

The Birds Without Borders - Aves Sin Fronteras® Recommendations for Landowners:

HOW TO MANAGE YOUR LAND TO HELP BIRDS







(Belize and Mesoamerica edition)

By Victoria D. Piaskowski, Mario Teul, Reynold N. Cal, Kari M. Williams and David Tzul

Dr. Gil Boese, President, Foundation for Wildlife Conservation, Inc. President emeritus, Zoological Society of Milwaukee Milwaukee, Wisconsin, U.S.A.

About the Authors

Gil Boese, Ph.D., was president of the Zoological Society of Milwaukee for 16 years. He has been president of the Foundation for Wildlife Conservation, Inc., since its inception in 1993. Dr. Boese initiated the Birds Without Borders - Aves Sin Fronteras* (BWB-ASF) project in 1996 and continues to oversee the project. He has supervised the management of Runaway Creek Nature Preserve since its purchase in 1998. Dr. Boese has a Ph.D in pathobiology from Johns Hopkins University and has done extensive field work in zoology.

Victoria Piaskowski has been the international coordinator of BWB-ASF since it began in 1996. Throughout the project, she has managed the research and field work and conducted staff training. Piaskowski has a master of science degree in biological sciences from the University of Wisconsin-Milwaukee.

Mario Teul has been the Belize national coordinator since 2003 and has been with the project since it started in Belize in 1997. Teul has an associate's degree in English with a minor in biology from the University College of Belize and a teaching certificate from the Belize Ministry of Education.

Reynold Cal has been the manager of the Runaway Creek Nature Preserve since 2004 and has been with the BWB-ASF project since 2001. Cal is a High School graduate with a teaching certificate from the Belize Ministry of Education.

Kari Williams is the Wisconsin-based BWB-ASF project assistant and has been with the project since 2000. She has a bachelor of science degree in zoology from the University of Wisconsin-Madison. She supports both the Belize and Wisconsin staff.

David Tzul is the administrative assistant of BWB-ASF Belize and has been with the project since 2003. Tzul has a post-secondary diploma in animal health and veterinary public health from the Regional Education Program for Animal Health Assistants in Guyana, South America. In addition, Tzul has certificates in protected areas management, conservation techniques, tour guiding and avitourism. He also received training in ornithology and neotropical biology at Cornell University in New York.

BIRDS WITHOUT BORDERS - AVES SIN FRONTERAS® CONTACT INFORMATION

BELIZE:

Birds Without Borders - Aves Sin Fronteras®

Forest Drive

Help for Progress Building

P.O. Box 97

Belmopan City, Cayo District

Belize, Central America Phone: 501-822-0236

Fax: 501-822-0241 E-mail: bwbasf@btl.net

WISCONSIN:

Birds Without Borders - Aves Sin Fronteras® Foundation for Wildlife Conservation, Inc.

Zoological Society of Milwaukee

1421 N. Water St.

Milwaukee, WI 53202

USA

Phone: 414-276-0339 Fax: 414-276-0886

E-mail: vickip@zoosociety.org

FOUNDATION FOR WILDLIFE CONSERVATION, INC.

10005 W. Blue Mound Rd. Milwaukee, WI 53226

USA

Phone: 414-258-2333, extension 214

Fax: 414-258-4004

E-mail: boese@zoosociety.org

BIRDS WITHOUT BORDERS - AVES SIN FRONTERAS® WEB SITE:

http://www.zoosociety.org/Conservation/BWB-ASF/

RUNAWAY CREEK NATURE PRESERVE WEB SITE:

http://www.zoosociety.org/runawaycreek

A Note about Bird Names

A single bird is often known by more than one name. All birds have a scientific name (Latin name), consisting of a genus and a species, that is usually printed in italics. All scientists worldwide use the scientific name to refer to each bird species. There are also English and Spanish common names for many bird species. In Belize, birds also can have a Creole name, a local Spanish name, a K'ekchi or Mopan Mayan name or an archaic or colloquial name. Tables listing these names can be found in Appendix 1 on pages 73-97.

In this manual, each time a bird is mentioned, we list its English common name, scientific name and Creole name.

TABLE OF CONTENTS —

About the authors	Inside Cover
Introduction	2
Why are birds important?	4
A summary: What you can do to help birds	5
Introducción en español	7
¿Por qué las aves son importantes?	8
Lo que puede hacer para ayudar a las aves: un resumen	9
Plants that provide food for birds	12
Places in Belize that sell plants used as food by birds and other Belize native/agricultural plants	27
Preventing birds from damaging crops	29
Birds and aquaculture	32
Pine savannas are important to birds	33
Forests found along Belize's rivers are important to many birds	36
Birds found at the Birds Without Borders - Aves Sin Fronteras® Belize study sites	43
Belize habitats that are preferred by resident and migratory birds	60
Neotropical migrants fly more than 1,500 miles to return to Belize each year	61
Other Belize habitats that are important to birds	62
Helping Jabirus	63
Helping birds that nest in holes or cavities	64
Naturally occurring water can benefit birds	67
Collisions with glass windows can cause bird deaths	68
Your outdoor cat kills many birds	69
Other things that you can do to protect birds and enhance bird populations	70
Another link between Belize and Wisconsin	71
Appendix 1. Lists of bird names	73
Appendix 1A. Creole names in alphabetical order (also English and scientific names)	73
Appendix 1B. English and scientific names (in evolutionary order)	75
Appendix 1C. Spanish common names in alphabetical order (also English and scientific nar	mes)82
Appendix 1D. Local Spanish names in alphabetical order (also English and scientific names	.)89
Appendix 1E. K'ekchi Mayan names in alphabetical order (also English and scientific names	s)89
Appendix 1F. Mopan Mayan names in alphabetical order (also English and scientific names	92
Appendix 1G. Archaic and colloquial names in alphabetical order (also English and scientific names)	94
Appendix 1H. Alternative and combined form names in alphabetical order (also English an scientific names)	
Appendix 2. Birds Without Borders - Aves Sin Fronteras® Belize partners and collaborator	s98
Appendix 3. Special acknowledgments	99
Appendix 4. Research techniques used to study birds and their habitats	100
Appendix 5. Birds Without Borders - Aves Sin Fronterαs® staff presentations and publicati	ions 102
Literature cited	103

INTRODUCTION

The numbers of many birds have been decreasing (Robbins et al. 1989, Miller and Miller 1997, Jones and Vallely 2001). These include some of Belize's resident birds and also Neotropical migratory birds (see definitions below). The main reason for this decline is loss of habitat (a place where a bird naturally and normally lives). Landowners can have a major role in saving birds by managing their land to provide good habitat, including plants that provide food for birds.

This manual is the result of more than seven years of field research in Belize by Birds Without Borders – *Aves Sin Fronteras*®. It provides information on the habitats and plants that we have found to be important to birds. It also includes other information on how to help birds. There are many pictures of birds and plants, so that the reader can easily identify them. (See the tables of bird names on pages 73-97. For the birds pictured in this manual, the page number of the photograph is included in the table.)

WHAT IS BIRDS WITHOUT BORDERS - AVES SIN FRONTERAS® (BWB-ASF)? -

BWB-ASF is a research, education and conservation project sponsored by the Foundation for Wildlife Conservation, Inc. (FWC) and the Zoological Society of Milwaukee (ZSM), in cooperation with private landowners. The FWC and ZSM are both based in Milwaukee, Wisconsin, U.S.A., and have conservation of wildlife and endangered species as their primary mission. Dr. Gil Boese, then president of the FWC and ZSM, founded BWB-ASF in 1996 to address the declines reported in some bird populations.

BWB-ASF began in Belize in 1997 with four goals:

- to do research on both migratory and resident bird species;
- to apply research results to conservation by making recommendations for landowners on how land can be managed to benefit birds;
- to educate children and adults about birds; and
- to train Belizeans so that they could design and conduct further research independently.

BWB-ASF conducted the research on privately owned lands in Belize and Wisconsin, U.S.A. The link between Belize and Wisconsin is our birds. More than 114 species of migratory birds spend part of their lives in both Belize and Wisconsin! In Belize, more than 10 private landowners allowed BWB-ASF to use their lands as study sites. (Please see Appendix 4 for information on the research techniques used to study birds and their habitats in Belize.)

BWB-ASF hired only Belizeans to work on the project, and, since 1997, has trained 21 Belizeans. Since 2003, a year-round, full-time staff of three Belizeans manage the project and do research in Belize. BWB-ASF has worked closely with government agencies and has had the full support of the Government of Belize. BWB-ASF was always granted the necessary

permits from the Conservation Division of the Ministry of Natural Resources, the Environment and Industry and from the Belize Agricultural Health Authority of the Ministry of Agriculture. BWB-ASF also has established many partnerships. (Please see Appendix 2 for a list of BWB-ASF partners and collaborators.)

In 1998, the FWC purchased 6,009 acres (2,432 hectares) of land critical to conservation in central Belize to protect it from development and now manages this land as Runaway Creek Nature Preserve (RCNP). The RCNP is an important part of the Mesoamerican Biological Corridor and provides large expanses of undisturbed habitats for many animals as well as rare plants. BWB-ASF staff continues to conduct research on the preserve. (Please see pages 45-46 for more details on the habitats and pages 48-59 for a list of the birds found at RCNP.)

CLASSIFYING BELIZE'S BIRDS

Birds can be classified by the amount of time they spend in Belize during their lifespan. This is also termed Belize seasonality. Birds in Belize belong to several groups, and sometimes combinations of those groups. Here are explanations of the different Belize seasonality classifications (Speicher and Greenberg 1991, Howell and Webb 1995, Jones and Vallely 2001, Jones 2003) and the abbreviations used in this booklet:

(R): **Resident** birds are present in Belize year-round.

(N): **Neotropical migrants** breed in North America but spend up to six months in Belize. During North American winters, these bird species also are found in southern Mexico, other parts of Central America, South America and Caribbean Sea islands (Greater Antilles).

CLASSIFYING BELIZE'S BIRDS (CONTINUED)

- (M): Migrants spend the non-breeding season ("winter") in Belize and do not breed in Belize. Also included in this category are Neotropical migrants that spend North American winters both north and south of Belize, from North America to southern Mexico, other parts of Central America, South America and Caribbean Sea islands (Greater Antilles).
- (R/M): **Resident/Migrant** birds have some individuals that are resident in Belize year-round and others that are migrants.
- (T): **Transients** are present only during migration and do not breed in Belize.
- (S): **Seasonal residents** migrate to Belize to breed (also called breeding migrants).
- (X): Status unsure, known from only 1-2 records.

WHY ARE BIRDS IMPORTANT?

Many people do not realize the important role that birds play in our lives and our environment.

The following is a list of some of the reasons that birds are important.

Control insect population

Many birds are insectivores. They eat insects that may be harmful to crops and forests.

Control pests

Hawks and owls feed on rodents (mice and rats).

Disperse seeds

Seed eaters disperse seeds through incomplete digestion.

Pollinate plants

Nectar-drinking birds (e.g., hummingbirds) pollinate plants as they move from flower to flower seeking nectar.

