggested that the species were more at risk than currently suggested.

2. Workshop participants identified potential advocates (or caretakers, champions, etc.) for 38 of the 57 globally threatened species.

3. Additional conservation actions were identified for 23 globally threatened species. For 17 species, the type of grant required (small, medium or large) to implement the conservation actions was documented.

4. There was enthusiasm (after the workshop and in follow-up emails) for the formation of an SCSCB Threatened Bird Working Group (TBWG).

5. The TBWG would aim to coordinate and engage the SCSCB membership in monitoring, evaluating and conserving the most threatened of our Caribbean bird species. It would need to do this by developing explicit terms of reference and working in close collaboration with the existing Caribbean Parrot, West Indian Whistling-Duck, and Monitoring Working Groups to provide added benefit to these groups and, recognising the potential for overlap, avoid duplication of effort.

Table 1. Globally threatened and endemic birds of the Caribbean and their IUCN Red List status. The worskshop identified those species for which a review of status should be undertaken, and also potential "species advocates" or "champions" for the globally threatened birds.

English name	Scientific name	Red List status	Status review needed?	Threatened species advocate identified?
Bermuda Petrel	*Pterodroma cahow*	EN		Yes
Jamaican Petrel	*Pterodroma caribbaea*	CR		Yes
Black-capped Petrel	*Pterodroma hasitata*	EN		Yes
West Indian Whistling-Duck	*Dendrocygna arborea*	VU		Yes
Cuban Kite	*Chondrohierax wilsonii*	CR		Yes
Gundlach's Hawk	*Accipiter gundlachi*	EN		Yes
Ridgway's Hawk	*Buteo ridgwayi*	CR		Yes
Trinidad Piping-Guan	*Pipile pipile*	CR		
Black Rail	*Laterallus jamaicensis*	NT		
Zapata Rail	*Cyanolimnas cerverai*	EN		Yes
Caribbean Coot	*Fulica caribaea*	NT		
Piping Plover	*Charadrius melodus*	NT	Yes	
Buff-breasted Sandpiper	*Tryngites subruficollis*	NT		
White-crowned Pigeon	*Patagioenas leucocephala*	NT	Yes	
Ring-tailed Pigeon	*Patagioenas caribaea*	VU		Yes
Plain Pigeon	*Patagioenas inornata*	NT	Yes	
Grenada Dove	*Leptotila wellsi*	CR		Yes
Grey-headed Quail-Dove	*Geotrygon caniceps*	VU	Yes	Yes
Key West Quail-Dove	*Geotrygon chrysia*			
Crested Quail-Dove	*Geotrygon versicolor*	NT	Yes	
Blue-headed Quail-Dove	*Starnoenas cyanocephala*	EN		Yes
Hispaniolan Parakeet	*Aratinga chloroptera*	VU		Yes
Cuban Parakeet	*Aratinga euops*	VU		Yes
Black-billed Parrot	*Amazona agilis*	VU		
Yellow-billed Parrot	*Amazona collaria*	VU		
Cuban Parrot	*Amazona leucocephala*	NT		
Hispaniolan Parrot	*Amazona ventralis*	VU		Yes
Puerto Rican Parrot	*Amazona vittata*	CR		Yes
Red-necked Parrot	*Amazona arausiaca*	VU		
St. Vincent Parrot	*Amazona guildingii*	VU		
Imperial Parrot	*Amazona imperialis*	EN		
St. Lucia Parrot	*Amazona versicolor*	VU		
Chestnut-bellied Cuckoo	*Piaya pluvialis*			
Bay-breasted Cuckoo	*Piaya rufigularis*	EN	Yes	Yes
Hispaniolan Lizard-Cuckoo	*Saurothera longirostris*			
Great Lizard-Cuckoo	*Saurothera merlini*		Yes	

Table 1. (Continued)

English name	Scientific name	Red List status	Status review needed?	Threatened species advocate identified?
Jamaican Lizard-Cuckoo	*Saurothera vetula*			
Puerto Rican Lizard-Cuckoo	*Saurothera vielloti*			Yes
Ashy-faced Owl	*Tyto glaucops*			
Puerto Rican Screech-Owl	*Otus nudipes*			
Cuban Pygmy-Owl	*Glaucidium siju*			
Bare-legged Owl	*Gymnoglaux lawrencii*			
Jamaican Owl	*Pseudoscops grammicus*			
Antillean Nighthawk	*Chordeiles gundlachii*		Yes	
Jamaican Poorwill	*Siphonorhis americanus*	CR		
Least Poorwill	*Siphonorhis brewsteri*	DD		
Cuban Nightjar	*Caprimulgus cubanensis*			
Hispaniolan Nightjar	*Caprimulgus eckmani*			
St Lucia Nightjar	*Caprimulgus cayennensis*		Yes	
Puerto Rican Nightjar	*Caprimulgus noctitherus*	CR		Yes
Antillean Palm-Swift	*Tachornis phoenicobia*			
Lesser Antillean Swift	*Chaetura martinica*		Yes	
White-tailed Sabrewing	*Campylopterus ensippenis*	NT		
Antillean Mango	*Anthracothorax dominicus*			
Jamaican Mango	*Anthracothorax mango*			
Green Mango	*Anthracothorax viridis*			
Purple-throated Carib	*Eulampis jugularis*			
Blue-headed Hummingbird	*Cyanophaia bicolor*		Yes	
Puerto Rican Emerald	*Chlorostilbon maugaeus*			
Cuban Emerald	*Chlorostilbon ricordii*			
Hispaniolan Emerald	*Chlorostilbon swainsonii*			
Red-billed Streamertail	*Trochilus polytmus*			
Black-billed Streamertail	*Trochilus scitulus*			
Bahama Woodstar	*Philodice evelynae*		Yes	
Vervain Hummingbird	*Mellisuga minima*			
Bee Hummingbird	*Calypte helenae*	NT		
Cuban Trogon	*Priotelus temnurus*			
Hispaniolan Trogon	*Temnotrogon roseigaster*	NT		
Narrow-billed Tody	*Todus angustirostris*			
Puerto Rican Tody	*Todus mexicanus*			
Cuban Tody	*Todus multicolor*			

Table 1. (Continued)

English name	Scientific name	Red List status	Status review needed?	Threatened species advocate identified?
Broad-billed Tody	*Todus subulatus*			
Jamaican Tody	*Todus todus*			
Antillean Piculet	*Nesoctites micromegas*			
Guadeloupe Woodpecker	*Melanerpes herminieri*	NT		
Puerto Rican Woodpecker	*Melanerpes portoricensis*			
Jamaican Woodpecker	*Melanerpes radiolatus*			
Hispaniolan Woodpecker	*Melanerpes striatus*			
West Indian Woodpecker	*Melanerpes superciliaris*			
Cuban Green Woodpecker	*Xiphidiopicus percussus*			
Fernandina's Flicker	*Colaptes fernandinae*	VU		Yes
Ivory-billed Woodpecker	*Campephilus principalis*	CR		Yes
Jamaican Elaenia	*Myiopagis cotta*			
Greater Antillean Elaenia	*Elaenia fallax*			
Greater Antillean Pewee	*Contopus caribaeus*			
Olive-sided Flycatcher	*Contopus cooperi*	NT		
Hispaniolan Pewee	*Contopus hispaniolensis*			
Jamaican Pewee	*Contopus pallidus*			
Puerto Rican Flycatcher	*Myiarchus antillarum*			
Sad Flycatcher	*Myiarchus barbirostris*			
Grenada Flycatcher	*Myiarchus nugator*		Yes	
Lesser Antillean Flycatcher	*Myiarchus oberi*		Yes	
La Sagra's Flycatcher	*Myiarchus sagrae*			
Stolid Flycatcher	*Myiarchus stolidus*			
Rufous-tailed Flycatcher	*Myiarchus validus*			
Loggerhead Kingbird	*Tyrannus caudifasciatus*		Yes	
Giant Kingbird	*Tyrannus cubensis*	EN		Yes
Jamaican Becard	*Pachyramphus niger*			
Bahama Swallow	*Callichelidon cyaneoviridis*	VU	Yes	
Golden Swallow	*Kalochelidon euchrysea*	VU		Yes
Cuban Martin	*Progne cryptoleuca*			
Palmchat	*Dulus dominicus*			
Zapata Wren	*Ferminia cerverai*	EN		Yes
Antillean House-Wren	*Troglodytes martinicensis*		Yes	
Bahama Mockingbird	*Mimus gundlachii*			
White-breasted Thrasher	*Ramphocinclus brachyurus*	EN		Yes

Table 1. (Continued)

English name	Scientific name	Red List status	Status review needed?	Threatened species advocate identified?
Scaly-breasted Thrasher	*Allenia fusca*			
Grey Trembler	*Cinclocerthia gutturalis*		Yes	
Brown Trembler	*Cinclocerthia ruficauda*		Yes	
Cuban Solitaire	*Myadestes elisabeth*	NT		
Bicknell's Thrush	*Catharus bicknelli*	VU		Yes
White-chinned Thrush	*Turdus aurantius*			
White-eyed Thrush	*Turdus jamaicensis*			
La Selle Thrush	*Turdus swalesi*	EN		Yes
Forest Thrush	*Cichlherminia lherminieri*	VU		
Cuban Gnatcatcher	*Polioptila lembeyei*			
Cuban Sparrow	*Torreornis inexpectata*	EN		Yes
Cuban Bullfinch	*Melopyrrha nigra*			
Painted Bunting	*Passerina ciris*	NT		
Cuban Grassquit	*Tiaris canora*			
Yellow-shouldered Grassquit	*Loxipasser anoxanthus*			
St. Lucia Black Finch	*Melanospiza richardsoni*	EN		
Puerto Rican Bullfinch	*Loxigilla portoricensis*			
Greater Antillean Bullfinch	*Loxigilla violacea*			
Puerto Rican Tanager	*Nesospingus speculiferus*			
Lesser Antillean Tanager	*Tangara cucullata*			
Black-crowned Palm-Tanager	*Phaenicophilus palmarum*			
Grey-crowned Palm-Tanager	*Phaenicophilus poliocephalus*	NT	Yes	
Chat Tanager	*Calyptophilus frugivorus*	VU	Yes	Yes
Stripe-headed Tanager	*Spindalis zena*			
Jamaican Euphonia	*Euphonia jamaica*			
Orangequit	*Euneornis campestris*			
Bachman's Warbler	*Vermivora bachmanii*	CR		
Golden-winged Warbler	*Vermivora chrysoptera*	NT		
Cerulean Warbler	*Dendoica cerulea*	VU		
Elfin-woods Warbler	*Dendroica angelae*	VU	Yes	Yes
Kirtland's Warbler	*Dendroica kirtlandii*	NT		
Arrowhead Warbler	*Dendroica pharetra*		Yes	
Olive-capped Warbler	*Dendroica pityophila*			
Vitelline Warbler	*Dendroica vitellina*	NT		
Plumbeous Warbler	*Dendroica plumbea*			

Table 1. (Continued)

English name	Scientific name	Red List status	Status review needed?	Threatened species advocate identified?
Barbuda Warbler	*Dendroica subita*	NT		
Whistling Warbler	*Catharopeza bishopi*	EN		
Semper's Warbler	*Leucopeza semperi*	CR		
Bahama Yellowthroat	*Geothlypis rostrata*			
Green-tailed Warbler	*Microligea palustris*			
Yellow-headed Warbler	*Teretistris fernandinae*			
Oriente Warbler	*Teretistris fornsi*			
White-winged Warbler	*Xenoligea montana*	VU		Yes
San Andres Vireo	*Vireo caribaeus*			
Thick-billed Vireo	*Vireo crassirostris*			
Cuban Vireo	*Vireo gundlachii*			
Puerto Rican Vireo	*Vireo latimeri*		Yes	
Jamaican Vireo	*Vireo modestus*			
Flat-billed Vireo	*Vireo nanus*		Yes	
Blue Mountain Vireo	*Vireo osburni*	NT		
Greater Antillean Oriole	*Icterus dominicensis*			

Follow-up actions.—The following actions were recommended:

1. Draft a vision statement and Terms of Reference for the TBWG and share with the SCSCB membership and existing Working Groups to ensure coherence and appropriateness. [David Wege; Lisa Sorenson; Steven Latta; Verónica Anadón; Chris Rimmer; Mayra Vincenty]

2. Set up a Threatened Birds Yahoo group, and invite people to participate. Explore other tools to manage new information and discussions on threatened species within the Caribbean. [Verónica Anadón; David Wege]

3. Follow up, through the Yahoo group, on the various recommendations for changes in species threat status, additions to the threatened species list, and changes to the listed conservation actions. Work in close collaboration with the IUCN Red List review process (coordinated by BirdLife International). [David Wege; Verónica Anadón; Chris Rimmer; Mayra Vincenty]

4. Follow up, through the Yahoo group, and with the named individuals, the concept of species champions or advocates, and whether this is could form a network that both engages SCSCB members and could help monitor the status of threatened species. [David Wege; Verónica Anadón; Chris Rimmer; Mayra Vincenty]

5. Build on the dynamism generated to develop an SCSCB Threatened Bird Conservation Program. [David Wege; Lisa Sorenson; Chris Rimmer; Verónica Anadón]

6. Liaise closely with the Monitoring Working Group (and potentially others) to develop joint initiatives. [Steven Latta; Lisa Sorenson; David Wege]

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HURRICANES AND THE FATE OF CARIBBEAN BIRDS—WHAT DO WE KNOW, WHAT DO WE NEED TO KNOW, WHO IS VULNERABLE, HOW CAN WE PREPARE, WHAT CAN WE DO, AND WHAT ARE THE MANAGEMENT OPTIONS?