Belong to the food chain

Birds and eggs provide food for predators, including other birds, mammals, and humans.

Clean up dead things

Vultures and some hawks eat roadkill and dead livestock.

Offer enjoyment

Many people enjoy bird-watching and bird songs.



Turkey Vultures (Cathartes aura, Doctor John Crow) clean up dead things by eating them.

Roadside Hawks (Buteo magnirostris, Chicken Hawk) feed on rodents.



Black Vultures (Coragyps atratus, John Crow) clean up dead things by eating them.



The Red-throated Ant-Tanager (Habia fuscicauda) feeds on seeds and disperses the seeds in its droppings.



The Ruby-throated Hummingbird (Amazilia tzacatl) pollinates plants.

The Tennessee Warbler (Vermivora peregrina) feeds on insects and helps to control insects.

Make avi-tourism possible – birds bring tourism dollars to Belize

Belize has approximately 574 species of birds. These beautiful birds that call Belize their home attract many tourists to Belize. Of the tourists that visit Belize, 29% come to see Belize's wildlife and 27% come to see the rain forest (Christ et al. 2001). Bird-watching is very popular with tourists and is included in both wildlife watching and the rain forest visits. So birds make an important contribution to Belize's economy by attracting tourists.

Have cultural significance

Birds play an important role in many cultures. Feathers may be used in some Maya, Incan, Aztec and North American Indian ceremonies. Historically, people observed bird migration to help determine appropriate times to plant and harvest crops.

Help monitor the environment

Birds are sensitive to disturbances in the environment. Therefore, by observing bird behavior and comparing numbers of each bird species from year to year, humans can monitor the health of the environment. [The decline of the Peregrine Falcon (Falco peregrinus) in the U.S.A. led to the discovery of dangerous levels of the insecticide DDT (dichlorodiphenyl-trichloroethane) in their food source. DDT, once thought of as beneficial for its ability to control mosquito populations and the spread of malaria, is now recognized as a bio-accumulative toxic chemical in the environment. It is banned in the U.S.A. and in Belize.]

A SUMMARY: WHAT YOU CAN DO TO HELP BIRDS

Like humans and other animals, birds need food, water and shelter to survive. This booklet provides detailed information on how you can provide these resources for Belize's birds. It also has information on other ways that you can help birds, including the following tips:

Preserve and protect native plants that are growing on your land.

Or, if you are planning to plant some flowers or trees, choose plants that are native to Belize. Native plants provide fruits, insects and nectar that many birds feed on. Native plants also provide shelter and places for birds to build nests. If you do



This Rufous-tailed Hummingbird (Amazilia tzacatl) and other hummingbirds feed on the flowers of the Costus (Family Costaceae) plant.

need to clear part of your land, leave as many native trees and plants as possible. (See pages 12-28 for more information.)

Try to preserve the natural habitats that are present on your land. The most important habitats are those that are not changed by people. If you need to clear an area of land (e.g., for farming), leave as much natural vegetation as possible. Remember that birds use many types of habitats. See the table on pages 48-59 to learn more about the habitats that birds prefer.

Protect Belize's pine savannas and "broken ridge" habitats. These habitats are very important to Belize's resident birds throughout the year, but especially during the breeding season, when birds nest and raise young. Neotropical migrants use pine savannas during the non-breeding season (North American winter) and during migration. See pages 33-35 for more information.

Preserve the forests found along Belize's rivers. Many species of birds, including those that need special protection, use these forests. See pages 36-38 for more information.

Don't plant non-native bamboo, especially along rivers. Non-native bamboo (*Bambusa vulgaris*) is very invasive and crowds out

the native plants that are important to birds and other wildlife.

DO help preserve Spiny bamboo (*Guadua longifolia*), which is native and grows naturally along the rivers.

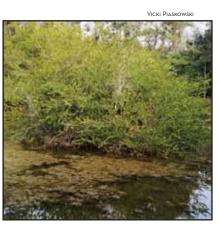
Protect mangroves. Mangroves provide important shelter and food for birds, insects, fish, and invertebrates. They are a very important Belize habitat. (See page 62 for more information.)

Protect littoral forests, the forests that replace mangroves above the tide line. Littoral forests are important habitats on many of Belize's cayes. (See page 62 for more information.)

Do not rake and clear beaches. Beaches provide feeding areas for many wading birds, including shore-birds. Birds find food in the seaweeds that wash up on the shore. Instead of raking and removing seaweeds, leave the seaweeds there for the birds. (See page 62 for more information.)

If you have naturally occurring water on your land, preserve it for birds. Water that occurs

naturally, such as flowing streams, small ponds or flooded areas in savannas, can attract birds and provide them with muchneeded water, especially during the dry season. See page 67 for more information. (Stagnant ponds



This pond at the Tropical Education Center of the Belize Zoo provides birds with food and water.

or bird baths provide breeding areas for mosquitoes and therefore should not be used unless they are

emptied, rinsed and filled with fresh water daily.) Naturally-occurring water is important to kingfishers, wading birds and the Jabiru, a large member of the stork family that is threatened with extinction in Belize. The



Keel-billed Toucans (Ramphastos sulfuratus, Belizean Bill Bird, Big-Bill Pillis) use the forests found along Belize's rivers Jabiru (Jabiru mycteria, Fillymingo, Turk) is also at risk in neighboring countries. See page 63 to learn more about the Jabiru.

Use safe ways to protect fruit trees from bird damage. If you grow fruit trees, use the harvesting practices and other suggestions found on pages 29-31 to prevent/minimize bird damage to fruit crops.

Use safe and effective methods to control birds at fish farms. If you own or work at a fish farm, use the suggestions found on page 32 to control birds that feed at aquaculture facilities.

VICKI PIASKOWSK

Help preserve dead trees and stumps where birds nest. Many birds nest in holes (cavities). In Belize, these cavities can be found in living and dead standing trees and stumps, old termite or wasp nests, on cliffs and in the walls of archeological temples. Among the ways you can help cavity-nesting birds are:

- Save dead trees instead of cutting them down.
- Leave termite nests in trees. See pages 64-66 for

more information on cavity-nesting birds.

Dead trees like these provide places for cavitynesting birds to make nests.

Learn how to prevent injury to birds from hitting

glass windows. See page 68 for more information.

Keep your pet cat indoors; the cat will live longer;

so will the birds. Cats that roam free don't just kill rodents. They also kill many wild birds and other wildlife. Even cats that are well-fed by their owners still have a natural instinct to hunt. What is best for your cat (staying indoors) also will help birds. See page 69 for more information.



Don't kill or harm birds with slingshots or pellet guns for sport. Instead, use non-living objects like an old can, a dead tree, plastic bottles or drawings of birds/animals for target practice. See page 70 for more information.

Do not trap or cage wild birds for pets. Keeping wild birds as pets is illegal in Belize. Report people

> who have wild birds as pets. See page 70 for more information.

Avoid using pesticides whenever possible.

Birds can be sensitive to what we use to control pests in our gardens, fields, orchards and plantations.

Support or volunteer for local, national and international conservation and conservation-education **organizations.** Some of these organizations that work in Belize can be found on our list of collaborators and partners on page 98. Many are happy to have volunteers work with them.

Help to get young people excited about birds.

Many conservation and conservation-education organizations have programs in which young people can learn about birds and other animals.

Landowners working together can conserve and protect larger areas of habitat than individuals. Talk with your neighbors to see if they are interested in joining with you to help save bird habitat.

RESUMEN EN ESPAÑOL DE THE BIRDS WITHOUT BORDERS - AVES SIN FRONTERAS® RECOMENDACIONES PARA PROPIETARIOS DE TERRENOS: CÓMO ADMINISTRAR SU TERRENO PARA AYUDAR A LAS AVES (EDICIÓN PARA BELICE Y MESOAMÉRICA)

Introducción

El número de muchas especies de aves ha disminuido (Robbins et al. 1989, Miller y Miller 1997, Jones y Vallely 2001). Entre estas especies se encuentran algunas de las especies de aves residentes de Belice y también las aves migratorias Neotropicales (ver las definiciones incluidas abajo). La razón principal de esta disminución es la pérdida de hábitats (lugar donde un ave vive por naturaleza). Los propietarios de terrenos pueden jugar un papel muy importante en la conservación de las aves administrando sus terrenos de forma que les provean un buen hábitat, incluyendo plantas que les proveen alimento.

Este manual es el resultado de la investigación de campo que Birds Without Borders – Aves Sin Fronteras® llevó a cabo por más de siete años en Belice. Provee información sobre el hábitat y las plantas que son importantes para las aves según nuestros hallazgos. También incluye información adicional sobre cómo ayudar a las aves. Existen muchas fotos de aves y plantas para que el lector pueda identificarlas. (Ver las tablas de los nombres de aves en las páginas 73-97. Para las aves ilustradas en este manual, el número de la página dónde se halla la foto está incluído en la tabla.)

— ¿Qué es Birds Without Borders - Aves Sin Fronteras® (BWB-ASF)?—

BWB-ASF es un proyecto de investigación, educación y conservación auspiciado por la Sociedad Zoológica de Milwaukee (ZSM por sus siglas en inglés) y por la Fundación para la Conservación de la Vida Silvestre (FWC por sus siglas en inglés), con la colaboración de propietarios de terrenos en su carácter individual o privado. Ambas, la ZSM y la FWC, están localizadas en Milwaukee, Wisconsin, EE.UU., y tienen como misión principal conservar la vida silvestre y las especies en peligro de extinción. El Dr. Gil Boese, quien fue presidente de la ZSM y de la FWC entonces, fundó la BWB-ASF en el 1996 para trabajar con la disminución poblacional que se ha hecho evidente en algunas especies aviarias.

La BWB-ASF nació en Belice en el 1997 con cuatro propósitos/metas:

- llevar a cabo investigaciones sobre las especies de aves residentes tanto como especies de aves migratorias;
- aplicar los resultados de las investigaciones a la conservación haciendo recomendaciones a los propietarios de terrenos sobre cómo los terrenos pueden ser administrados en beneficio de aves;
- educar a niños y adultos sobre las aves; y
- adiestrar a los beliceños para que ellos puedan diseñar y llevar a cabo la investigación de manera independiente.

La BWB-ASF llevó a cabo la investigación en terrenos privados en Belice y Wisconsin, EE.UU. El enlace entre Belice y Wisconsin son nuestras aves. ¡Más de 114 especies de aves migratorias pasan parte de sus vidas en ambos lugares Belice y Wisconsin! En Belice, más de 10 propietarios privados de terrenos le permitieron a BWB-ASF usar sus terrenos como centros de investigación. (Para obtener información sobre las técnicas de investigación usadas en Belice para el estudio de las aves y de sus hábitat, favor de ver el Apéndice 4) La BWB-ASF sólo empleó a beliceños para trabajar en el proyecto y desde 1997 ha adiestrado a 21 beliceños. Actualmente, en el año 2003, 3 beliceños trabajan a tiempo completo en el proyecto y llevan acabo la investigación en Belice durante todo el año. La BWB-ASF ha trabajado estrechamente con agencias gubernamentales y ha contado con todo el apoyo del Gobierno de Belice. La División de Conservación del Ministerio de Recursos Naturales y Medio Ambiente, el Ministerio de Comercio e Industria v la Autoridad de Salud Agrícola del Ministerio de Agricultura de Belice, siempre le ha concedido a la BWB-ASF los permisos necesarios. La BWB-ASF también ha establecido muchas sociedades. (Para una lista de socios y colaboradores de la BWB-ASF, favor de ver el Apéndice 2.)

En el 1998, la FWC compró 6,009 acres (2,433 hectáreas) de terreno vital para la conservación en el centro de Belice con la intención de protegerlo del desarrollo urbano, y ahora administra este terreno como la Reserva Natural de Runaway Creek (RCNP por sus siglas en inglés). La RCNP es parte importante del Corredor Biológico Mesoamericano y le provee vastas extensiones de hábitat en su estado natural a muchos animales tanto como plantas escasas. Los personales de BWB-ASF continúan llevando a cabo investigaciones en la reserva. (Para más información sobre las aves y hábitat encontrados en la RCNP, favor de ver las páginas 45-46 y 48-49)

LA CLASIFICACIÓN DE LAS AVES DE BELICE

Las aves pueden ser clasificadas por la cantidad de tiempo que permanecen en Belice durante su época de vida. Esto también se denomina como la estacionalidad de Belice. Las aves en Belice pertenecen a varios grupos y algunas veces la combinación de aquellos grupos. He aquí algunas explicaciones sobre las diferentes clasificaciones de estacionalidad en Belice (Speicher y Greenberg 1991, Howell y Webb 1995, Jones y Vallely 2001, Jones 2003) y sobre las abreviaturas usadas en este folleto:

- (R): Aves **residentes** están presentes en Belice durante todo el año.
- (N): Aves migratorias neotropicales se aparean en Norte América pero pueden pasar hasta un máximo de seis meses en Belice. Durante los inviernos norteamericanos, estas especies de aves también se pueden encontrar en el sur de México, en otras partes de Centro América, en Sur América y en las islas del Mar Caribe (Antillas Mayores).
- (M): Aves **migratorias** pasan la temporada en la que no se aparean ("invierno") en Belice y no se aparean en Belice. Incluidas en esta categoría son las aves migratorias neotropicales que pasan los inviernos

- norteamericanos tanto al norte como al sur de Belice, desde Norte América hasta el sur de México, en otras partes de Centroamérica, en Sur América y en las islas del Mar Caribe (Antillas Mayores).
- (R/M): La categoría de aves **residentes/migratorias** incluye a algunas aves que son residentes en Belice durante todo el año y a otras que son migratorias.
- (T): Las aves **transeúntes** sólo son pasajeros o transitorios en Belice y no se aparean allí.
- (S): Las aves **residentes estaciónales** migran a Belice para aparearse (también se les llama aves migratorias reproductoras).
- (X): Las aves de **estado incierto** son las que sólo han sido registradas 1 ó 2 veces.

APUNTES SOBRE LOS NOMBRES DE LAS AVES

Un ave es a menudo conocida con más de un nombre. Todas las aves tienen un nombre científico (un nombre latino) que consiste de un género y de una especie, usualmente impresa en itálicas. Todos los científicos a nivel mundial usan el mismo nombre científico para referirse a cada especie de ave. También existen nombres comunes en español y en inglés para muchas especies de aves. En Belice, las aves también pueden tener un nombre en criollo, un nombre local en español, un nombre en Kekchi o en Mopan Maya o un nombre arcaico o coloquial. En el Apéndice 1, de las páginas 73 a 97, se puede encontrar tablas que contienen estos nombres. En este manual, cada vez que se menciona un ave, nosotros incluímos su nombre común en inglés, su nombre científico y su nombre en criollo.

¿POR QUÉ LAS AVES SON IMPORTANTES?

Muchas personas no se dan cuenta del papel importante que juegan las aves en nuestras vidas y en nuestro medio ambiente. La siguiente es una lista de algunas de las razones por las que son importantes las aves.

Controlan la población de los insectos

Muchas aves son insectívoras. Ellas comen insectos que pueden ser perjudiciales para los cultivos y para los bosques.

Controlan las plagas

Los halcones y los búhos (tecolote, lechuza) se alimentan de roedores (ratas y ratones).

Dispersan las semillas

Las aves que comen semillas dispersan las semillas a través de digestión incompleta o parcial.

Polinizan plantas

Las aves que beben el néctar de las flores (ej., los colibríes) polinizan las plantas cuando se mueven de flor en flor buscando néctar.

©.JAMES BEVERINGE

La Archilochus colubris poliniza

Son parte de la cadena alimenticia

Las aves y los huevos les sirven de alimento a los depredadores, incluyendo a otras aves, mamíferos y a humanos.

Limpian el medio ambiente

Los buitres (zopes, chombo) y algunos halcones se alimentan de carroña de animales muertos en la carretera y de ganado muerto.



La especie Coragyps atratus se deshace de la materia muerta comiéndos ela

Son fuente de entretenimiento

Muchas personas disfrutan observando a las aves y escuchando su canto.

Posibilitan el aviturismo - las aves benefician la economía turística de Belice

Belice cuenta con aproxi-

madamente 574 especies de aves. Estas bellas aves que tienen a Belice como hogar son una gran atracción turística a Belice. El 29% de los turistas que visitan Belice vienen a disfrutar de la vida silvestre v el 27% vienen a disfrutar del bosque lluvioso (Christ et al. 2001). La observación de aves es

muy popular entre los turistas y está incluida tanto en las visitas de observación de la vida silvestre como en las visitas al bosque lluvioso. Es así que las aves contribuyen grandemente a la economía de Belice, atravendo a los turistas.



La Buteo magnirostris se alimenta de roedores.

Tienen valor cultural

Las aves juegan un papel muy importante en muchas culturas. Las plumas de las aves han sido utilizadas en ceremonias indígenas mayas, incas, aztecas y de indios norteamericanos. Históricamente, la observación de la migración de aves ayudaba a la gente a determinar el momento apropiado para sembrar y cosechar los cultivos.

Nos ayudan a seguir el estado de salud del medio

Las aves son sensibles a los trastornos ambientales. Es por eso que observando el comportamiento de las aves y comparando la cantidad de aves especie por especie y año tras año, los humanos pueden monitorear el estado de salud del medio ambiente. [La disminución poblacional del falcón peregrino (Falco peregrinus) en los EE.UU. llevó al descubrimiento de altos niveles del insecticida DDT en su fuente de alimento. El DDT (dichlorodiphenyltrichloroethane), antes visto como benéfico por su habilidad para controlar la población de mosquitos y la propagación de la malaria, es ahora reconocido como un químico tóxico bioacumulativo que afecta al medio ambiente. Esta prohibido en los EE.UU. y en Belice].

LO QUE PUEDE HACER PARA AYUDAR A LAS AVES: UN RESUMEN

Igual que los humanos y otros animales, las aves necesitan de alimento, aqua y abrigo para sobrevivir. Este manual contiene información detallada sobre como usted puede proveerle estos recursos a las aves de Belice. También contiene información sobre otras maneras en las que usted puede ayudar a las aves, incluyendo los siquientes consejos:

• Proteja y conserve las plantas nativas que crecen en su terreno. O si usted piensa sembrar

algunas flores o árboles, escoja plantas que sean nativas de Belice. Las plantas nativas proveen frutas, insectos y néctar de los que muchas aves se alimentan. Las plantas nativas también les proveen refugio y lugares donde construir sus nidos. Si usted necesita despejar parte de su terreno, deje todos los árboles y plantas nativas que le sea posible. (Para más información ver páginas 12-28)

• Trate de conservar los hábitat naturales que se encuentren en su terreno. Los hábitat más importantes son aquellos que no han sido alterados por los humanos. Si usted necesita despejar un area de su terreno (ej., para sembrar) deje tanta vegetación como le sea posible. Recuerde que las aves usan muchas clases de habitat. Para aprender más sobre el habitat que las aves prefieren ver la tabla en las páginas 48-59.

• Proteja el hábitat de savanas de pino y de "acantilados." Estos hábitat son de mucha importancia para las aves residentes de Belice

> durante todo el año, pero en especial durante la temporada de apareamiento, cuando las aves anidan y crían a sus polluelos. Las aves migratorias neotropicales usan las savanas de pino durante la temno norteamericano) y durante la migración. Para más información ver

porada en la que no se aparean (el invier-Los Ramphastos sulfuratus hacen uso las páginas 33-35. de los bosques que se encuentran a la orilla de los ríos de Belice. Conserve los bosques que rodean a los ríos

de Belice. Muchas especies de aves usan estos bosques, incluvendo aquellas que necesitan protección especial. Para más información ver las páginas 36-38.

- No siembre bambú no nativo, especialmente alrededor de los ríos. El bambú no nativo (Bambusa vulgaris) es sumamente invasivo y desplaza a las plantas nativas que son importantes para aves y otros miembros de la vida silvestre.
- Ayude a conservar el bambú espinoso (Guadua longifolia), que es nativo y crece naturalmente alrededor de los ríos.
- Proteja a los bosques de mangle. Los bosques de mangle le proveen abrigo y comida a aves, insectos, peces e invertebrados. Estos son hábitats muy importantes para Belice.



Árboles muertos como estos les proveen lugares a las aves que anidan en cavidades.

importantes para Belice. (Para más información ver página 62.)

- Proteja los bosques costeros, los bosques que sustituyen a los mangles más allá de la línea de la marea. Los bosques costeros son hábitat importantes que se encuentran en muchos de los cayos de Belice. (Para más información ver página 62.)
- No rastrille ni remueva las algas marinas de las playas. Las playas le proveen áreas de alimentación a muchas aves zancudas, incluyendo a las aves costeras. Las aves encuentran alimento en las algas marinas que las olas arrastran hacia la costa. En vez de rastrillar o remover las algas marinas, déjelas allí para las aves. (Para más información ver página 62.)
- Si usted tiene alguna fuente de agua natural en su terreno presérvela para las aves. Las fuentes de agua naturales, tales como ríos o riachuelos, estanques pequeños o áreas empantanadas que se encuentran en savanas, pueden atraer a las aves y proveerles grandes cantidades de agua necesaria para ellas, especialmente durante la temporada seca. Para más información ver página 67. (Los charcas con agua estancada o los bebederos para aves pueden ser criaderos de mosquitos y por consiguiente no deben ser usados a menos que sean vaciados, enjuagados y llenados con aqua fresca diariamente).
 - Las fuentes de agua de procedencia natural son importantes para los martin pescadores,

las aves zancudas y para el jabirú, un ave de gran tamaño que es miembro de la familia de las cigueñas que está en peligro de extinción en Belice. El jabirú (*Jabiru mycteria*) está también en peligro en países vecinos. Para más información ver página 63 para aprender más sobre el jabirú.