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RECENT HURRICANES have raised concerns regarding the fate of many Caribbean birds, especially for rare, single island endemic species. Although Caribbean birds and their habitats have evolved in an area with a high hurricane frequency and are assumed to be relatively resilient to storm effects, habitat loss and degradation and various other human impacts may place certain species at risk to hurricanes. This symposium was designed to review knowledge regarding hurricane effects on birds and their habitats; dispel myths; identify information needs; review pre- and post- hurricane monitoring and census methods; and identify population and habitat management options to ameliorate storm effects. The symposium identified the species at greatest risk to hurricane impacts, the pre-hurricane information needs, and the potential post-hurricane management responses.

Review of hurricane effects.—The review of previous hurricane studies and the presentations in this symposium indicated that:

1. Direct effects of hurricanes, which occur during the storm (i.e., mortality due to exposure to the storm's winds, rains, or storm surge), are most evident in aquatic or seabirds.

2. Indirect effects, which occur in the storm's aftermath due to damage to the habitat are most evident in land birds.

3. Population declines of land birds are often related to diet – nectarivores and frugivore/seedeaters are most likely to decline, while insectivores and raptors are more resistant to storm effects.

4. Population declines are often most severe at high elevations, reflecting the fact that montane vegetation recovers more slowly than lowland vegetation.

5. Some population declines of land birds do occur as a result of mortality (e.g., Puerto Rican Parrot).

6. Some population declines of land birds represent habitat or location shifts and may include:

a. Montane populations shift to the lowlands.

b. Canopy-dwellers shift to ground level.

c. Forest understory species shift to early-successional sites (e.g., pre-existing treefall gaps).

7. Some population declines of land birds and colonial water birds may result from loss of large trees for nesting or roosting.

8. Reproduction may be initially curtailed or delayed in the breeding season immediately following a hurricane in terrestrial and aquatic species.

9. Post-hurricane wandering or movements of some birds may bring them into conflict with humans, which may further contribute to bird mortality.

10. Given the importance of indirect effects of hurricanes on land birds it may be possible to devise management strategies to ameliorate some negative hurricane effects.

Traits of birds that are likely to be at risk of population declines due to hurricanes, based on previous studies and the symposium studies include:

1. Nectarivores, frugivores and seed eating birds.

2. Tree cavity nesting species of birds.

3. Species confined to small habitat fragments on islands.

4. Species that require high elevation or montane habitats (> 1,000 m).

5. Colonial waterbirds (e.g., herons & egrets) requiring trees for nesting.

6. Species of open exposed habitats (e.g., aquatic birds).

7. Species with small (< 500) population size.

Potential management activities to ameliorate hurricane impacts on bird populations include:

1. Close hunting seasons on game birds for at least a year after the passage of a major hurricane.

2. Supplementary feeding might be possible if post-hurricane populations are concentrated in re-

stricted locations where provisioned food might be encountered.

3. Establish lowland reserves as post-hurricane refuges for high elevation or montane species, which move to the lowlands in search of food and shelter following hurricanes.

4. Encourage habitat corridors between forest reserves, which facilitate post-hurricane movement of displaced birds.

5. Plant or favor fruit or seed-bearing plants that are relatively resistant to hurricane damage or have rapid recovery rates after storm (e.g., some palms).

6. Provide artificial cavities for nest or roost sites for species at risk to loss of cavity trees.

7. Encourage wide geographic dispersion of habitat and populations to minimize risk of a strike to a small isolated population or habitat.

Questions.—Questions posed to the symposium contributors included:

1. What information would have been helpful to you prior to a hurricane, which might have allowed a more efficient post-hurricane response?

2. What recommendations do you have for those concerned with storm impacts on sensitive populations?

3. Can you make any management recommendations that might help limit the effects of hurricanes on birds?

General response of participants.—All participants reiterated the importance of having monitoring programs established to provide baseline studies well before the arrival of a hurricane. All studies presented in the symposium were based on comparisons of post-hurricane studies with baseline studies of populations conducted before the storm. All participants agreed that baseline data were absolutely essential to evaluate hurricane effects and López-Ortiz emphasized that without quantitative before and after data it would be difficult to persuade decision makers to respond to hurricane-induced population declines in bird populations. The presentations of Arendt and López-Ortiz were especially noteworthy in illustrating the value of long-term monitoring and other studies well before the arrival of hurricanes. Rusk's Grenada Dove studies suggest the possibility of substantial declines in an already critically endangered population (estimated at 180 doves before Hurricane Ivan). The Grenada work indicated that the doves shifted out of traditional sites and changed their calling behavior thereby making evaluation of the actual numbers of remaining doves difficult. Thus the uncertainty of the dove counts may result in management actions such as captive breeding.

Bradley's experiences in response to the devastating effects of Hurricane Ivan (initially a class 5 storm when it struck Grand Cayman) were especially insightful. She noted the importance of public outreach after the storm to sensitize the public to the plight of birds after the storm. Artificially provisioning some sensitive bird populations (i.e., Cayman Parrots and West Indian Whistling-Ducks) was possible as birds wandered into human settlements in search of food handouts (as long as food supplies lasted on the island). However, wandering parrots were at risk when they came into farm yards in search of food where they were frequently shot. As documented elsewhere, the loss of cavity trees for nesting parrots and woodpeckers was a concern on Grand Cayman where Bradley and collaborators were providing nest boxes to speed the recovery of affected species. Unexpected storm surge contributed to substantial tree mortality on the island's coast in a forest reserve, which was believed (before the storm) to have been the most important forest site on the island - emphasizing the importance of widely scattered habitat reserves on an island. These experiences suggested that preparations for management of sensitive species should be initiated before a hurricane and should include having potential bird food supplies stored, nest boxes constructed, as well as plans in place for public education and outreach. Also, the storm damage to the major forest reserve on Grand Cayman emphasized the importance of considering hurricane effects when establishing nature reserves (i.e., storm surges can cause substantial tree mortality in coastal forest reserves).

Recommendations.—Discussions with participants and the audience indicated that there was a need for information relating to the effects of hurricanes on bird populations and potential management responses. Thus it was recommended that a publication summarizing information on hurricane effects on Caribbean bird populations and suggesting management responses before and after storms should be prepared for decision makers in both the public and private sector. The publication would also suggest ways in which to prepare for these storms in terms of bird conservation. The symposium organizer, J. Wunderle, volunteered to write the proposed publication, which would summarize results from the SCSCB symposium. The recommended work would be published as U.S. Forest Service Technical Report that would be sent to ap-

propriate officials throughout the region as well as provided to participants at SCSCB meetings. The publication will also be translated into Spanish and French.

J. Carib. Ornithol. 18:96-97, 2005

CARIBBEAN WILDLIFE ART WORKING GROUP

NILS NAVARRO

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THE MISSION OF THE Caribbean Wildlife Art Working Group: To promote an artistic movement in the Caribbean based on Wildlife Art, to raise awareness and appreciation of the rich biodiversity of the region, and to join efforts among the artistic community to contribute to the financing of the SCSCB.

Our objectives are:

1. To promote the conservation of Caribbean biodiversity, especially birds, through the arts.

2. To create and develop a wildlife artist movement focused on the richness and endemism of Caribbean biodiversity.

3. To contribute to raising funds for the Society for the Conservation and Study of Caribbean Birds (SCSCB) through donations of artwork, limited edition prints, royalties, poster designs, paintings for auctions and raffles, on-line sales, illustrations of books and magazines, designs for T-Shirts and greeting cards, collective exhibitions, and establishing a wildlife photo reference library for artists, among other actions.

4. Design art activities that are related to environmental education and outreach: festivals, workshops, art competitions, and field trips.

Art possesses the capacity to inspire and to touch the hearts of many people. For this reason a group of artists and scientists was founded in the year 2003, the "Caribbean Wildlife Art Working Group," during the 14th Meeting of the Society for the Conservation and Study of the Caribbean Birds in the island of Tobago. Within two years of having been created, the Caribbean Wildlife Art Working Group (CWAWG) has carried out several actions with the objective of promoting the conservation of the biological diversity of the Caribbean, through the fine arts, as well as a movement of wildlife artists in the area.

The results obtained during the first two years (2003-2005) of work were presented in Nils Navarro's presentation to the plenary as a featured speaker: *Caribbean Wildlife Art and Conservation - Art's Capacity to Inspire and Raise Funds for Nature Conservation.* Among the more important actions of the WG: exhibitions of paintings, design of programs for teaching wildlife art in Academies of Fine Arts in Cuba, courses in wildlife art, art competitions for children, Festivals of Art and Nature, design of posters with a conservation message, book illustrations, auction of art to raise funds for conservation NGOs, donation of copyright, preparation of programs for environmental education on the radio and TV, and painting murals for cities (with the topic of the flora and fauna of the Caribbean). Nils also presented several proposals for obtaining funds for the SCSCB. During the meeting, the CWAWG donated T-shirts decorated with a Cuban Macaw painting and an original American Kestrel watercolour painting by Nils for the Silent Auction.

The meeting was a wonderful place to share experiences with other people and have contact with an organization that is enthusiastic about our project support. The needs and recommendations outlined below arose out of discussions with CWAWG members in Cuba prior to and following the Guadeloupe conference, and from discussions with colleagues at the CWAWG meeting, and with meeting delegates during the week.

Our needs include:

1. The project needs to be expanded to other islands in the Caribbean. To date most of the actions of the CWAWG have been carried out in the island of Cuba, including the training courses for young artists in the Academies of Fine Arts. The workshops and training courses should be organized in other countries in the region. This will enable new artists to join our efforts in bird conservation and through their work they will have the opportunity to

contribute to the conservation of Caribbean avifauna.

2. The work and actions of the CWAWG needs to be promoted on SCSCB´s web site, through a novel and colourful design. The group's achievements and art can be featured on the website and workshops in the region can be publicized on the webpage. We also propose on-line sales of art using artists members' donations, in order to help finance the core activities of the SCSCB.

3. A seed fund is needed for the preparation of all the materials that are needed to build the program and obtain future funds for the SCSCB. This seed funding will be used to purchase art materials and to pay for finished products such as T-Shirts, fans, cards, and others products. At the moment the Caribbean Wildlife Art WG lacks financial support to initiate proposed plans to assist the SCSCB.

Our recommendations include:

1. Carry out a training workshop in Wildlife Art in another Caribbean country in 2006, preferably Dominican Republic, Bahamas or Puerto Rico, where Cuban artists are willing to impart free courses as a donation to SCSCB. These courses can also help raise funds for SCSCB and they can be promoted through SCSCB's web site.

2. If accepted by the SCSCB Board, a Cuban artist and member of the CWAGG will design a web site for SCSCB. The web site will include a section of online art sales with the objective of raising funds for the Society. The CWAWG is willing to create the website design and keep this section of the site up to date in its entirety.

3. SCSCB establish a seed fund for the Caribbean Wildlife Art Working Group for the preparation of works and other products. This seed fund will be reimbursed to SCSCB through the sales of the donated works and other art products.

4. Prepare an art show to present during the North American Ornithological Conference next year in Veracruz, Mexico. Some art pieces will be donated by the CWAWG members to raise funds for SCSCB. Additional items will be prepared for silent auctions that take place during these kind of meetings.

J. Carib. Ornithol. 18:97-99, 2005

PROTECTED AREAS MANAGEMENT: MOVING FROM PAPER PARKS TO EFFECTIVE MANAGEMENT, ARE PROTECTED AREAS REALLY CONSERVING BIRDS?

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THIS ROUND-TABLE DISCUSSION was held to stimulate thoughts on the effectiveness of existing and proposed protected areas (PAs) in the region, in regard to the conservation of birds. Moreover, it aimed to move beyond just complaining about PAs not fulfilling this objective, but formulating new and innovative solutions to meet the identified constraints.

Protected Areas have been a part of the region's landscape since the mid-1800s, with the Tobago's Main Ridge Forest Reserve designated as the first such area in the Western Hemisphere, primarily for watershed protection. With the signing of Multi-Environmental Agreements by countries in the Region, especially over the last two-three decades, more PAs have been established or at least proposed. It seems apparent that a well-established system of PAs would conserve birds, but in reality this does not seem to translate on the ground.

Some of the issues were highlighted, including:

1. Under-staffing and/or underpaid staff.

2. Shortage or lack of trained personnel / managers.

3. Inadequate or no enforcement of laws and

regulations.

4. Lack of political support.

5. Improper demarcation of boundaries on the ground.

Three break-out working groups (selected on the basis of language spoken) were tasked to discuss the following question in order to provide recommendations for follow-up: What can be done to effectively manage protected areas so that they conserve birds?

The working groups identified the following additional issues and problems:

1. Lack of human resources.

2. Lack of financial resources.

3. Lack of (financial) incentives.

4. Insufficient law enforcement.

5. Lack/absence of legislation.

6. Lack of political support and continuity.

7. Frequent staff turn-over.

8. Absence of management plan.

9. Need for effective stakeholder survey / involvement.

10. Lack of training.

11. Lack of education.

12. Lack of public awareness.

13. Demarcation of boundaries of protected areas; existence of private in-holdings within protected areas.

14. Need for agreed clear objectives for creation of protected areas.

Recommendations.—The following recommendations were made by the working groups (WGs):

ACTIVITIES	WG 1 English	WG 2 Spanish	WG 3 French
Designating PAs			
• Delimiting boundaries of PAs on the ground		√	
Management Plans			
• Elaborate Management Plan guided by public policy and with full engagement of stakeholders in the process.	√	√	
• Incorporate all essentials in the Plan			
–Adequate Human Resources	√		
–Sustainable financing including core funding	√	√	√
–Stakeholder involvement	√	√	
• Implement Plan ensuring that:			
–Goals are clearly identified	√		
–Threats are clearly identified			√
–Initiatives are incorporated	√	√	
–Clear roles are identified for stakeholders	√		√
–Local communities are empowered to undertake key roles, including policy development	√	√	
• Periodic review of Management Plan, involving communities	√	√	
Financing			
• Adopt strategies for the economic sustainability of the PAs, which may include establishing a Conservation Fund, with clear guidelines for operating and sustaining the fund	√	√	
• Establish a User-fee schedule	√		
• Elaborate a catalogue for the public to review and make donations towards the PA		√	
Training			
• Efficiently train personnel to manage PAs and implement management plans	√	√	
Enforcement (Resource Protection)			
• Establish strict regulations and provide for enforcement by park rangers and honorary rangers	√	√	√

ACTIVITIES	WG 1 English	WG 2 Spanish	WG 3 French
Enforcement (Resource Protection)			
• Develop strategies for the protection of buffer zones around the PAs		√	
• Manage visitorship at public sites to mitigate impact			√
• Take actions within the framework of a network			√
Monitoring and Research			
• Monitoring of all species within the Pas	√	√	√
• Determine species requirements and population dynamics			√
• Promote programme of volunteers (e.g. University interns) for monitoring of species and conduct of research.		√	
• Implement bio-security measures to prevent introduction of invasives			√
• Establish time-lines for research activities taking into account safeguard measures			√
Public Awareness			
• Develop and implement Awareness Programme for children, general public and decision-makers	√		√
• Possible use of a bird(s) as a flagship species	√		
• Provide adequate signage, including on regulations and general information			√

Conclusion.—The topic and question posed to the working groups generated much discussion, with the general feeling that PAs, if managed effectively, can fulfil the objective of conserving birds. In order to explore this issue further, it is recommended that a one-day workshop be convened (possibly at the 16th Meeting) for this purpose.

J. Carib. Ornithol. 18:99-100, 2005

BUILDING ON CARIBBEAN BIRD CONSERVATION EFFORTS THROUGH THE INTEGRATION OF MIGRATORY BIRD INITIATIVES: A STEP CLOSER TO "ALL-BIRD" CONSERVATION

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THE CARIBBEAN IS CRITICALLY IMPORTANT for a number of North American breeding migrants (or Neotropical migratory birds) during the boreal winter months. Migrant passerines in particular are disproportionately concentrated in this region (and Central America), yet little is known about how well existing initiatives, site priorities or the current protected area networks cater for their long-term conservation. Whilst not the highest conservation priority for the region, interest in migratory birds provides a potential opportunity to strengthen existing Caribbean bird initiatives and to help deliver SCSCB bird conservation goals, and move us a step closer to "all bird" conservation in the region. This workshop explored what the opportunities might be.

Workshop results.—How can we use migrants and migratory bird initiatives as tools to strengthen our existing Caribbean bird research, conservation and awareness initiatives and deliver our Caribbean bird conservation goals?

Broad results from the breakout group discussions were as follows:

1. Inform existing initiatives and programs of

SCSCB and its members of migrant bird conservation issues, and adapt where appropriate.

a. Incorporate migrant checklists into West Indian Whistling-Duck and Wetlands Conservation Program materials, e.g. for teachers to identify migrants during field trips.

b. Develop checklists flagging endemic, threatened and migratory birds to be used during Caribbean Endemic Bird Festival (CEBF) field trips.

c. Integrate migrant activities in the CEBF (e.g. videos, talks, "farewell to our migrants"), following the Cuban dedication of 3 days to migrants.

d. Promote migrant activities as a fundraising/ development opportunity for CEBF (e.g. through PIF, or incorporation of IMBD materials).

e. Integrate migrant bird information needs into the Monitoring Working Group objectives.

f. Integrate migrant bird conservation issues into the Waterbirds Working Group activities.

g. "Migrant proof" existing programs by ensuring appropriate checklists of migrants are available.

h. Recognize that funding exists for migrant birds (e.g., USFWS NMBCA) that may be used to support conservation initiatives for both migrant and resident birds.

2. Investigate new initiatives that could benefit migrants and "all-bird" conservation.

a. Assist funding agencies in an advisory capacity by providing details on the needs and priorities of the region with regards to avian conservation (identified participatively) to ensure that due consideration is given to activities on the wintering grounds or to assist in efforts to keep "common birds common."

b. Promote the principle of "collective responsibility" for birds shared between countries (residents and migrants alike) amongst "non-bird" entities such as forestry departments, tourism boards, and planning and development agencies.

c. Prioritize migrants (as have been waterbirds and threatened species).

d. Promote Christmas Bird Counts as a means of monitoring migrants (and other species).

e. Promote established initiatives that benefit migrants, and assist in their expansion in an integrated manner that promotes "all bird" conservation (e.g. through Partners in Flight, Ducks Unlimited monitoring, PRBO monitoring, Bird Studies Canada training, Raptor Population Monitoring Index, Western Hemisphere Shorebird Reserve Network, Important Bird Areas).

f. Recognize that the majority of residents and visitors (human) to the Caribbean may not be aware that birds migrate. Education projects or community outreach initiatives should strive to inform people of "all birds" (e.g., resident birds, endemic birds, threatened birds and migratory birds etc.).

Recommendations.—The following recommendations were adopted:

1. Create a table with the presence of migrants per island and by Important Bird Area, and make widely available. LEAD: BirdLife Caribbean Program.

2. Ensure integration of Migrant bird conservation needs in the activities of the Monitoring and the Waterbirds Working Groups. LEAD: Working Group Chairs.

3. Incorporate Migrant bird information in all appropriate aspects of the Caribbean Endemic Bird Festival, West Indian Whistling-Duck Program. LEAD: CEBF Coordinator; WIWD-WG Coordinator.

4. Detail, in a format that is readily digestible, the needs and priorities for bird conservation in the Caribbean, and make widely available. LEAD: SCSCB Executive.

J. Carib. Ornithol. 18:101-102, 2005

AQUATIC BIRD CONSERVATION IN THE CARIBBEAN—NEXT STEPS IN DELIVERING THE CARIBBEAN WATERBIRD CONSERVATION PLAN

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THE CARIBBEAN is home to over 185 species of waterbird (seabirds, wading birds, marshbirds, waterfowl and shorebirds), including a number of endemic and globally threatened species. Planning for the conservation of Caribbean waterbird species began in 1997, and culminated with the presentation of a second draft of a Caribbean Waterbird Conservation Plan (CWCP) at the 2003 SCSCB meeting in Tobago. The plan is intended to increase awareness of waterbird conservation needs throughout the region, and was conceived as a process through which the SCSCB can coordinate its efforts with international initiatives such as Waterbird Conservation for the Americas, Partners in Flight, the Important Bird Areas (IBA) program, and TNC's Eco-regional planning initiative, amongst others.

Waterbird Conservation for the Americas, through BirdLife International, has recently initiated a regional waterbird conservation planning project throughout Latin America and the Caribbean ("Range-wide Waterbirds"), which intends to build upon the existing CWCP and the regional IBA program in order to strategically advance conservation for critically threatened waterbird species and sites in the region. A waterbird conservation planning workshop was convened at the 2005 SCSCB meeting in Guadeloupe to discuss consolidation of the existing CWCP and to move towards the achievement of its goals. Breakout groups were asked to discuss priority needs for consolidating the plan focused around three themes (the priority areas identified at the Tobago meeting): acquisition of baseline information, site conservation and awareness-building. To help orientate discussions, three questions were posed to each group:

1. What would you do with a significant amount of funding?

2. What would you do with a small amount of funding?

3. What should be the role of the SCSCB in these initiatives?

A summary of the specific ideas that were proposed and the amount of funding required is presented in the table below. Each group was asked to synthesize their individual replies into themes. Many of the resulting themes were common to all three groups. The principal priorities identified were:

1. The identification and filling of priority data gaps (a variety of specific gaps were listed).

2. The establishment of clear targets for species and habitat conservation (to facilitate monitoring and evaluation).

3. The development of a coordinated monitoring program, building upon existing efforts, and involving local people and private enterprises (ideally through Site Support Groups). This program should have a clear goal to produce periodic status reports, should build on local government reporting requirements, and be linked to reporting mechanisms for international conventions (e.g. Ramsar and SPAW).

4. Greater awareness building at all levels, but especially among decision-makers (government, business, NGO and community leaders), with emphasis on the economic value of nature and the fact that many sites are interconnected (in part through shared bird populations).

5. Development of an effective lobby for waterbird conservation, capitalizing on the attention focused on small island nations through climate change.

6. Implementation of site conservation action, channeled through Site Support Groups, and with an emphasis on training and capacity-building.

Each group gave careful consideration to the role of the SCSCB in the implementation of the CWCP. Once again, there was broad consensus among the groups, and the following roles were highlighted:

1. Set strategic direction (identification of priorities and targets).

2. Regional coordination (including effective information dissemination).

3. Regional representation (including lobbying, and the building of partnerships and alliances).

4. Facilitation (fundraising, establishment of best practices and use of sound science, dissemination of good models, training and capacity-building).

5. Monitoring and evaluation (defining successes).

Several general concerns were raised regarding the plan. Among them was the need for a broad consensus from across the Caribbean and from many different sectors; in fact, without a broad constituency of stakeholders involved, "plan" may be rather a misnomer. It was also stressed that many smaller islands do not have the "luxury" of dedicated bird conservation people, but rather general wildlife officers. The plan should therefore be flexible enough to adapt to a broader taxonomic approach.