- Use métodos seguros para protejer a los árboles frutales del daño que las aves puedan causarles. Si cultiva árboles frutales ponga en práctica los métodos de cosecha y otras sugerencias que se encuentran en las páginas 29-31 para prevenir/minimizar el daño que las aves le puedan causar a las cocechas de frutas.
- Use métodos seguros y efectivos para controlar a las aves en criaderos de peces. Si usted tiene o trabaja en un criadero de peces siga las sugerencias en la página 32 para controlar a las aves que buscan alimento en lugares donde se crían peces.
- Ayude a conservar los árboles muertos y los tocones donde las aves hacen sus nidos.

 Muchas aves hacen sus nidos en agujeros (cavidades). En Belice, estas cavidades se pueden encontrar en árboles vivos y muertos, en tocones, en nidos de termitas (comején) o de avispas, en acantilados y en los muros de templos arqueológicos. Algunas de las maneras en las que puede ayudar a las aves que anidan en cavidades son:
 - Conservando a los árboles muertos en vez de cortarlos.
 - Dejando a los nidos de termitas (comején) en los árboles.

Para más información sobre las aves



El Amazilia tzacatl y otros colibríes se alimentan de las flores de las plantas del género Costus (Familia Costaceae).

que anidan en cavidades ver páginas 64-66.

- Evite el uso de pesticidas cuando sea posible. Las aves pueden ser sensibles a lo que usamos para controlar las plagas en nuestros jardines, campos, huertos y plantaciones.
- Apoye a o sea voluntario de organizaciones conservacionistas y de organizaciones que ofrecen educación sobre la conservación a nivel local, nacional e internacional. Algunas de estas organizaciones que trabajan en Belice

- se pueden encontrar en nuestra lista de colaboradores y asociados que se encuentra en la página 98. Muchas de ellas reciben a los voluntarios con los brazos abiertos.
- Ayude a entusiasmar a los jóvenes con las aves. Muchas organizaciones conservacionistas y que educan sobre la conservación tienen programas en los que los jóvenes pueden aprender sobre aves y sobre otros animales.
- · Aprenda como prevenir que las aves se lesionen al golperse con ventanas de vidrio o cristal. Para más información ver página 68.
- Mantenga a sus gatos dentro de la casa; el gato vivirá más y las aves también. Los gatos que vagan libremente no sólo matan roedores, también matan aves silvestres y a otros miembros de la vida silvestre. Aún los gatos que son bien alimentados por sus dueños tienen un instinto natural de caza. Lo que es mejor para su gato (quedarse adentro) también ayudará las aves. Para más información ver página 69.

- No mate o dañe las aves con hondas o escopetas de perdigones para uso deportivo. Use objetos inertes como una lata vieja, un árbol muerto, botellas plásticas o dibujos de aves/animales para practicar el tiro. Para más información ver página 70.
- No atrape o enjaule aves silvestres como mascotas. Tener a aves silvestres como mascotas es ilegal en Belice. Denuncie a las personas que tienen aves silvestres como mascotas. Para más información ver página 70.

Los propietarios de terrenos que trabajan en conjunto pueden conservar y proteger areas más grandes de hábitat que las personas que trabajan en su carácter individual. Hable con sus vecinos para ver si están interesados en unirse a usted para ayudar a salvar el hábitat de las aves.



El ave Vermivora peregrina se alimenta de insectos y ayuda a controlarlos.





La sabana de Belice y hábitat de transición (broken ridge) son de suma importancia para las aves residentes y migratorias de Belice



El ave Tyrannus savana se anida en las sabanas de Belice.

VICKI PIASKOWSK



Fuentes de agua natural es importante para muchas aves. Esta aguada en el Centro Tropical de Educación suministra las aves con alimento y agua.



El bosque riverina provee hábitat para muchas especies de aves, incluyendo aquellos que necesitan protección especial.



Mangles como estas en Caye Caulker, son muy importantes para las aves, peces, insectos y otros invertebrados.



Nidos viejos de termitas son usados por las aves para anidarse y criar polluelos, por ejemplo, Trogon melanocephalus.



Este nido de termitas tiene una cavidad de nido.

PLANTS THAT PROVIDE FOOD FOR BIRDS

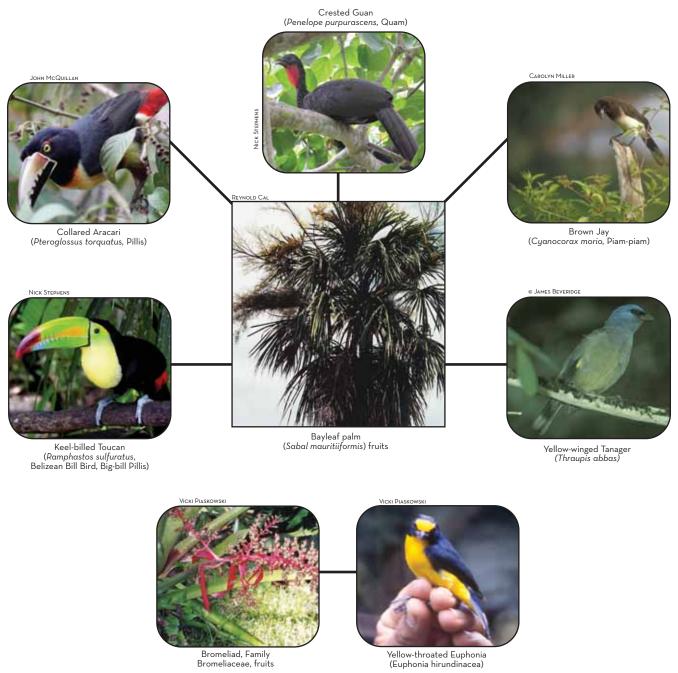
While they conducted the research, Birds Without Borders – Aves Sin Fronteras® staff made observations of the plants that were used by birds for food. Many migrant and resident birds are attracted to the fruits that grow on native plants. Birds also feed on insects and caterpillars ("worms") that can be found on native plants. Other birds, such as hummingbirds, feed on flowers and nectar, but also eat insects.

Following are pictures of plants and some of the birds that feed on them. A complete list can be found on pages 23-26. As a landowner, you can help birds by protecting these plants if they are growing on your land. Or, if you are planning to plant some flowers

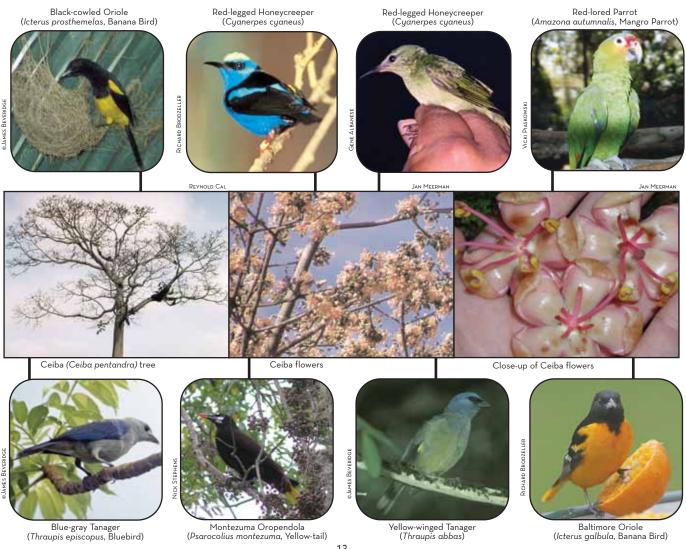
or trees, you can choose some of the plants on this list. If you need to clear an area of your land, leave as many of these plants as possible.

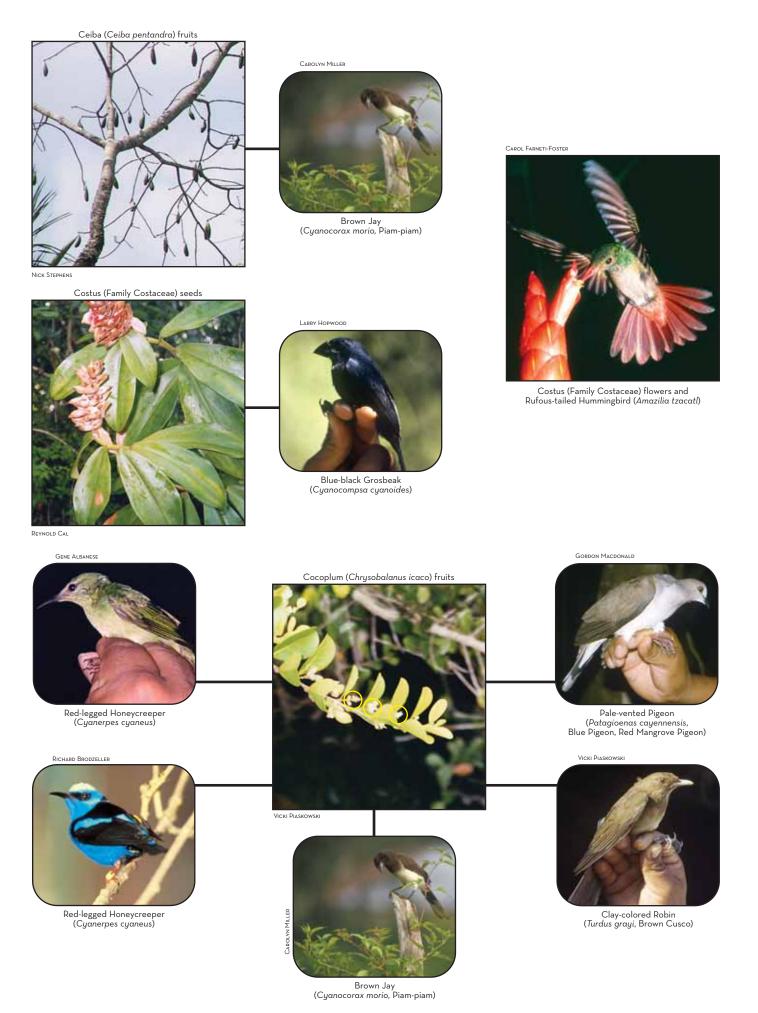
Most of the plants on this list are native to Belize, which means that they grow here naturally. We have included many photographs of both the plants and birds so that they can be easily identified. We also contacted nurseries country-wide to determine if they sell these plants. (Please see pages 27-28 for a list of places where some of these plants can be purchased.)

Watch for the many beautiful birds that will come to feed on these plants on your land.



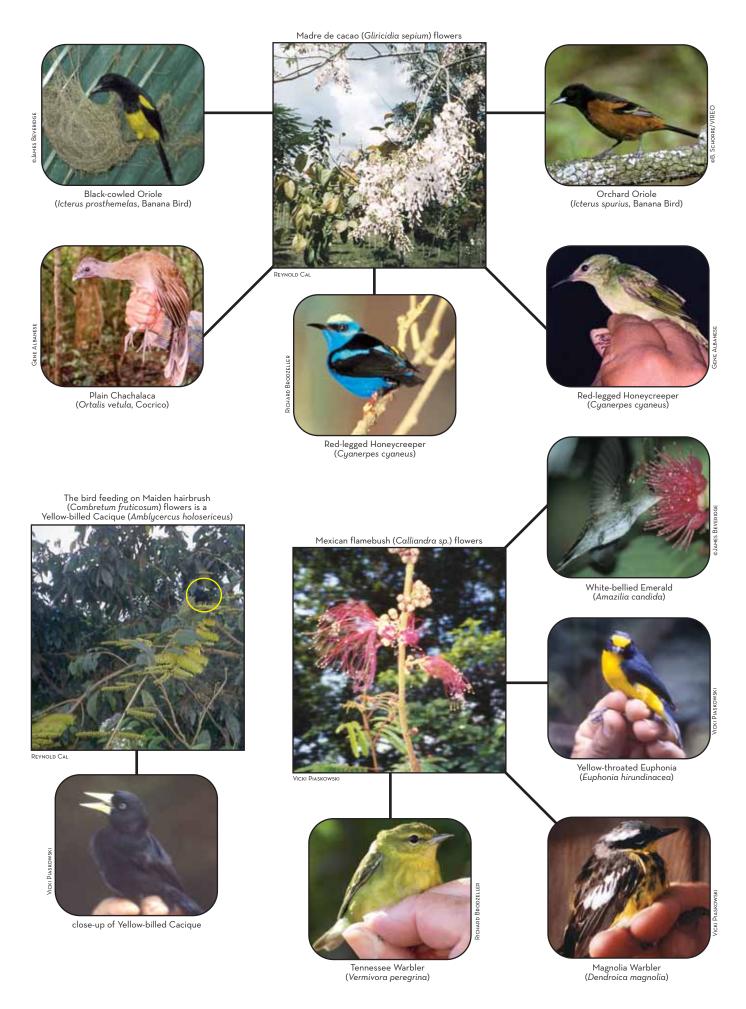


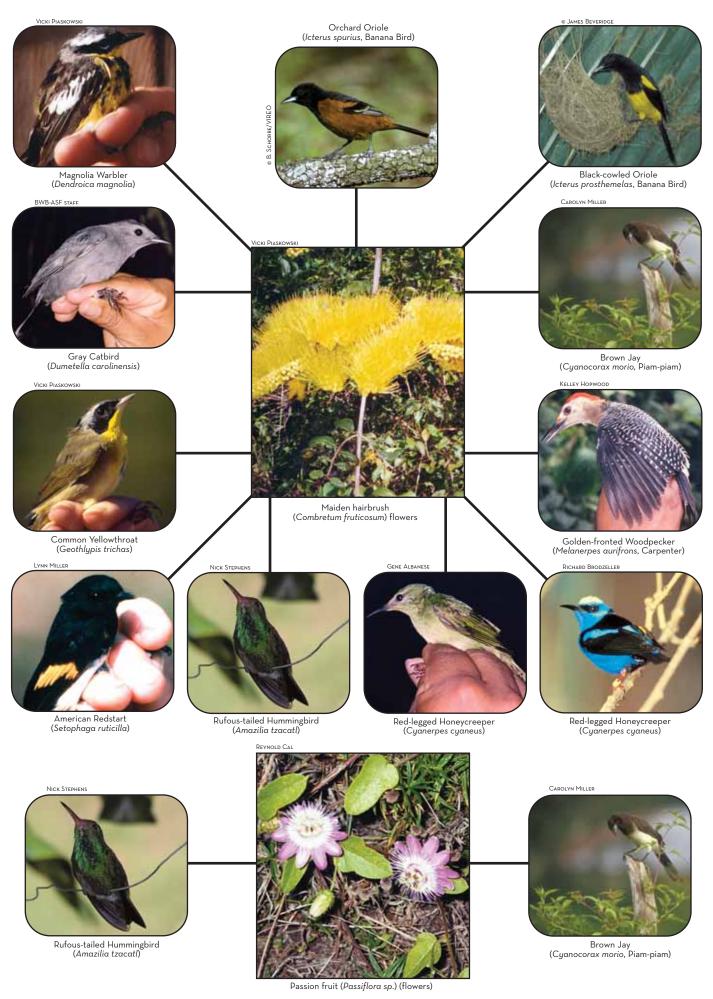


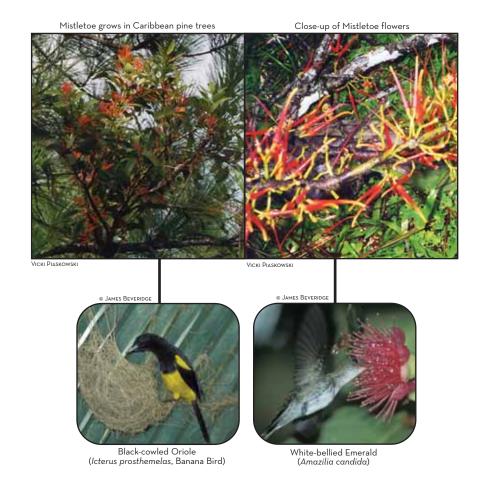


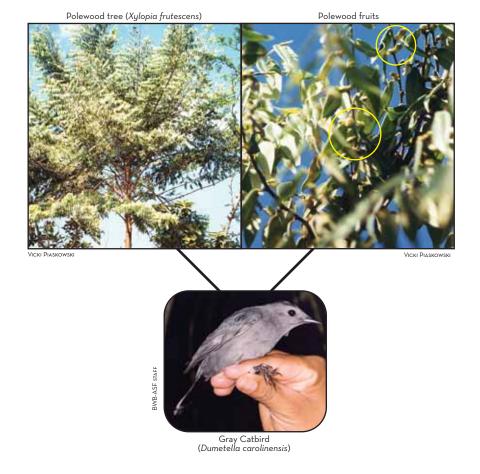


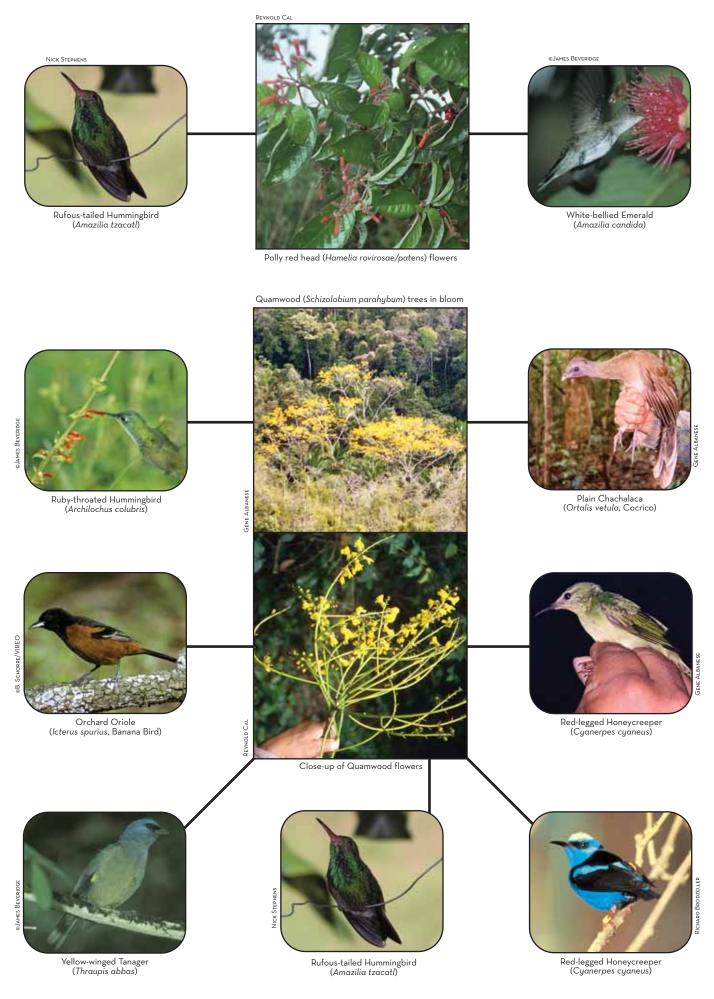


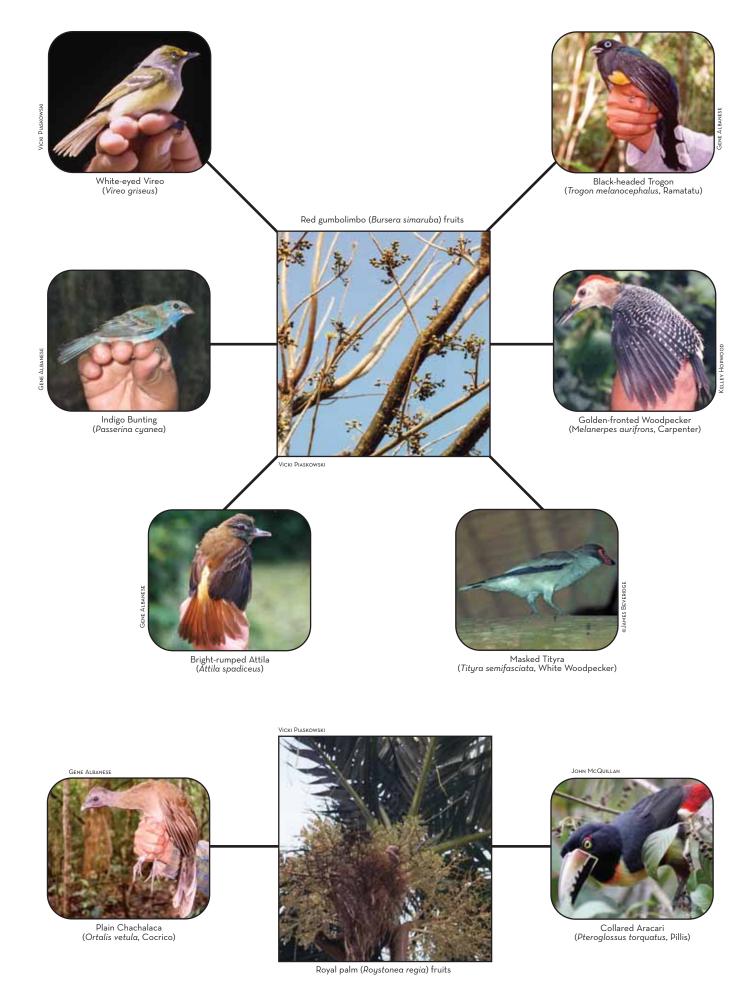


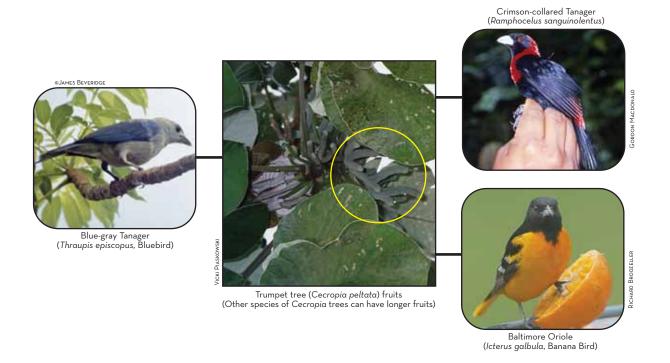


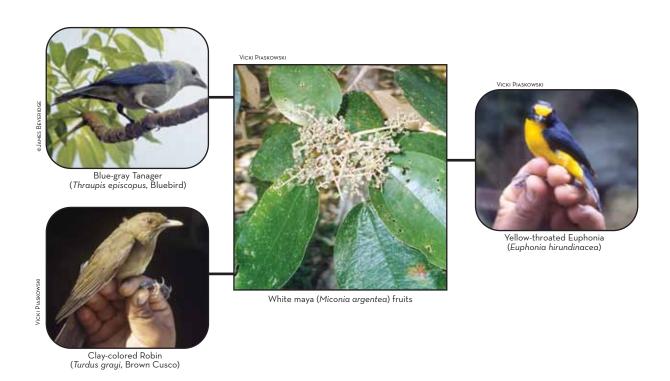












PLANT SPECIES (part of plant that bird feeds on) Scientific name in italics	Resident birds seen feeding on plant	MIGRANT BIRDS SEEN FEEDING ON PLAN
Acacia sp. (seeds)	Olive-throated Parakeet (Aratinga nana, Wood-lice Kiti)	
Bayleaf palm (fruit) Sabal mauritiiformis	Brown Jay (Cyanocorax morio, Piam-piam) Collared Aracari (Pteroglossus torquatus, Pillis) Crested Guan (Penelope purpurascens, Quam) Keel-billed Toucan (Ramphastos sulfuratus, Belizean Bill Bird, Big-bill Pillis) Yellow-winged Tanager (Thraupis abbas)	
Boyjob (fruit) Matayba apetala/oppositifolia	Collared Aracari (Pteroglossus torquatus, Pillis)	
Breadnut (fruit) Trophis racemosa		Gray Catbird (Dumetella carolinensis) Rose-breasted Grosbeak (Pheucticus ludovicianus) Wood Thrush (Hylocichla mustelina)
Bri-bri (fruit) Inga sp.	Brown Jay (Cyanocorax morio, Piam-piam) Buff-throated Saltator (Saltator maximus) Yellow-tailed Oriole (Icterus mesomelas, Banana Bird)	
Bromeliad (fruit) Family Bromeliaceae	Yellow-throated Euphonia (Euphonia hirundinacea)	
Capulin (fruit) Trema micrantha	Tropical Mockingbird (<i>Mimus gilvus</i> , Nightingale)	Gray Catbird (Dumetella carolinensis) Least Flycatcher (Empidonax minimus) Yellow-breasted Chat (Icteria virens)
Carbon del rio (fruit) Trichilia pallida	Clay-colored Robin (Turdus grayi, Brown Cusco) Gray-headed Tanager (Eucometis penicillata) Montezuma Oropendola (Psarocolius montezuma, Yellow-tail) Yellow-bellied Tyrannulet (Ornithion semiflavum) Yellow-throated Euphonia (Euphonia hirundinacea)	
Trichilia sp. (fruit)	Boat-billed Flycatcher (Megarynchus pitangua, Kiskadee) Crested Guan (Penelope purpurascens, Quam) Greenish Elaenia (Myiopagis viridicata) Ochre-bellied Flycatcher (Mionectes oleagineus) Red-capped Manakin (Pipra mentalis)	Gray Catbird (Dumetella carolinensis) Wood Thrush (Hylocichla mustelina)
Ceiba (flowers, nectar and fruit) Ceibα pentandra	Black-cowled Oriole (Icterus prosthemelas, Banana Bird) Blue-gray Tanager (Thraupis episcopus, Bluebird) Canivet's Emerald (Chlorostilbon canivetii) Montezuma Oropendola (Psarocolius montezuma, Yellow-tail) Red-legged Honeycreeper (Cyanerpes cyaneus) Red-lored Parrot (Amazona autumnalis, Mangro Parrot) Rufous-tailed Hummingbird (Amazilia tzacatl) White-bellied Emerald (Amazilia candida) White-fronted Parrot (Amazona albifrons, Corn-eater, Corn Kiti) Yellow-winged Tanager (Thraupis abbas) Brown Jay (Cyanocorax morio, Piam-piam)	Baltimore Oriole (Icterus galbula, Banana Bird) Summer Tanager (Pirαnga rubrα)
Coccolobα sp. (fruit and flowers)	Great Kiskadee (Pitangus sulphuratus, Kiskadee) Red-capped Manakin (Pipra mentalis) Yellow-bellied Elaenia (Elaenia flavogaster)	Gray Catbird (Dumetella carolinensis) Wood Thrush (Hylocichla mustelina)
Cocoplum (fruit) Chrysobalanus icaco	Brown Jay (Cyanocorax morio, Piam-piam) Clay-colored Robin (Turdus grayi, Brown Cusco) Fork-tailed Flycatcher (Tyrannus savana, Scissors-tail) Pale-vented Pigeon (Patagioenas cayennensis, Blue Pigeon, Red Mangrove Pigeon) Red-legged Honeycreeper (Cyanerpes cyaneus) Saltator sp. (Genus Saltator) Yellow-green Vireo (Vireo flavoviridis) Yellow-throated Euphonia (Euphonia hirundinacea)	

^{*}There are both native and non-native members of these plant groups.