An overall consensus existed that the plan needs to be finalized as soon as possible, to provide a unifying strategy and guiding framework, and to capitalize on the new opportunities that have appeared since Tobago to start implementation (such as the range-wide waterbirds project). To achieve this, the following next steps were identified during a separate meeting of the SCSCB Waterbirds Task Force:

1. Ann Sutton will complete the plan in its current format as a specific product for NFWF (in satisfaction of project requirements).

2. BirdLife range-wide waterbird project staff (Rob Clay and Verónica Anadón) will draft a strategic vision document by the end of October 2005, using the existing draft plan and notes from the Tobago and Guadeloupe meetings. This document will concisely present SCSCB's strategic framework for waterbird conservation in a style appropriate for "marketing" to potential donors. This document will be reviewed by persons representing the interests and needs of SCSCB, Waterbird Conservation Council, and BirdLife (Lisa Sorensen, Patricia Bradley, Ann Sutton, Jennifer Wheeler and David Wege). The goal is to have this document ready for publication by the end of 2005.

J. Carib. Ornithol. 18:102-105, 2005

WEST INDIAN WHISTLING-DUCK AND WETLANDS CONSERVATION PROJECT: SYMPOSIUM REPORT AND PROJECT NEWS

LISA SORENSON[1], PATRICIA BRADLEY[2], LOURDES MUGICA[3], AND KATE WALLACE[4]

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THE WEST INDIAN WHISTLING-DUCK (WIWD) and Wetlands Conservation Project of the SCSCB has been working to reverse the decline of the globally threatened WIWD and the continuing loss of wetlands throughout the Caribbean. Crucial to achieving this is increasing the awareness and appreciation by local people for the value of wetlands and wetland biodiversity. Our strategy has been to produce educational materials on birds and wetlands, and through intensive workshops, train enthusiastic teachers and local partner staff, who in turn, teach children and train others. This "multiplier effect" has helped us to reach a large number of people, in order to develop a network of local people that care about birds and wetlands and become involved in their conservation. The project also develops *Watchable Wildlife Ponds*—wetlands equipped with interpretive signs and viewing areas where local people, school groups, and tourists can easily observe whistling-ducks and other wildlife.

Funding from several sources enabled us to continue our programme of wetlands outreach and education. Since 2002, a total of 2,084 teachers and natural resource staff have been trained in 78 work-

shops in 11 countries (Anguilla, Antigua and Barbuda, British Virgin Islands, Bahamas, Cayman Islands, Cuba, Dominican Republic, Jamaica, Puerto Rico, St. Vincent and the Grenadines and Trinidad and Tobago). Many teachers, ecotour companies, and partner agencies throughout the Caribbean are using the book and other project materials in their outreach programs (e.g., summer camps) and environmental days (e.g., World Wetlands Day, Caribbean Endemic Bird Festival). The project has had the greatest success in countries with strong partner NGOs and individual leaders and where funding for activities beyond initial training workshops has been available (Bahamas, Jamaica, Dominican Republic, Puerto Rico and Cuba). In this symposium, project partners had the opportunity to describe the unique ways that they are carrying out the WIWD Project locally, share their activities and accomplishments, and discuss the main challenges and difficulties faced and solutions to shared problems. Symposium contributors included: Nadia Watson, Kate Wallace, Lourdes Mugica and Beatriz Hernandez. WIWD Project activities were also presented by Eliezer Nieves, Lynn Gape and Lisa Sorenson in the Education and Awareness Symposium.

Watson reported on the activities of the Jamaican Environment Trust's (JET) Schools' Environment Programme (SEP). SEP is a dynamic education programme implemented in 353 schools across Jamaica. Through SEP, JET conducts two sets of workshops annually which are geared towards increasing environmental awareness of teachers, NGOs, government personnel and community leaders, providing resource materials and finding opportunities for infusing environmental content into the curriculum. JET and the West Indian Whistling Duck (WIWD) Project collaborated on the delivery of two sets of workshops during 2003-2005 entitled "Wetlands, not Wastelands" and "Wetland Wonders." A total of 20 workshops have been conducted, training over 500 persons. Watson reported on the activities carried out in the workshops and the many positive responses received from participants. Analysis of wetland quizzes taken by participants both before and after the presentations and activities showed that before presentations the quiz results exhibit a distribution skewed to the left, with most individuals obtaining scores between 20% and 30% (Fig. 1). After the presentations, the distribution is skewed to the right, with the majority of persons obtaining between 70% and 80%. This suggests the activities conducted and presentations made during the workshop added to the participants' knowledge.

Wallace, with the support of Sociedad Ornitológica de la Hispaniola, reports great success in implementing the "Yaguaza Project" in the Dominican Republic despite many local challenges. Fifteen wetlands education training workshops have been delivered over the last two years to a diverse group of people including teachers, community leaders, environmental educators, student volunteers, tour guides, children, and institutional technical staff. Settings vary from city locations where the electricity goes off in the middle of a presentation to rural

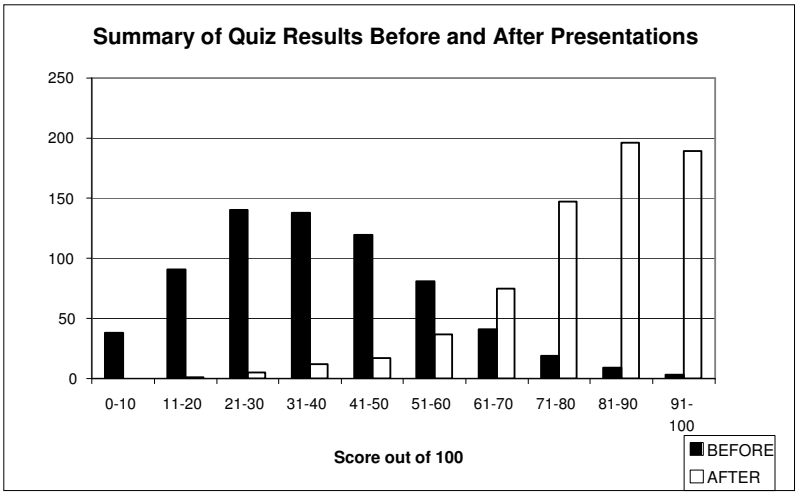

Fig. 1. Summary of wetland quiz results before and after wetland workshop presentations and activities.

settings that never have electricity. The flexibility of the presenters as well as the participants often results in encounters that are fun as well as productive. Wallace describes one memorable workshop: "It was terribly hot, there was no electricity, everyone arrived late, and the group seemed lackluster in their response to the presentations and activities. We were feeling a bit discouraged, yet during the field trip the next day, while having the snack, people began to talk and very soon they expressed the need for a local committee to carry on the conservation work of the community, so they formed a group right then and there!" Wallace and co-facilitators were thrilled with this unexpected result and will continue to support the work of the group. During fall 2005, Wallace also organized the building of an observation platform at a new *Watchable Wildlife Pond* site in Parque Nacional Mirador del Norte in Santo Domingo. The WIWD Project donated 12 pairs of binoculars and spotting scope and tripod to the Park so that they could initiate bird watching activities with visitors to the park as well as form a local birding group.

Mugica and her colleagues in Cuba described the environmental education campaign that was developed in rural communities associated with rice paddies and natural coastal wetlands. Components of the program involved: four workshops with educators and community leaders to launch the Spanish version of the book *Los Maravillosos Humedales del Caribe Insular,* contests in different artistic mediums related to the protection of wetlands, a photographic exhibition on wetlands, and slide shows for different sectors of the population. A community festival was also organized. It included activities with children and a special commemorative stamp. Site Support Groups, "Wetland Friends," were established, which will help continue the work of the project in the future. Additionally, a guidebook to the birds of the Cuban wetlands was written and many materials were donated to the libraries and schools in both localities. Approximately 8,000 people participated directly in one or more activities. According to the questionnaires, the participation in the different activities, and the diverse local initiatives, the objectives of the project had been fulfilled: increasing knowledge about wetlands and the need for their protection. A movement has begun in both municipalities to continue this work, for which the leaders of the project continue offering help in the future on an advisory level.

Although Hernandez was not able to give her presentation due to illness, she reported on the activities of the "Chiriría Project" in Puerto Rico. Collaborating with the IBA Program in Puerto Rico and with additional funding from Shell Chemical Yabucoa, three wetlands workshops were organized and delivered as well as slide shows, a puppet show and a first annual Bird Festival hosted by the Shell Corporation. In addition, two bi-annual newsletters were printed and distributed to educators and conservation organizations around the island. More than 150 people were reached by the effort. As a result both the Conservation Trust of Puerto Rico, the largest environmental non-profit organization in the island, and the Puerto Rican Ornithological Society adopted the project in 2005 and will sustain the program into the future.

The Bahamas National Trust sponsored two wetlands workshops in New Providence during 2004-2005 for 29 teachers that are implementing a 10-session curriculum on wetlands (using *Wondrous West Indian Wetlands*) in their schools. Lynn Gape and Lisa Sorenson facilitated the workshops which were well-received. All teachers received 'mini-kits" to carry out their lessons and activities. The BNT continues to do a terrific job delivering performances of their critically acclaimed *Wetlands Are Wild* puppet show; over 400 Bahamian students attended recent performances.

During 2004-2005, seven wetlands education training workshops were also held in the Cayman Islands, St. Vincent and the Grenadines, Anguilla, and Tortola, British Virgin Islands. The two-day workshops, facilitated by Sorenson and Michele Kading (Head Interpretor, Oak Hammock Marsh Interpretive Centre), received much positive feedback from participants. Many commented on what an "eye-opener" the workshop was for them and pledged to use the materials and new knowledge in their classrooms and communities. For more details on these workshops, see Birdlife Caribbean Newsletters (No. 02 and 03).

Other project news.—After seeing and learning about WIWDs during a wetlands workshop in Antigua in 2002, Joseph Prosper initiated a WIWD monitoring program which he continues today. He has recruited his colleagues, friends; relatives and residents living near the various wetlands to take part in monthly island-wide simultaneous duck count he organizes. Prosper has amassed a wealth of data on the natural history of WIWDs in Antigua, including information on their numbers, distribution, habitat use, breeding ecology, nesting sites, breeding success, and causes of mortality of adults and ducklings. He has also gathered information on

the status of wetlands in Antigua. Prosper presented results from his research at the past two Society for the Conservation and Study of Caribbean Bird meetings (Tobago in 2003 and Guadeloupe in 2005) and has written a paper on his work for submission to the *Journal of Caribbean Ornithology*. Recognizing that some of the threats to the ducks are from impacts of area users and development, Mr. Prosper has used a participatory approach to WIWD conservation. He works on raising public awareness of the duck's threatened status by talking with community members and hunters about the bird and involving them in his research and monitoring efforts. Prosper, a high school teacher, also shares his knowledge with his students, taking them on wetland field trips whenever the opportunity presents itself. Efforts by citizen scientists like Mr. Prosper are critically important in countries such as Antigua where there are very few trained wildlife professionals. The SCSCB is proud of his dedication and efforts.

A major achievement in 2004 was the completion of the fully revised and updated Second Edition of the English version of the workbook *Wondrous West Indian Wetlands: Teachers' Resource Book*. The Spanish version of the book *Los Maravillosos Humedales del Caribe Insular: Libro de Trabajo para el Maestro*, published in 2003, is available and in use by a number of agencies and organizations in Puerto Rico, Cuba and the Dominican Republic. The book has been translated into French and the French version will be published this year. Other new outreach materials available include: *Mangroves of the Caribbean Identification Guide*, *Seabirds of the Caribbean* identification card and slide show, and a *Save Our Seabirds* poster (English and Spanish versions). For funding for materials and project activities, we extend our sincere thanks to the US Fish and Wildlife Service (Wildlife Without Borders and Neotropical Migratory Bird Conservation Act Fund), BirdLife International, Royal Society for the Protection of Birds and National Fish and Wildlife Foundation. We are also thankful to the many people that have contributed their time and talents to this project in countless ways.

The WIWD Project recently received $40,000 from EPA's Environmental Education Grant Program for a project entitled *Community Education for the Wise-Use of the Globally Important Caño Tiburones Wetland in Puerto Rico*. The Puerto Rican Ornithological Society, the local project partner in this grant, has already delivered the first workshops. The Conservation Trust of Puerto Rico is another new project partner that has been doing a terrific job delivering workshops to different communities near the Trust's wetland properties. We welcome these two new partners to the project and look forward to hearing more about their activities in the future.

J. Carib. Ornithol. 18:105-107, 2005

PROPOSAL TO STANDARDIZE SPANISH NAMES OF BIRDS

SERGIO A. COLÓN-LÓPEZ[1], VERONICA ANADÓN-IRIZARRY[2], AND SHEYLDA N. DÍAZ-MÉNDEZ[3]

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IN RECENT YEARS, birdwatching in the Caribbean (and Latin America) has gained importance and popularity and many people with diverse academic backgrounds and interests in birds have joined professional ornithologists in the study and observation of birds. Increased participation and interest in birdwatching activities has led to increased communication between these non-professional ornithologists ("birders") and ornithologists in Spanish-speaking countries. There is also increased exchange between Spanish-speaking countries within the Caribbean as well as with other countries outside the region. Standardizing Spanish bird names will facilitate communication between Spanish speakers without using the scientific names. The proposal to standardize Spanish names was submitted by Sergio Colón who pursues the support and implementation of the SCSCB, as well as Cuba, the Dominican Republic and Puerto Rico. The purpose of the roundtable discussion (attended by 15 people, mostly from

the three Spanish-speaking Caribbean countries) was to present the project and provide an opportunity for discussion. The opening presentation included a description of the rationale for the project, advantages of standardization, the process for standardizing, and responsibilities of the Hispanic Nomenclature Committee.

The following points were raised during the discussion:

1. Concern was expressed about the possible disuse of local names and a loss of feeling of ownership, both viewed as downsides to standardization.

2. Scientific names are already in use at conferences and in the scientific literature.

3. Learning new Spanish bird names is the same degree of difficulty as learning the scientific names that are in Latin.

4. Learning Latin names is not difficult because the word root is similar to the etymological language.

Recommendations.—The following recommendations were made:

1. Outreach and educational materials prepared by the SCSCB should be designed using each country's local bird names. The materials will be distributed to each country. If there is not enough funding to produce separate versions for each of the three Spanish-speaking countries, each country will be expected to print the materials themselves.

2. Clearly establish to whom this proposal is directed e.g., birdwatchers, professional ornithologists or local communities.

3. Inform Sergio Colón to continue with the proposal as only time can judge its benefits.

Follow up actions.—The following recommendations were made for the group to follow up:

1. Delegates from Cuba, the Dominican Republic and Puerto Rico will present the proposal to their respective countries and discuss it with different institutions.

2. The report will be submitted to Sergio Colón, author of the proposal.

Appendix 1.—Responding letter from Sergio Colón who was not able to attend the Guadeloupe SCSCB meeting to present the proposal.

"Dear friends,

"I want to comment about the results presented from the discussion about the proposal mentioned above.

"In regard to the report I received, I sensed more fears than solid arguments. I can partially understand this because that, which is new, causes concerns. I do not visualize any changes in the names of our common birds because of name standardization, although it could affect those less familiar to us like the pelagic species. However, knowing the name of our endemic vireo, Puerto Rican Vireo (possible standardize name for *Vireo latimeri*), I will always call it Bienteveo in Puerto Rico when in the company of my fellow citizens. I will refer to it as such, even though Bienteveos belongs to the genera (*Myiozeletes, Pitangus, Conopias,* etc.) of the tyrannid family and in spite of it being called *Vireo altiloquus* in Cuba.

"But believe me, when I find myself among Mexicans, Argentines or Peruvians, I will call it Puerto Rican Vireo. Thus, I will not fail our Puerto Rican idiosyncrasy. Having a standardized nomenclature would bring the Spanish language to a higher ranking as far as ornithology is concerned and would give a sense of collective ownership to the Dominicans , Cubans, Venezuelans, Peruvians and other Spanish speaking countries because we speak the same language.

"My friends, my name is Sergio Antonio Colón López, yet my wife calls me Ser, my children 'Papi,' my mother and brothers Junior, and to some of my childhood friends I am Cucho. The use of scientific names needs to be promoted; they are forever present, beginning with scientific publications to field manuals. The scientific names are very useful when communicating with the Japanese, Chinese, French, etc., but to use them in the spoken language or repeatedly when writing is not practical. For this reason, English speakers prefer the use of common names and so do the Spanish in Europe. In scientific writing, it is usually common to see the scientific name the first time the species is mentioned, but it is unnecessary after that. That is the case of the Reinita Mielera (Bananaquit) *Coereba flaveola.* Most people employ Spanish phonics to pronounce the name when in fact it is pronounced 'sereba flaveola.'

"Scientific names are meant for scientists; the standardized names are meant for scientists as well as for electricians, doctors, farmers, and for all bird lovers. Therefore, learning new Spanish names is not the same as learning cumbersome scientific ones in Latin. As to the use of scientific names in conferences and in the literature, I think it is impractical because not everyone knows scientific names. At

least in Puerto Rico the majority of those who work with birds and who are members of the Puerto Rican Ornithological Society are not scientists. Standardization will serve as a link for ornithologists who want to work directly with the communities.

"During my attendance at the Caribbean Convention in Cuba, an Argentinean gave a workshop on anatids. When I spoke to her about the project, she rejected it. She said that scientific names were enough and local names must be kept. Yet, surprisingly enough, the workshop was in English and she was using standardized English names! Another advantage of standardization is that it allows you to easily place a bird taxonomically. For example, I am sure that I would not be understood by most people if I said that I saw a *Syrigma sibilatrix* for the first in Puerto Rico, instead of Garza Chiflona.

"Regarding the production of educational materials (such as posters), using local names on such materials is not a bad idea in itself. I feel, nevertheless, that it takes away from the international character and it multiplies the work effort. I would expect that international projects employ standardized names, and domestic projects use local names. I have asked myself if, when Dr. Lisa Sorenson was preparing the poster 'Save our Seabirds' in English, did she receive a complaint from the Jamaican delegation because the local name 'Bo'sun Bird' was not used instead of the standardized 'White-tailed Tropicbird.' Similarly, did the delegation from Grenada protest because the local name 'Boatswain Bird' was not used, or did someone from St. Vincent object because 'Scissor-tail' was not used. I asked, were there complaints from the Bahamians as to why the local name 'Plimico' was not used, and the same for Grenada and St. Vincent for 'Little Devil' instead of the standardized 'Audubon's Shearwater.' Surely, there were not complaints because they are aware of the proper use of English standardized names. This is something we should learn.

"In conclusion, if we wish to work with Spanish communities and get them involved in bird conservation, as well as enhance communication links among Latin countries, standardization of Spanish names is the answer."

Sergio A. Colón López
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J. Carib. Ornithol. 18:107-108, 2005

INVASIVE SPECIES WORKING GROUP

ANDREW DOBSON[1] AND CAROLYN WARDLE[2]

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ALTHOUGH SEVERAL ATTEMPTS have been made in the past to activate an Invasive Species Working Group for the Society, it has proved difficult to decide just how to approach this very important subject and how any meaningful results may emerge. There are many success stories of eradication of invasive species on which to base our efforts but these successes have involved dedicated people and funding.

Ten people, headed by President Andrew Dobson, attended the Invasive Species Working Group meeting held in Guadeloupe, representing a wide spread of island nations around the region. The discussion was confined to generalizations in order to define the more important invasive species impacting Caribbean birds and areas that needed work. It was hoped that specific projects would emerge in due course that the Society might be able to support in whatever way appropriate.

The main categories of species were defined as plants, non-bird invasives and birds. Not all exotic species are invasive. Foreign species are introduced deliberately, e.g., the pet or nursery trade, or they arrive in cargo or by some other unknown way. A few species were identified as potential problems in the Caribbean region, including: Casuarina trees; feral cats; mongoose, rats, mice, etc.; domestic animals such as dogs; farm animals; and introductions due to the pet trade (e.g., Eurasian Collared Dove [*Streptopelia decaocto*]).

Andrew Dobson stated that the Bermuda Petrel is monitored for rats and other threats and that some

islands in the Bermuda chain are now free of rats. The main bird invasives in Bermuda are the Great Kiskadee (*Pitangus sulphuratus*), Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), and Feral Rock Pigeon (*Columba livia*).

Some general points were made:

1. List which species are invasive in the Caribbean so that information can be shared.
2. Identify what is already present.
3. Identify new invasives as early as possible and try to eradicate before the species becomes unmanageable.
4. Identify invasives in other islands so that they can be blacklisted from legal introduction.
5. Identify what actions have already been successful and what has been a failure.
6. Avoid deliberate and inadvertent introductions, work with local governments.
7. Share ideas as to what can be done about common problems.
8. Convincing the public is an important step in eradication, improving local knowledge (including lawmakers) of invasive species is important.
9. Work with local lawmakers to try to improve local laws.
10. Sometimes reducing the level of invasives to manageable levels will also work.
11. Sometimes obvious actions are not the solution, e.g., if the top predator is eliminated, the next may become more successful (cats may be keeping rats at bay, once cats are eliminated rats take over, etc.).
12. Study the situation carefully before taking action.

It was suggested that an invasives information network for the Caribbean be set up. Also, SCSCB should get in touch with the IUCN Invasives Group for assistance and information, as well as pursue projects with the assistance of Island Conservation (Bernie Tershy's organization).

J. Carib. Ornithol. 18:109-114, 2005

BIRD MONITORING WORKING GROUP OF THE SCSCB: TOWARDS ALL-SPECIES MONITORING AND EXPANDED TRAINING OPPORTUNITIES IN THE CARIBBEAN

STEVEN C. LATTA

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THE MONITORING WORKING GROUP was formed at the Guadeloupe Meeting of the SCSCB following the Monitoring Symposium and expression of broad interest in the region in collaborative monitoring efforts and expanded training opportunities (see report, this issue).

More than a dozen participants agreed by consensus that a Monitoring Working Group would be formed. Steven Latta of Point Reyes Bird Observatory (slatta@prbo.org) and Jon McCracken of Bird Studies Canada (jmccracken@bsc-eoc.org) agreed to coordinate the working group. We agreed to proceed with the drafting of a vision statement defining the role of the Monitoring Working Group, with an emphasis placed on training SCSCB members in monitoring techniques and encouraging inter-island cooperation in monitoring shared species and habitats. That vision statement is reproduced below. We also agreed to prepare a regional report on bird monitoring that will include existing monitoring programs, existing training opportunities, and recommendations for standardized monitoring protocols. This report will be based on the questionnaire which follows. Finally, we are exploring options for funding training programs in the region, and hope to offer expanded training workshops and internships in 2006.

VISION STATEMENT

The long-term vision of SCSCB's Monitoring Working Group is to enable Caribbean countries to build high-quality bird monitoring and training programs that have regional relevance and significance because of shared species and habitats. Within this context, the Working Group will:

- Foster inter-island cooperation and collaboration in the regional monitoring of shared species of birds (including Neotropical migrants) and their associated habitats;
- Work to significantly increase the number of skilled field biologists living in the region; and
- Build regional capacity to carry out standardized monitoring and training programs.
- Although the focus of the working group is on the Caribbean islands, the group will cooperate with other groups, agencies, and interests working on common goals within the Caribbean, Latin America, and the Western Hemisphere

ROLES OF THE WORKING GROUP (FIVE-YEAR HORIZON)

- Compile and disseminate information on existing monitoring and training programs that are relevant to the Caribbean;
- Identify and promote standardized monitoring protocols that can be used to report upon trends of species of interest within the Caribbean
- Promote the need for the creation of a common database structure and data-sharing system, so that data of regional interest can be archived, retrieved and analyzed by program participants;
- Support the development of an Internet program to facilitate regional data input from scientists and volunteers (birdwatchers, students, etc.), to compile data, and retrieve reports, maps, etc.
- Promote standardized protocols for training specialized field staff, with a view towards creating a cadre of trainers in the Caribbean;
- Attempt to identify one or more regional "centers of excellence" in the Caribbean that can take a lead role on developing monitoring and training programs within the region; and
- Seek resources to undertake the above.