PLANT SPECIES (part of plant that bird feeds on) Scientific name in italics	RESIDENT BIRDS SEEN FEEDING ON PLANT	MIGRANT BIRDS SEEN FEEDING ON PLANT
Copal (fruit) Protium copal	Black-faced Grosbeak (Caryothraustes poliogaster) Brown Jay (Cyanocorax morio, Piam-piam) Olive-throated Parakeet (Aratinga nana, Wood-lice Kiti) Red-lored Parrot (Amazona autumnalis, Mangro Parrot)	
Costus (flowers and seeds) Family Costaceae	Blue-black Grosbeak (Cyanocompsa cyanoides) Rufous-tailed Hummingbird (Amazilia tzacatl)	
Craboo (fruit) Byrsonima crassifolia	Black-cowled Oriole (Icterus prosthemelas, Banana Bird) Brown Jay (Cyanocorax morio, Piam-piam) Tropical Mockingbird (Mimus gilvus, Nightingale)	
Ficus (fruit) Ficus sp.	Red-capped Manakin (Pipra mentalis) Red-legged Honeycreeper (Cyanerpes cyaneus) Yellow-throated Euphonia (Euphonia hirundinacea)	Prothonotary Warbler (Protonotαriα citreα)
Fiddlewood (fruit) Vitex gaumeri	Black-headed Trogon (Trogon melanocephalus, Ramatatu) Collared Aracari (Pteroglossus torquαtus, Pillis)	
Give-and-Take Palm (fruit) Cryosophila stauracantha	Keel-billed Toucan (<i>Ramphastos sulfuratus,</i> Belizean Bill Bird, Big-bill Pillis)	
Grande betty (fruit) Cupania belizensis	Black-faced Grosbeak (Caryothraustes poliogaster) Scrub Euphonia (Euphonia affinis) Yellow-throated Euphonia (Euphonia hirundinacea)	
Gaussia maya (fruit)		Gray Catbird (Dumetella carolinensis) Wood Thrush (Hylocichla mustelina)
Guayavillo (fruit) Eugeniα sp.	Rose-throated Tanager (Piranga roseogularis)	
Hibiscus* (flower) Hibiscus sp.	Rufous-tailed Hummingbird (Amazilia tzacatl)	
Wild hibiscus (flower) Hibiscus sp.	Canivet's Emerald (Chlorostilbon canivetii) Stripe-throated Hermit (Phaethornis striigularis) White-bellied Emerald (Amazilia candida)	
Indian redhead (flower) Aphelandra scabra	Long-billed Hermit (Phaethornis longirostris) Stripe-throated Hermit (Phaethornis striigularis) Wedge-tailed Sabrewing (Campylopterus curvipennis)	
Lonchocarpus flower (flower) Lonchocarpus sp.	Wedge-tailed Sabrewing (Campylopterus curvipennis)	
Logwood (flowers) Haematoxylon campechianum	White-bellied Emerald (Amazilia candida)	
Madre de cacao (flower) Gliricidiα sepium	Black-cowled Oriole (Icterus prosthemelas, Banana Bird) Collared Aracari (Pteroglossus torquatus, Pillis) Plain Chachalaca (Ortalis vetula, Cocrico) Red-legged Honeycreeper (Cyanerpes cyaneus)	Orchard Oriole (Icterus spurius, Banana Bird)
Maiden hairbrush (flowers) Combretum fruticosum	Black-cowled Oriole (Icterus prosthemelas, Banana Bird) Blue-gray Tanager (Thraupis episcopus, Bluebird) Brown Jay (Cyanocorax morio, Piam-piam) Golden-fronted Woodpecker (Melanerpes aurifrons, Carpenter) Grayish Saltator (Saltator coerulescens, John Smith Kill a Bird) Olive-backed Euphonia (Euphonia gouldi) Red-legged Honeycreeper (Cyanerpes cyaneus) Rufous-tailed Hummingbird (Amazilia tzacatl) Scrub Euphonia (Euphonia affinis) Yellow-backed Oriole (Icterus chrysater, Banana Bird) Yellow-tailed Oriole (Icterus mesomelas, Banana Bird) Yellow-billed cacique (Amblycercus holosericeus	American Redstart (Setophaga ruticilla) Common Yellowthroat (Geothlypis trichas) Gray Catbird (Dumetella carolinensis) Magnolia Warbler (Dendroica magnolia) Orchard Oriole (Icterus spurius, Banana Bird) Yellow-breasted Chat (Icteria virens) Yellow-rumped Warbler (Dendroica coronata
Mapola (flowers) Luehea seemannii	Rufous-tailed Hummingbird (Amazilia tzacatl) White-bellied Emerald (Amazilia candida)	

^{*}There are both native and non-native members of these plant groups.