Survey of Monitoring Programs and Training Opportunities in the Caribbean

Part 1: Contact Information

Name of project/program:
Organization/institution:
Contact person:
Contact e-mail address:
Website address:
Location(s) of project
a) Site name(s):
b) Country/Countries:

Part 2: General Information

Type(s) of project(s) being reported on:
a) monitoring project(s)
b) training project(s)
Project history/duration
a) annually or
b) intermittently
Year started:
Focal group(s) (mark all that apply):
a) resident species
b) Neotropical migrants
Focal species (mark all that apply):
a) colonial waterbirds/seabirds
b) waterfowl
c) raptors
d) shorebirds
e) hummingbirds
f) parrots
g) Passerines
h) others (specify)

Part 3: Monitoring Information

Feature(s) being monitored (mark all that apply):
a) population size
b) productivity
c) survivorship
d) other (specify in comments)
Monitoring geographic framework is (mark all that apply):
a) site or area based
b) route based
c) point based
d) other (specify in comments)
Sampling design is (mark all that apply):
a) stratified
b) random
c) systematic
d) area search
e) other (specify in comments)
Sampling intensity (insert number below):
a) number of repeated samples = _____
Monitoring method(s) used (mark all that apply):
a) point counts
b) call playback
c) transects
d) area search / atlassing / inventorying
e) territory "spot mapping"
f) aerial surveys
g) nest monitoring
h) mist netting (incl. MoSI program)
i) Christmas Bird Count(s)
j) “e-bird”
k) other (specify)
If point counts are used, what type(s)?
a) unlimited distance
b) fixed-distance
c) distance sampling (incl. distance categories)
d) double observer
If point counts are used, what duration?
a) < 5 minutes
b) 5 minutes
c) 10 minutes
d) other (specify)
Other information on monitoring program(s) that you would like to share (optional):

Part 4: Training Programs

Training focus and skills developed (mark all that apply):
a) point counts
b) call playback
c) transects
d) area search / atlassing
e) territory mapping
f) aerial surveys
g) nest finding / monitoring

h) mist netting / banding / ageing / sexing
i) color banding
j) bird identification (visual)
k) bird identification (auditory)
l) quantitative habitat assessments
m) database management
n) data analysis
o) other (specify in comments)

Location(s) of training program:

Financial incentives provided, if any (mark all that apply):

a) accommodation provided
b) food provided
c) travel supported
d) training provided for free
e) stipend provided
f) other (specify in comments)

Primary language(s) of instruction (mark all that apply):

a) Spanish
b) English
c) French
d) Dutch

Duration of training:

a) less than 1 week
b) 1-2 weeks
c) 2-4 weeks
d) 4-8 weeks
e) more than 8 weeks

Time(s) of year at which training occurs (mark all that apply):

a) March-May
b) June-August
c) September-November
d) December-February
e) any time

Type(s) of opportunity (mark all that apply):

a) workshop
b) internship/unpaid field assistantship
c) credit course
d) paid field assistantship

Type(s) of evaluation / testing (mark all that apply):

a) no formal evaluation/testing
b) written test
c) practical field test
d) certification
e) course credit

Target group(s) for training (mark all that apply):

a) university / college students
b) wildlife professionals
c) park rangers
d) ecotourist guides
e) other (specify in comments)

Average number of trainees per year:

a) 1-3 people
b) 4-6 people
c) 7-10 people
d) 11-15 people
e) 16-20 people
f) more than 20 people (specify in comments)

Other information on training program(s) (optional):

Please return completed forms to:

Steven C. Latta
Director, Latin American Program
PRBO Conservation Science
7428 Redwood Blvd. Ste. 203
Novato, CA 94945

EL GRUPO DE MONITOREO DE AVES DE LA SCSCB: HACIA EL MONITOREO DE TODAS LAS ESPECIES Y EL INCREMENTO DE LAS OPORTUNIDADES DE ENTRENAMIENTO EN EL CARIBE

STEVEN C. LATTA

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EL GRUPO DE MONITOREO fue creado en la Reunión de la SCSCB en Guadalupe, luego del Simposio de Monitoreo y como resultado del gran interés mostrado en dicha reunión por llevar a cabo esfuerzos de colaboración e incrementar las oportunidades de entrenamiento (ver reporte en este número) en la región.

Más de una docena de participantes coincidieron por consenso que el Grupo de Trabajo de Monitoreo debía crearse y Steven Latta del Point Reyes Bird Observatory (slatta@prbo.org) y Jon McCracken de Bird Studies Canada (jmccracken@bsc-eoc.org) aceptaron ser los coordinadores. Acordamos llevar a cabo una versión inicial de la visión definiendo el papel del grupo de trabajo, haciendo énfasis en el entrenamiento de miembros de la SCSCB en las técnicas de monitoreo y promoviendo la cooperación entre las islas en el monitoreo de hábitat y especies comunes. Esta idea inicial se muestra a continuación. También coincidimos en preparar un reporte regional del monitoreo de aves que incluirá los programas ya existentes. Este reporte estará basado en el cuestionario que sigue. Finalmente, estamos explorando opciones para financiar programas de entrenamiento en la región y esperamos poder ofrecer talleres de entrenamiento y pasantías en el 2006.

VISIÓN

La visión a largo plazo del Grupo de Trabajo de Monitoreo de la SCSCB es capacitar a los países del Caribe en la creación de programas de entrenamiento y de monitoreo de aves que tengan una relevancia e importancia regional debido a los hábitat y especies comunes. Dentro de este contexto, el Grupo de Trabajo:

- Mantendrá la cooperación y colaboración entre las islas en el monitoreo regional de especies de aves comunes (incluyendo las migratorias neotropicales) y sus hábitat asociados;
- Trabajará para incrementar significativamente en la región, el número de biólogos de campo con habilidades de campo; y
- Incrementará las capacidades a nivel regional para llevar a cabo programas de entrenamiento y monitoreos estandarizados.
- A pesar de que el objetivo principal del grupo de trabajo son las islas del Caribe, el mismo cooperará con otros grupos, agencias e interesados que estén trabajando en metas comunes dentro del Caribe, América Latina y el hemisferio occidental.

ROLES DEL GRUPO DE TRABAJO (EN UN PLAZO DE CINCO AÑOS)

- Agrupar y diseminar la información de los programas de entrenamiento y monitoreo existentes que son relevantes para el Caribe;
- Identificar y promover los protocolos estandarizados de monitoreo para que puedan ser usados en reportar las tendencias de las especies de interés dentro del Caribe;
- Promover la necesidad de la creación de una base de datos y un sistema de intercambio de datos, de forma que aquellos datos de interés regional puedan ser archivados, recuperados y analizados por los participantes en el programa.
- Apoyar el desarrollo de un programa de Internet que facilite la entrada de datos regionales a partir de las observaciones de científicos y voluntarios (observadores de aves, estudiantes, étc) para compilar dichos datos y obtener reportes, mapas, étc.

  Promover protocolos estandarizados para el entrenamiento de personal especializado en tareas de campo, con vistas a crear una cátedra de entrenadores.
- Intentar identificar uno o más "centros de excelencia" regionales en el Caribe que puedan desarrollar un papel fundamental en en el desarrollo de los programas de entrenamiento y monitoreo dentro de la región; y
- Buscar recursos para llevar a cabo lo anterior.

Encuesta de los Programas de Monitoreo y las Oportunidades de Entrenamiento en el Caribe.

Parte 1: Información de Contacto

Nombre del proyecto/programa:

Organización/Institución:

Persona a contactar:

Dirección de correo electrónico del contacto:

Dirección del sitio Web:

Localización(es) del proyecto

a) Nombre del sitio(s):

b) País/Países:

Parte 2: Información General

Tipo(s) de proyecto(s) que ha(n) sido reportado (s):

a) proyecto(s) de monitoreo

b) proyecto(s) de entrenamiento

Historia del proyecto/duración

a) anual ó

b) intermitente

Año en que comenzó:

Grupo(s) focal(es) (marque el que corresponda)

a) especies residentes

b) migrantes neotropicales

Especie focal (marque todas las que corresponda):

a) aves acuáticas colonials/aves marinas

b) anseriformes

c) rapaces

d) limícolas

e) zunzunes y colibríes

f) pericos y cotorras

g) paseriformes

h) otras (especifique)

Part 3: Información del Monitoreo

Características que han sido monitoreadas (marque todas las que corresponda):

a) tamaño poblacional

b) productividad

c) supervivencia

d) otras (especifique con comentarios)

Marco geográfico del moniteo (marque todas las que corresponda):

a) Sitio ó área

b) Ruta

c) Punto

d) otro (especifique con comentarios)

El diseño de muestreo es (marque todas las que corresponda):

a) estratificado

b) aleatorio

c) sistemático

d) área de investigación

e) otro (especifique con comentarios)

Intensidad de muestreo (inserte debajo un número)

a) número de muestras repetidas = _____

Método(s) de monitoreo empleado(s) (marque todas las que corresponda):

a) puntos de conteo

b) llamada de reclamo (playback)

c) transectos

d) área de investigación / atlas / inventario

e) mapeo de territorio

f) muestreos aéreos

g) monitoreo de nidos

h) redes ornitológicas (incluy. el programa MoSI)

i) Conteo(s) Navideño de Aves

j) "e-bird"

k) otros (especifique)

Si son usados puntos de conteo, ¿De qué tipo son?

a) sin distancia fija

b) distancia fijada

c) muestreo de distancia (incluy. categorías de distancia)

d) observadores dobles

Si son usados puntos de conteo, ¿Qué duración tienen?

a) < 5 minutos

b) 5 minutos

c) 10 minutos

d) otros (especifique)

Otra información acerca del (los) programa(s) de monitoreo que quisiera compartir. (Opcional):

Parte 4: Programas de Entrenamiento

Objetivo de los entrenamientos y habilidades desarrolladas (marque todas las que corresponda):

a) puntos de conteo
b) llamadas de reclamo (playback)
c) transectos
d) área de investigación / atlas
e) mapeo de territorios
f) muestreos aéreos
g) búsqueda y/o monitoreo de nidos
h) redes ornitológicas/ anillamiento / sexado / cálculo de edad
i) anillamiento con bandas (anillos) de colores
j) identificación de aves (visual)
k) identificación de aves (auditiva)
l) valoración cuantitativa del hábitat
m) manejo de base de datos
n) análisis de datos
o) otro (especifique con comentarios)

Localidad(es) del programa de entrenamiento:

Incentivos financieros brindados, si alguno (marque todos los que correspondan):

a) hospedaje
b) alimentación
c) apoyo a viajes
d) entrenamiento gratuito
e) estipendio
f) otro (especifique con comentarios)

Idioma(s) primario(s) de la institución (marque todos los que correspondan):

a) Español
b) Inglés
c) Francés
d) Holandés

Duración del entrenamiento:

a) menos de 1 semana
b) 1-2 semanas
c) 2-4 semanas
d) 4-8 semanas
e) más de 8 semanas

Época(s) del año en que se desarrolla el entrenamiento (marque todos los que correspondan): a) Marzo-Mayo
b) Junio-Agosto
c) Septiembre-Noviembre
d) Diciembre-Febrero
e) cualquier época

Tipo(s) de oportunidad(es) (marque todos los que correspondan):

a) talleres
b) pasantía/asistente de campo sin paga
c) curso de créditos
d) asistente de campo pagado

Tipo(s) de evaluación/comprobación (marque todos los que correspondan):

a) evaluación no formal /comprobación
b) examen escrito
c) examen práctico de campo
d) certificado
e) curso de créditos

Grupo(s) a los que va dirigido el entrenamiento (marque todos los que correspondan):

a) estudiantes universitarios
b) profesionales de vida silvestre
c) guardaparques
d) guías de ecoturismo
e) otro (especifique con comentarios)

Número promedio de personas entrenadas por año:

a) 1-3 personas
b) 4-6 personas
c) 7-10 personas
d) 11-15 personas
e) 16-20 personas
f) otro (especifique con comentarios)

Otra información sobre el(los) programa(s) de entrenamiento (opcional):

Por favor envíe los cuestionarios llenos a:

Steven C. Latta
Director, Latin American Program
PRBO Conservation Science
7428 Redwood Blvd. Ste. 203
Novato, CA 94945
slatta@prbo.org

STUDIES IN TRINIDAD AND TOBAGO ORNITHOLOGY HONOURING RICHARD FFRENCH. —Edited by Floyd E. Hayes and Stanley A. Temple. 2002. Occasional Paper #11 of the Department of Life Sciences, University of the West Indies, St. Augustine, Trinidad. 209 pp. ISBN: 976-620-167-6. $25, available from Mr. Dexter Ottley at bshop@books.uwi.tt. Website: www.geocities.com/floyd_hayes/occasionalpaper_contents

As a young birdwatcher, two books always grabbed my imagination—as much for their author's names as for their exotic avifauna. James Bond's *Birds of the West Indies* (1961) and Richard ffrench's *A guide to the birds of Trinidad and Tobago* (1973) were both early, landmark publications which helped to popularize bird study and provide a foundation for avian conservation in the Caribbean. From 1958-1985, Richard ffrench taught school in Trinidad. Though not trained as an ornithologist, birds were clearly his passion, and he spent countless hours in the field as a Master Bander and a careful observer of birdlife. Through 96 books, book chapters, journal articles, and notes, ffrench made tremendous contributions to our understanding of the distribution, natural history, and behavior of Caribbean birds. He also promoted natural history and conservation activities in Trinidad and Tobago, was a founding member of the Asa Wright Nature Centre, and was active in national and regional ornithological organizations. In a wonderful tribute to Richard ffrench, the editors of *Studies in Trinidad and Tobago ornithology honouring Richard ffrench* have collected 26 papers concerning ornithology in Trinidad and Tobago and the Eastern Caribbean. These papers are organized into five sections, including: I. Richard ffrench (3 papers); II. Taxonomy and Morphological Variation (3 papers); III. Faunistics and Population Ecology (6 papers); IV. Ecology, Behaviour and Conservation (8 papers); and V. Short Communications (6 papers).