PLANT SPECIES (part of plant that bird feeds on) Scientific name in italics	RESIDENT BIRDS SEEN FEEDING ON PLANT	MIGRANT BIRDS SEEN FEEDING ON PLANT
Mexican flamebush (flowers) Calliandra sp.	Azure-crowned Hummingbird (Amazilia cyanocephala) Plain Chachalaca (Ortalis vetula, Cocrico) Scrub Euphonia (Euphonia affinis) White-bellied Emerald (Amazilia candida) Yellow-throated Euphonia (Euphonia hirundinacea)	Magnolia Warbler (Dendroica magnolia) Tennessee Warbler (Vermivora peregrina)
Mistletoe (flowers)	Azure-crowned Hummingbird (Amazilia cyanocephala) Black-cowled Oriole (Icterus prosthemelas, Banana Bird) Buff-bellied Hummingbird (Amazilia yucatanensis) Scrub Euphonia (Euphonia affinis) White-bellied Emerald (Amazilia candida)	
Family Myrsinaceae (fruit)	Yellow-green Vireo (Vireo flavoviridis)	
Narrow-leaf Moho (flowers) Trichospermum campbellii	Azure-crowned Hummingbird (Amazilia cyanocephala)	
Negrito (fruit) Simarouba glauca	Crested Guan (Penelope purpurascens, Quam)	
Orange tree (fruit) Citrus sp.	Golden-fronted Woodpecker (Melanerpes aurifrons, Carpenter) Montezuma Oropendola (Psarocolius montezuma, Yellow-tail) Red-legged Honeycreeper (Cyanerpes cyaneus) Red-lored Parrot (Amazona autumnalis, Mangro Parrot)	Orchard Oriole (Icterus spurius, Banana Bird)
Palmetto (fruit) Acoelorraphe wrightii	Hepatic Tanager (<i>Piranga flava</i> , Pepper Bird)	
Passion fruit* (flowers) Passiflora sp.	Brown Jay (Cyanocorax morio, Piam-piam) Rufous-tailed Hummingbird (Amazilia tzacatl)	
Polewood (fruit) Xylopia frutescens		Gray Catbird (Dumetella carolinensis)
Polly red head (flowers) Hamelia rovirosae/patens	Rufous-tailed Hummingbird (Amazilia tzacatl) White-bellied Emerald (Amazilia candida)	
Psychotria sp. (fruit) Psychotria sp.	Ochre-bellied Flycatcher (Mionectes oleagineus)	
Quamwood (flowers) Schizolobium pαrαhybum	Grayish Saltator (Saltator coerulescens, John Smith Kill a Bird) Plain Chachalaca (Ortalis vetula, Cocrico) Red-legged Honeycreeper (Cyanerpes cyaneus) Rufous-tailed Hummingbird (Amazilia tzacatl) White-bellied Emerald (Amazilia candida) Yellow-tailed Oriole (Icterus mesomelas, Banana Bird) Yellow-winged Tanager (Thraupis abbas)	Orchard Oriole (Icterus spurius, Banana Bird) Ruby-throated Hummingbird (Archilochus colubris)
Red gumbolimbo (fruit) Bursera simaruba	Black-faced Grosbeak (Caryothraustes poliogaster) Black-headed Trogon (Trogon melanocephalus, Ramatatu) Bright-rumped Attila (Attila spadiceus) Golden-fronted Woodpecker (Melanerpes aurifrons, Carpenter) Keel-billed Toucan (Ramphastos sulfuratus, Belizean Bill Bird, Big-bill Pillis) Masked Tityra (Tityra semifasciata, White Woodpecker) Rose-throated Becard (Pachyramphus aglaiae) Slaty-tailed Trogon (Trogon massena, Ramatatu)	Indigo Bunting (Passerina cyanea) White-eyed Vireo (Vireo griseus)
Royal palm (fruit) Roystonea regia	Collared Aracari (Pteroglossus torquatus, Pillis) Plain Chachalaca (Ortalis vetula, Cocrico)	
Sandpaper vine (fruit) Family Dilleniaceae	Ochre-bellied Flycatcher (Mionectes oleagineus)	
Family Sapindaceae (fruit)	Black-headed Trogon (Trogon melanocephalus, Ramatatu)	

^{*}There are both native and non-native members of these plant groups.

PLANT SPECIES (part of plant that bird feeds on) Scientific name in italics	RESIDENT BIRDS SEEN FEEDING ON PLANT	MIGRANT BIRDS SEEN FEEDING ON PLANT
Trumpet tree (fruit) Cecropia peltata	Blue-gray Tanager (Thraupis episcopus, Bluebird) Collared Aracari (Pteroglossus torquatus, Pillis) Crimson-collared Tanager (Ramphocelus sanguinolentus) Keel-billed Toucan (Ramphastos sulfuratus, Belizean Bill Bird, Big-bill Pillis) Scrub Euphonia (Euphonia affinis)	Baltimore Oriole (Icterus galbula, Banana Bird)
White maya (fruit) Miconia argentea	Blue-gray Tanager (Thraupis episcopus, Bluebird) Clay-colored Robin (Turdus grayi, Brown Cusco) White-fronted Parrot (Amazona albifrons, Corn-eater, Corn Kiti) Yellow-throated Euphonia (Euphonia hirundinacea) Yellow-winged Tanager (Thraupis abbas)	
Wild caimito (fruit) Chrysophyllum sp.	Black-headed Trogon (Trogon melanocephalus, Ramatatu)	

 $^{{}^*\}mathit{There}$ are both native and non-native members of these plant groups.

PLACES IN BELIZE THAT SELL PLANTS USED AS FOOD BY BIRDS AND OTHER BELIZE NATIVE/AGRICULTURAL PLANTS

(Please note: Birds Without Borders – *Aves Sin Fronteras** does not endorse any one nursery. We are providing this information so that landowners will have information about where to buy plants that are used as food by birds.)

NURSERY	PLANTS SOLD THAT ARE USED AS FOOD BY BIRDS (SEE TABLE ON PG. 23-26)	OTHER NATIVE PLANTS SOLD
Mario Fernandez Pasco Enterprise 123 Western Highway Cayo. Nursery at Benque Viejo Road/ Western Hwy	Bayleaf palm (Sabal mauritiiformis)	Zericote (Cordia sp.) Sour sop (Annona muricata)
Variety Nursery Upper Barton Creek P.O. Box 34, San Ignacio Guacamallo/Mountain Pine Ridge Road	Craboo (Byrsonima crassifolia) Passion fruit (Passiflora sp.)	17 varieties of Mangoes (Mangifera sp.) 21 varieties of Citrus (Citrus sp.) 9 varieties of Avocado (Persea sp.) 5 varieties of Sapodilla (Manilkara zapota) Tamarind (Tamarindus sp.) Custard apple (Annona reticulata) Jack fruit (Artocarpus heterophyllus) Sour sop (Annona muricata) Monkey/Baboon cap (Couepia polyandra) Monkey/Baboon cap (Couepia polyandra) Wild cherry (Pseudolmedia spuria)
5 G's Nursery St. Margaret's Village Contact: Lennox Gladden		Cashew (Anacardium occidentale) Mango (Mangifera sp.) Golden plum (Spondias sp.) Custard apple (Annona reticulata) Mammee apple (Pouteria sapota/mammosa) Tuki/Cow sop (Annona sp.) Sweet sop (Annona squamosa) Monkey/Baboon cap (Couepia polyandra) Banana (Musa sp.) Plantain (Musa sp.) Citrus (Citrus sp.) Avocado (Persea sp.) Spices
Melvin's Nursery Mile 59-60 Western Hwy Blackman Eddy Village	Royal palm (Roystonea regia) Caimito (Chrysophyllum sp.) Hibiscus (Hibiscus sp.) Heliconia sp.	Star apple (Chrysophyllum sp.) Sour sop (Annona muricata) Custard apple (Annona reticulata) Mango (Mangifera sp.) Malay apple (Syzygium malaccense) Cashew (Anacardium occidentale) Citrus (Citrus sp.) Avocado (Persea sp.) Sea grape (Coccoloba uvifera) Chamaedorea sp.
Riverwalk Nursery Mile 60 Western Highway P.O. Box 103, Belmopan Phone/Fax: 824-2495	Royal palm (Roystonea regia) Passion fruit (Passiflora sp.) Hibiscus (Hibiscus sp.) Heliconia sp.	Citrus (Citrus sp.) Avocado (Persea sp.) Malay apple (Syzygium malaccense) Kinep (Talisia oliviformis) Guava (Psidium guajava) Sour sop (Annona muricata) Lemonaria (Psychotria fruticetorum) Cashew (Anacardium occidentale) Banana (Musa sp.) Lantana camara

NURSERY	PLANTS SOLD THAT ARE USED AS FOOD BY BIRDS (SEE TABLE ON PG. 23-26)	OTHER NATIVE PLANTS SOLD
Redmond's Garden Nursery Mile 61 Western Highway	Royal palm (Roystonea regia) Hibiscus (Hibiscus sp.)	Mangos (Mangifera sp.) Citrus (Citrus sp.) Sapodilla (Manilkara zapota) Avocado (Persea sp.) Lemonaria (Psychotria fruticetorum)
Belize Botanic Gardens Curator: Heather Duplooy P.O. Box 180 San Ignacio, Cayo, Belize Tel: 824-3101 Fax: 824-3301	Palmetto (Acoelorraphe wrightii) Craboo (Byrsonima crassifolia) Passion fruit/vine (Passiflora sp.) 3 types of Mexican flamebush (Calliandra sp.) (white, red, pink) Acanthaceae Black cabbage bark (Lonchocarpus castilloi) Caimito (Chrysophyllum sp.) Heliconia sp.	Breadnut (Brosimum sp.) Star apple (Chrysophyllum sp.) Obel (Piper auritum) Snake plant (Sansevieria trifasciata) Tamarind (Tamarindus sp.) Ironwood (Dialium guianense) Custard apple (Annona reticulata) Monkey/Baboon cap (Couepia polyandra) Sour sop (Annona muricata) Mammee apple (Pouteria sapota/mammosa)
Toledo District Agriculture Station 5 miles – Punta Gorda/ San Antonio Road. Tel: 722-2689		Golden plum (Spondias sp.) Grapefruit (Citrus sp.) Malay apple (Syzygium malaccense) Custard apple (Annona reticulata) Cashew (Anacardium occidentale) Spices Sour sop (Annona muricata) Star apple (Chrysophyllum sp.) Monkey/Baboon cap (Couepia polyandra)
Stann Creek Agriculture Station 9 Miles Stann Creek Valley Road Tel: 522-2514	Craboo (Byrsonima crassifolia)	Star apple (Chrysophyllum sp.) Mango (Mangifera sp.) Monkey/Baboon cap (Couepia polyandra) Granadilla (Passiflora sp.) Kinep (Talisia oliviformis) Jack fruit (Artocarpus heterophyllus) Tamarind (Tamarindus sp.) Custard apple (Annona reticulata) Mammee apple (Pouteria sapota/mammosa) Nutmeg (Myristica sp.) Breadnut (Brosimum sp.)

PREVENTING BIRDS FROM DAMAGING CROPS

In addition to their natural foods, some bird species also feed on agricultural crops and on fish at fish farms. For this reason, birds may be viewed as pests

by farmers and citrus growers. Here we provide information on how to prevent bird damage to citrus and aquaculture.

BIRDS AND CITRUS GROVES

Which of the birds pictured here do you think are responsible for major damage to citrus crops?



Roadside Hawk



(Buteo magnirostris, Chicken Hawk)



Brown Jay (Cyanocorax morio, Piam-piam)



Golden-fronted Woodpecker (Melanerpes aurifrons, Carpenter)





Red-legged Honeycreeper (Cyanerpes cyaneus)



Montezuma Oropendola (Psarocolius montezuma, Yellow-tail)



Red-lored Parrot (Amazona autumnalis, Mangro Parrot)



Red-legged Honeycreeper (Cyanerpes cyaneus)

(Please see pages 30-31 for the birds that do and don't cause damage to citrus crops.)