In a tribute such as this, the breadth and depth of the papers is rich and fascinating. For example, in Part I, beyond the standard summaries of the accomplishments of ffrench, I enjoyed the editors' selection of "Soldado Rock" as excerpted from *A naturalist in Trinidad* (Worth 1967). In this recounting of an expedition to a small island southwest of Trinidad, we find Richard ffrench accompanying a team of virus hunters as they collect ticks from seabirds. In a wonderfully entertaining story, so atypical of ornithological journals, we learn something about Brown Noddy (*Anous stolidus*) and Sooty Tern (*Sterna fuscata*) nesting behavior, the biology of ticks, the adventure of field biology, and most appropriately, something of the character and passion of Richard ffrench.

Part II contains some of the research highlights of the journal. In "Natal pterylosis of two Trinidadian ovenbirds (Furnariidae)," Charles Collins and Tamara Araya describe the *neossoptiles* or the number and pattern of natal downs. In a data-rich paper, Floyd Hayes describes geographic variation and sexual dimorphism in the White-tailed Sabrewing (*Campylopterus ensipennis*), and then presents three hypotheses to explain the function of the widened shafts of the outermost primaries which form the "sabres." Although Hayes was unable to test these hypotheses, he does a good job of outlining a future research program to test sabre function. Finally, Robin Restall examines variation among Gray Seedeaters (*Sporophila intermedia*) and argues that *S. i. insularis* should be raised to a full species, Ring-necked Seedeater (*S. insularis*).

Part III contains mostly avifaunal studies from particular locales. These studies most often present species inventories, but some also use point counts or mist-netting to determine relative abundance of birds in describing avian communities. In addition to notes of pelagic seabirds wintering at sea, other papers examine bird abundance at Laventille Marsh prior to its apparent 'destruction'; restored marsh sites at Caroni, Trinidad; Guayaguayare and the Victoria Mayaro Forest reserve of Trinidad; and the Bocas Islands of the northern Gulf of Paria between Trinidad and Venezuela. While of relevance to the conservation and management of these sites, these papers are of perhaps less interest to a wider, general audience. Of more interest, I think, is the unique approach taken by Doug McNair and coauthors in one of the few papers in the book not specific to Trinidad and Tobago. They combined data from Guana Island in the British Virgin Islands with similar data from Harrison Point at the northwest tip of Barbados to examine patterns of Nearctic-Neotropic landbird migration in the eastern Caribbean. Blackpoll Warblers (*Dendroica striata*) were the most common migrant at each site, but a perhaps surprising variety of scarce transients or vagrants were also recorded. Results are used to assess

what routes birds likely take during autumn migration.

The largest group of papers, Part IV, includes eight papers on ecology, behavior and conservation. These include studies of the foraging behavior of the Trinidad Piping-Guan (*Pipile pipile*), a very interesting report of the persistence of some White-bearded Manakin (*Manacus manacus*) leks for as long as 42 years, the biology of the Band-rumped Swift (*Chaetura spinicauda*) and the Black-throated Mango (*Anthracothorax nigricollis*), and Stan Temple's use of ffrench's compilation of life history data and a unique multiple logistic regression model to predict the relative vulnerability of birds on Trinidad and Tobago to extinction. An interesting paper by Tim Manolis and Alex Cruz presents preliminary data on the brood parasitic Shiny Cowbird (*Molothrus bonariensis*) mating systems, suggesting that cowbirds may be promiscuous where host densities are clumped, but monogamous where hosts are more uniformly distributed. Finally, in my favorite article in this section, Mykela Heath and Mike Hansell examine weaving techniques used by Yellow Oriole (*Icterus nigrogularis*) and Crested Oropendola (*Psaracolius decumanus*) in nest building. The authors present a fascinating discussion of the types of weaving stitches, trajectories of strands of building materials, and stitching and building techniques, and compare these results to those of other nest weavers.

Finally, the tribute concludes with several short communications. While these are mostly sight records, their inclusion here is appropriate, as much of Richard ffrench's contribution to ornithology and conservation in Trinidad and Tobago was based on just this sort of careful observation and record keeping.

The editors and the University of the West Indies are to be saluted for their contribution of this fine and handsomely produced monograph, and I expect Richard ffrench is pleased with this deserved tribute as well. The diversity of papers presented in the book provides an example of how much innovative and important ornithological work is undertaken in Trinidad and Tobago and the Caribbean in general. Now, if only the editors had thought to resolve that enduring question: what is the origin of that odd name, ffrench?—STEVEN C. LATTA, *PRBO Conservation Science, 7428 Redwood Blvd. Ste. 203, Novato, CA 94945, USA; e-mail: slatta@prbo.org*

LITERATURE CITED

WORTH, C. B. 1967. A naturalist in Trinidad. Philadelphia, PA: J. B. Lippincott Co. 291 pp.

BOND, J. 1961. Birds of the West Indies. Boston: Houghton Mifflin Company. 256 pp.

FFRENCH, R. 1973. A guide to the birds of Trinidad and Tobago. Wynnewood, PA: Livingston Publishing Company. 470 pp.

BIRDS OF THE WEST INDIES.—Herbert Raffaele, James Wiley, Orlando Garrido, Allan Keith, and Janis Raffaele. 2003. Princeton University Press, Princeton, New Jersey. 216 pp. ISBN: 0-691-11319-X. $24.95.

This welcome guide to the birds of the West Indies is a field version of Raffaele *et al.*'s (1998) popular *A guide to the birds of the West Indies*. Itself the successor to James Bond's (1961) *Birds of the West Indies*, Raffaele *et al.*'s 1998 book is a comprehensive guide to 564 species, including wintering and passage migrants. All species were illustrated in Raffaele *et al.*'s 1998 book, and seven special plates featured the island endemics of Cuba, Hispaniola, Jamaica, and Puerto Rico. This earlier book also contained fairly comprehensive information on field identification, voice, nesting, and geographic range of each species. While widely hailed for its thorough treatment, it was also bemoaned for its large format, heavy weight, prohibitive cost, and especially for its notoriously bad binding which repeatedly failed to withstand even the lightest field use.

Now, Princeton University Press has released this heavily revised and redesigned book based on Raffaele *et al.*'s earlier effort. Much shorter in length, pocket-sized, and with a weather-resistant cover and solid binding, the book can truly be considered a field guide. Introductory material has been limited to brief accounts on how to use the guide, an explanation of terms used in the text, and a summary of conservation issues in the West Indies. A list of

threatened and endangered species is also provided, and while one may argue that much of this could be updated, and equivocate over which species are in which list, the point is clear that human populations and land use changes continue to have a tremendous, negative impact on the region's birds. Species accounts are now placed facing the species' illustration and are abbreviated. Included in the accounts are short descriptions of plumages, voice, status and range, and habitat. Of highest importance for identification, the plumage descriptions focus on key field marks, and while they may be sufficient for the identification of most species by experienced birdwatchers, they are probably insufficiently detailed for beginners, or to separate hard-to-identify species that may be easily confused; seldom is there any specific information on similar species. The number and quality of range maps has also been reduced. While these, too, are placed facing the plates, all but the largest islands of the Greater Antilles have been relegated to the tiniest dot of color. In addition, the useful list of common local names of each species that was found in the earlier edition has been omitted. Nevertheless, these are minor problems, and are largely necessary compromises that one must make in distilling information on 564 species of birds into a single, pocket-sized field guide.

The plates in the *Birds of the West Indies* by principal illustrators Tracy Pederson and Kristin Williams, and supporting artists Cynthie Fisher, Don Radovich, and Bart Rulon, vary in quality but are largely very well done. The special plates featuring island endemics have unfortunately been omitted to save pages, and others, such as the vireos, have been entirely repainted. We find particularly well-done many of the waterbirds, parrots and parakeets, Caprimulgids (including the nice black-and-white drawings of tail patterns), hummingbirds, and woodpeckers. The warbler plates we find particularly difficult to use, especially those of nonbreeding plumages which are incomplete and would be of most value in the region. Some plates have been reorganized from the earlier guide. With computer technologies, plates can now be disassembled and reassembled, allowing for updating, deletions, and replacements of images. This allows much flexibility in book design, but it also contributes to a certain inconsistency among plates, which can be compounded with the multiple artists involved in the project. So for example, some plates mix images by different artists with different styles. Another occasional problem is one of distributing images among the plates. Because publishers are no longer constrained by the composition of the original work by the artist, some plates, such as the shorebirds in this guide, can be very crowded with figures, and others, such as the first plate of thrushes, can appear quite empty. Another minor detail that could actually be corrected with these technologies is that we might prefer that the guide have placed all birds on one plate facing the same direction. This allows for an easier comparison among similar species. More important in our minds is a preference that all views of any one species be on the same plate. For example, images of birds in flight are often on plates several pages away from images of the same species perched. Similarly, views of birds in breeding and non-breeding plumages are not often together, making comparisons of plumages more difficult.

Overall, we think this revised and redesigned version of the Raffaele *et al.* guide is a very well done, field-worthy book that will be carried by almost all Caribbean residents and visitors interested in bird identification. We particularly like its handy size and durability, the ease in which a species can be located in the book, and its relative affordability. Nevertheless, we still carry the more complete *A guide to the birds of the West Indies* in our vehicles as a reference. Whereas this guide is especially useful for those birdwatchers traveling among several islands, we think that there is still a need for island-specific field guides that can provide more in-depth presentations of field identification of all birds, especially very similar or easily confused species, as well as the natural history, ecology, and conservation of island birds.—STEVEN C. LATTA, *PRBO Conservation Science, 7428 Redwood Blvd. Ste. 203, Novato, CA 94945, USA; e-mail: slatta@prbo.org*; and KATE WALLACE, *Apdo. 3284, Santo Domingo, Dominican Republic, e-mail: cua809@yahoo.com*

LITERATURE CITED

BOND, J. 1961. Birds of the West Indies. Boston: Houghton Mifflin Company. 256 pp.

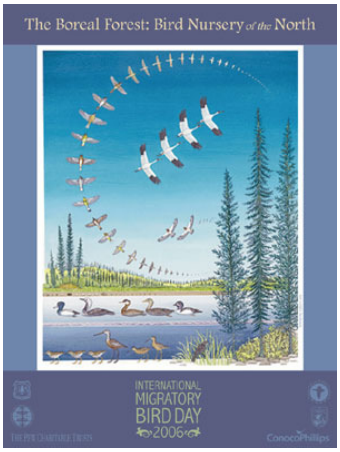
RAFFAELE, H., J. WILEY, O. GARRIDO, A. KEITH, AND J. RAFFAELE. 1998. A guide to the birds of the West Indies. Princeton, NJ: Princeton University Press. 511 pp.

ANNOUNCEMENTS AND NEWS

REVIEWERS FOR VOLUME 18

We thank the following individuals (an asterisk indicates more than one manuscript reviewed) for reviewing manuscripts for volume 18: Martín Acosta, Nicolas Barré, P. A. Buckley, Dennis Denis Avila, Andrew Dobson, Philippe Feldmann, Ruud van Halewijn*, Allan Keith, Oliver Komar*, Lourdes Mugica Valdes, Robert Norton*, Tineke Prins*, Lisa Sorenson*, Antonio Rodríguez Suarez, Pascal Villard, David Wingate, and Joseph Wunderle*.

INTERNATIONAL MIGRATORY BIRD DAY 2006



International Migratory Bird Day 2006 focuses on the importance of the Boreal Forests of Canada and Alaska to migratory birds. Though far from this region, many of the migratory bird species seen in the Caribbean during the non-breeding season depend on the Boreal Forest for nesting. IMBD is collaborating with Sheylda Díaz-Méndez, Coordinator of Caribbean Endemic Bird Festivals, to provide education materials for youth and adults. These materials, including posters, educational magazines, bird stickers, and more will be distributed throughout the islands for use in education programs and festivals. Both programs seek assistance in the distribution of materials. Any travelers who would be willing to take materials should contact Sheylda at otoarina77yahoo.com or Susan Bonfield (IMBD Coordinator) at SBonfield@aol.com. For more information about IMBD and to get involved, please learn more at www.birdday.org

NEW WEBSITE FOR BIRDS OF GUADELOUPE

Anthony Levesque reports that a new website on the birds of Guadeloupe has been developed: www.amazona-guadeloupe.com.

5TH CARIBBEAN ENDEMIC BIRD FESTIVAL TO BE CELEBRATED 22 APRIL - 22 MAY 2006

To the Coordinators of the Caribbean Endemic Bird Festival: The Society for the Conservation and Study of Caribbean Birds (SCSCB) will celebrate the 5th edition of the Caribbean Endemic Bird Festival (CEBF) from 22 April to 22 May 2006. The purpose of the festival is to increase public awareness of the region's high endemism and rich bird life through activities such as talks, nature and birdwatching walks, photographic exhibitions, art competitions, launching of endemic bird postal stamps, articles in the media, and the preparation and distribution of educational materials about birds to schoolchildren and the general public.

Can CEBF 2006 be even bigger than last year's success? Thanks to your collaboration, we held a successful event in 2005 with a total of 17,072 persons participating in 218 activities held in twelve countries. Congratulations to all of you on such an excellent result! The outgoing CEBF Coordinator, Adrianne Tossas, goes on to other functions this year. She initiated the coordination of this magnificent event and with you made it a tradition that results in the education of thousands of people every year. She gave a presentation about all of your activities at the SCSCB meeting in Guadeloupe this past August and described how the festival is growing each year. It was a pleasure for me, the new CEBF Coordinator, to meet many of you and hear about your experiences at the CEBF coordinator's meeting in Guadeloupe.

Will your country be celebrating? Let us know! Please confirm if you will be coordinating festival activities in your country this year, and let me know as soon as possible about your plans so that a regional list of activities can be prepared. If the local coordinator has changed, and you know his or her e-mail, I would appreciate your help with this information. If you know of additional groups that would like to join the festival, please send me their contact information (name and email address) so that I can communicate with them.

Funding available to help with CEBF activities.—This year we are pleased to announce that 6 or more grants (up to $500.00 each) will be available to help cover expenses of CEBF activities. Our sincere thanks to BirdLife International for this funding (funds from UNEP-GEF). To apply for a grant, please send to me (via email), no later than 12 March, the following information: (1) Coordinator name, address, phone number, and email; (2) Country where CEBF will be held; (3) Organizations that will benefit from this grant; (4) A brief description of the activities you are planning to organize in your island/country (include objectives and expected results) and how a small grant (specify amount requested up to $500 maximum) would help you develop these further (maximum one page). The best proposals will receive a grant of up to $500.00.

Please encourage other groups and organizations in your country to celebrate the festival and/or participate in your group's activities. We are looking forward to hearing about the many exciting activities you will be organizing this year.—SHEYLDA N. DÍAZ-MÉNDEZ, *Coordinadora en Puerto Rico, Proyecto para la Conservación de Humedales y la Chiriría Caribeña, Representante National Wildlife Federation, Sociedad Ornitológica Puertorriqueña, Inc., Coordinadora, Festival de aves endémicas del Caribe, 787-458-5406; www.avesdepuertorico.org*

5TO FESTIVAL DE LAS AVES ENDÉMICAS DEL CARIBE A CELEBRARSE DEL 22 DE ABRIL AL 22 DE MAYO DE 2006

A todos los Coordinadores del Festival: La Sociedad Caribeñna para el Estudio y la Conservación de las Aves (SCSCB por sus siglas en inglés) celebrará su 5ta edición del Festival de Aves Endémicas del Caribe de abril 22 al 22 mayo de 2006. El propósito de este festival es aumentar la conciencia del endemismo de cada región y la rica biodiversidad en aves de cada país. Esto se logrará a través de las charlas, caminatas deobservación de aves y naturaleza, exhibiciones de fotografías, competencias de arte, publicidad en los medios y la preparación y distribución de materiales educativos a los estudiantes y al público en general.

¿El Festival de Aves Endemicas del Caribe del 2006 puede superar el de años anteriores? Gracias a la colaboración de todos, los eventos del 2005 fueron un éxito que alcanzaron 17,072 participantes en 218 actividades en 12 países. Les felicito en ese tremendo resultado! La coordinadora todos estos años, Adrianne Tossas, pasa a otras funciones de ahora en adelante. Fue ella quien inició la coordinación de este magnífico evento y junto a ustedes lo han hecho una tradición que resulta en la concieciación de miles de personas anualmente. Adrianne nos presentó en Guadalupe cómo el Festival ha evolucionado cada año. Fue un placer para mí, la nueva coordinadora de este festival, conocerlos y ver lo que han logrado en la reunión de los coordinadores del CEBF en Guadalupe.

¿Tu país lo celebrará? ¡Déjanos saberlo! Por favor confirma si estarás coordinando el festival este año y déjame saber lo antes posible para preparar la lista de los planes regionales y compartirla con todos. Esto nos da ideas a coordinadores nuevos, como yo. Si el coordinador local ha cambiado, y tienes su información de contacto, agradecería que me dieras esa información. Si conoces de otros grupos de quieran unirse a nuestro festival, envíame su nombre y correo electrónico para comunicarme con ellos.

Fondos disponibles para las actividades de CEBF.—Este año nos complace anunciar que hay 6 o más becas (de hasta $500 cada una) y estarán disponibles para cubrir gastos relacionados al festival. Nuestros sinceros agradecimientos a BirdLife International por estos fondos (de UNEP-GEF). Para aplicar a estas becas, envia via correo electrónico la siguiente información a más tardar marzo 12: (1) Nombre del coordinador, dirección, teléfono y correo electronico; (2) País donde se celebrará el CEBF; (3) Organizaciones que se benefician con la beca; (4) Una descripción breve de las actividades que están planificando en su país incluyendo los objetivos y los resultados que esperas. Necesito saber cómo la beca te ayuda y cuánto específicamente hasta un máximo de $500. 00. En una página estará muy bien. Las mejores propuestas recibirán sus becas de la cantidad que solicita, hasta $500.00.

Por favor anima a otras organizaciones a celebrar el festival y/o participar en las activid! ades. Estamos deseosos de saber lo que van a llevar a cabo en todo el Caribe.—SHEYLDA N. DÍAZ-MÉNDEZ, *Coordinadora en Puerto Rico, Proyecto para la Conservación de Humedales y la Chiriría Caribeña, Representante National Wildlife Federation, Sociedad Ornitológica Puertorriqueña, Inc., Coordinadora, Festival de aves endémicas del Caribe, 787-458-5406; www.avesdepuertorico.org*

15TH REGIONAL MEETING OF THE
SOCIETY FOR THE CONSERVATION AND STUDY OF CARIBBEAN BIRDS
Photographs by Andrew Dobson and Jerome Jackson


Eric Carey


Jim Corven


Andrew Dobson


Rosemarie Gnam


Anthony Levesque


Lourdes Mugica


Claudie Parvis


Lisa Sorenson


Carolyn Wardle


David Wege


Jennifer Wheeler


Joe Wunderle


Raphael Lorenzo, Yvonne Arias, and Kate Wallace


Steve Latta, Kamal Islam, and Jon McCracken

THE SOCIETY FOR THE CONSERVATION AND STUDY OF CARIBBEAN BIRDS

MEMBERSHIP

Annual membership dues are US$20.00 for individuals, US$50.00 for institutions based in the Caribbean, and US$120 for institutions based elsewhere. Life memberships are available for US$300.00, payable in three annual installments. Send check or money order in US funds with complete name and address to: Dr. Rosemarie Gnam, PO Box 863208, Ridgewood, NY 11386, USA; e-mail: ilothian@msn.com

SUBMISSION OF MANUSCRIPTS TO JOURNAL OF CARIBBEAN ORNITHOLOGY

Form of Submission.—All manuscripts and materials must be submitted electronically, preferably as a Word, WordPerfect, jpg or gif file attachment, to the editor, Floyd E. Hayes, at jco@puc.edu. Cuban authors should submit manuscripts directly to one of the Cuban associate editors (see front inside cover). Each research manuscript will be reviewed by at least two referees who will judge its suitability for publication.

Language.—Contributions may be in English, Spanish, or French. An abstract in at least one of the other two languages is required but is unnecessary for submission (the editorial board will assist with translation).

Format.—Conform to the style of the most recent issue, but note new conventions for literature citations:

- Font: Times New Roman, 10 point.
- Spacing: single spaced throughout, with an extra space between sections.
- Title: all caps and centered, no longer than 20 words.
- Authors: small caps and centered; use superscripted numbers for multiple addresses.
- Addresses: italicized and centered.
- Abstract: <5% of manuscript's length; heading indented and italicized, followed by a period and an em dash.
- Key words: up to 10 in alphabetic order, italicized, and separated by commas; heading indented and italicized, followed by a period and an em dash.
- Section headings: small caps and centered.
- Subsection headings: indented and italicized, followed by a period and an em dash.
- Bird names: vernacular name followed by scientific name in parenthesis, with only vernacular name used thereafter.
- Text citations: author(s) and year (e.g., Smith 1990, Smith and Jones 1991, Smith *et al.* 1992); multiple citations listed chronologically.
- Measurements: metric units (e.g., km, m, ha, g, l).
- Dates and times: continental dating (e.g., 5 March 2005) and 24-hour clock (e.g.,: 08:35 hr).
- Acknowledgments: precedes Literature Cited.
- Literature Cited: cite only publicly available sources; please avoid citing websites.

  Journal

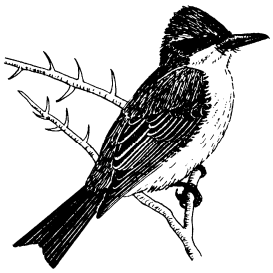
  Frost, M. D., and E. B. Massiah. 2003. Observations of rare and unusual birds on Grenada. Journal of Caribbean Ornithology 16:63-65.

  Book or report

  Bond, J. 1985. Birds of the West Indies. 5th ed. Collins, London.

  Chapter in book

  Saliva, J. E. 2000. Status of Sooty Terns in the West Indies. Pp. 102-108 *in* Status and conservation of West Indian seabirds (E. A. Schreiber and David S. Lee, eds.). Society of Caribbean Ornithology, Ruston, LA.
- Tables, figures, and appendices: inserted after Literature Cited section; each numbered (e.g., Table 1, Fig. 1, Appendix 1) with a short heading; footnotes alphabetic rather than numeric.



THE JOURNAL OF CARIBBEAN ORNITHOLOGY

SOCIETY FOR THE CONSERVATION AND STUDY OF CARIBBEAN BIRDS
SOCIEDAD PARA LA CONSERVACIÓN Y ESTUDIO DE LAS AVES CARIBEÑAS
ASSOCIATION POUR LA CONSERVATION ET L' ETUDE DES OISEAUX DE LA CARAÏBE

2005 Vol. 18, No. 1

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