The Citrus Research and Education Institute (CREI) and Natural Resource Management and Protection Project (NARMAP) conducted a study in orange groves in the Stann Creek Valley in Belize from 1992 through 1994 to determine the amount of damage that birds do to citrus crops (CREI and NARMAP 1996).

The CREI-NARMAP study found that crop damage by birds was only about 4%, with only 3 of 50 groves losing more than 10% of their fruits (see table below). This study found that bird damage was much less than the farmers perceived. [Please contact the BWB-ASF office (822-0236 or bwbasf@btl.net) for a free copy of the CREI-NARMAP report entitled "Bird Damage to Citrus, Identification and Monitoring."]

AVERAGE PERCEIVED DAMAGE	NUMBER OF GROVES	AVERAGE ACTUAL DAMAGE
20%-30% of crop	5	3.8%
30%-40% of crop	2	7.0%
40%-50% of crop	6	4.5%
Table from CREI and NARMAP (1996)		

CREI/NARMAP studied the birds that damaged crops and found that three bird species were responsible for the most damage to oranges:



Brown Jay (Cyanocorax morio, Piam-piam) caused about 23% of all bird damage, or 0.9% yield loss



Golden-fronted Woodpecker (Melanerpes aurifrons, Carpenter) caused about 20% of all bird damage, or 0.8% yield loss





RICHARD BRODZELLER

Red-legged Honeycreeper (Cyanerpes cyaneus) caused about 23% of all bird damage, or 0.9% yield loss

The birds pictured below, along with other species of orioles and tanagers, caused some damage. Combining all of these species, the damage they caused amounted to less than 0.05% yield loss.



Red-lored Parrot (Amazona autumnalis, Mangro Parrot)



Montezuma Oropendola (Psarocolius montezuma, Yellow-tail)



Orchard Oriole (Icterus spurius, Banana Bird)



Great-tailed Grackle (Quiscalus mexicanus, Blackbird)

Other birds seen in orchards that do NOT damage the fruit are:



Keel-billed Toucan (Ramphastos sulfuratus, Belizean Bill Bird, Big-Bill Pillis) does not have the bill shape needed to pierce or tear away the orange peel.



Roadside Hawk
(Buteo magnirostris, Chicken Hawk)
is a bird of prey that feeds on birds,
mammals, reptiles and insects, not fruit.
They use the open areas in orchards to
hunt for rats, lizards, and even snakes.



Collared Aracari (Pteroglossus torquatus, Pillis) does not have the bill shape needed to pierce or tear away the orange peel.





Vermilion Flycatchers [(Pyrocephalus rubinus, Robin Redbreast) male left, female right] feed on insects that are attracted to the damaged fruit but do not eat the fruit.

WHAT WORKS TO PREVENT BIRD DAMAGE TO FRUIT CROPS

Studies have shown that the tactics listed below can prevent bird damage to citrus and other fruit crops (Avery et al. 1988, Tipton et al. 1989, CREI and NARMAP 1996, personal communication with Cayo District Agriculture Coordinator, and BWB-ASF field observations):

- Use harvesting practices to prevent/minimize bird damage.
 - Harvest papayas when mature but not yet ripe. This prevents birds from attacking the fruit. Harvest mature citrus fruit as soon as possible. Leaving ripe fruit on trees provides more time for birds to learn that there is ripe fruit and feed on it.
- Encourage birds of prey [like the Roadside Hawk (*Buteo magnirostris*, Chicken Hawk) pictured above] by providing perches throughout the orchard. Birds of prey scare other birds away. Perches provide a place for birds of prey to sit and look for the food (rodents, lizards and snakes) that they hunt.

- Consider using fluorescent monofilament line and eyespot balls. These devices have been tried in the U.S.A. with some success. Fluorescent yellow monofilament line [20 lb (9 kg) test] was strung in a grid over the groves about one meter (3 ft.) above the trees. Eyespot balls were made using beach balls and drawing three large eyes on them with black and red permanent markers (Tipton et al. 1989).
- Use control measures including sporadic firecrackers.
- Preserve native plants that grow on the edges of the groves to provide alternative natural foods for the birds (See the table on pages 23-26).
- Do not destroy forested areas that are unsuitable for citrus. This helps to keep birds in the forests and away from plantations.

WHAT DOESN'T WORK TO PREVENT BIRD DAMAGE:

Shooting birds is not effective. These birds are soon replaced by others from nearby habitats. Shotgun shells are also expensive.

BIRDS AND AQUACULTURE

Birds can cause losses at aquaculture facilities. To determine what the birds fed on and what the losses were, scientific studies were done at catfish farms in the southern U.S.A. The findings were:

- Great Egrets (*Ardea alba*, White Gaulin) preferred to eat small fingerlings (7.5-10 cm or 3-4 inches) rather than larger catfish. (Werner et al. 2001).
- Great Blue Herons (*Ardea herodias*, Blue Gaulin, Toby Full Pot) also preferred fingerlings to larger fish (Glahn et al. 2002).
- In ponds where fish disease was present, most (85%) of the fish eaten by Great Blue Herons were diseased and most (76%) of these fish were terminally ill.
- Great Blue Herons were most likely to catch fish during times when the fish were fed because fish feeding brings the fish to the surface.
- The number of healthy fish caught by Great Blue Herons was small. The removal of dead and dying fish by the birds may help to prevent the spread of disease.

WHAT WORKS TO CONTROL BIRDS FEEDING AT AQUACULTURE FACILITIES:

The keys to success are timing, persistence, organization and diversity (Booth 1994). The goal is to convince the birds that the area is unsafe. Combining techniques (visual and auditory) works better than just using one technique.

Tests have shown that the following work best to prevent bird damage at aquaculture facilities (Littauer 1990, Booth 1994):

- Frightening devices such as pyrotechnics (rope firecrackers, exploders or shooting shotguns and rifles **into the air**), scarecrows and human presence can be extremely effective.
- Shotguns and rifles fired into the air are less effective than firecrackers and other sound frightening devices.
- Begin frightening programs before the birds have established regular feeding patterns. If they get used to feeding at a pond, they will be more difficult to scare away.
- Noises in the air are more effective than noises on the ground.
- Try to frighten the birds **before** they land. If they are scared off early in the morning, they will move to other feeding areas.
- Use a variety of techniques.
- Frequently **change** the locations of scarecrows and exploders because birds can get used to them.
- Be aggressive with the frightening program.







Great Egret (Ardeα αlbα, White Gaulin)

TECHNICAL METHODS TO DECREASE BIRD PREDATION AT AQUACULTURE FACILITIES:

(Gorenzel et al. 1994, Tobin 1998, Werner et al. 2001, Glahn et al. 2002, Dorr and Taylor 2003, Taylor and Dorr 2003)

- Maintain water depth at greater than one meter (3 ft.)
- Aquaculture pond banks should be steep. Do not provide a sloping bank where birds can wade in and feed.
- Pond banks should not have vegetation that could provide cover and a place for birds to hide.
- There should be no telephone or light poles or trees that provide perches or places for the birds to roost (sleep).
- Birds are more likely to feed on ponds heavily stocked with fish. Reducing stocking may make the ponds less attractive to birds.
- Use pyrotechnics (firecrackers or other loud noises) to disperse birds from ponds that have small fingerlings (less than 18 cm or 7 in.), their preferred size foods.
- Focus on scaring birds away from the ponds with loud noises during the time that the fish are being fed, because this is when fish come to the surface and are most easily caught by birds.
- Do not locate aquaculture facilities near rivers, marshes or wetlands, which are the natural feeding areas for aquatic birds.
- Be aware that injured birds act as live decoys and lure other birds to the facility.
- Exclusion with netting, fencing or wires is the most effective way of keeping birds out of aquaculture ponds.
- Killed birds are quickly replaced by others from nearby areas.

For free copies of the complete studies from the references listed above and on page 31, please contact the Birds Without Borders – *Aves Sin Fronteras** office at 822-0236 or bwbasf@btl.net.

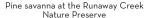
PINE SAVANNAS ARE IMPORTANT TO BIRDS

Approximately 8.8% of the land in Belize is pine savanna (Vreugdenhil et al. 2002). Many people view pine savannas as wastelands, although they have more plant species than rain forests (Kricher 1997).

Belize's lowland pine savannas and "broken ridge" (also known as scrub-shrub or savanna-scrub) are very important to Belize's resident birds during the breeding season, when they nest and raise young. Savannas are also important to Belize's resident birds during the rest of the year. Neotropical migrants use pine savannas during the non-breeding season (North American winter) and during migration.

Many animals also use savannas because the open habitat allows for easy movement, creating an ideal wildlife corridor.







Pine-oak forest at the Tropical Education Center of the Belize Zoo

Savannas are very prone to fires caused by lightening strikes during the dry season (Kricher 1997). Caribbean pines (*Pinus caribaea*) have bark that can tolerate mild fires. The graminoids (grasses, sedges and rushes) that grow in savannas regenerate quickly after fires. It is believed that if savannas were not subjected to occasional fires, the plant species present would gradually change.

THE COMMON PLANTS THAT BIRDS USED FOR NEST BUILDING WERE:



VICKI PIASKOWSKI





Caribbean pine (Pinus caribaea)

Calabash (Crescentia cujete)









Live oak (Quercus oleoides)

Yaha (Curatella americana)









Palmetto (Acoelorraphe wrightii)

Craboo (Byrsonima crassifolia)

BIRDS THAT NEST IN PINE SAVANNAS:



Fork-tailed Flycatchers (Tyrannus savana, Scissors-tail) nested mainly in Caribbean pine, Calabash and Craboo.



Fork-tailed Flycatcher (Tyrannus savana, Scissors-tail) nest in Yaha.



White-collared Seedeaters (Sporophilia torqueola, Ricey, Grassy Bird) nested mainly in palmetto.



White-collared Seedeater (Sporophilia torqueola, Ricey, Grassy Bird) nest in Palmetto.



Green-backed Sparrows (Arremonops chloronotus) built a nest on the ground.



VICKI PIASKOWSKI

Green-backed Sparrow (Arremonops chloronotus) nest on the ground.



Ruddy Ground-Dove (Columbina talpacoti, Turtle Dove) built nests on the ground.



Ruddy Ground-Dove (Columbina talpacoti, Turtle Dove) nest, with two eggs, on the ground.



Mangrove Vireo (Vireo pallens semiflavus) BWB-ASF staff was the first to describe the nest of this species (Figueroa and Albanese 2003)



Mangrove Vireo in nest.



Tropical Kingbirds (Tyrannus melancholicus) nested in Caribbean pine and Calabash.



Tropical Kingbird (Tyrannus melancholicus) nest in Calabash.

THESE SPECIES ARE ALSO COMMON IN PINE SAVANNAS:



Vermilion Flycatcher (*Pyrocephalus rubinus*, Robin Redbreast) male



Vermilion Flycatcher female



Yellow-headed Parrot (Amazona oratrix, Yellow-head)



Blue-gray Gnatcatcher (Polioptila caerulea)



Dickcissel (Spiza americana). These birds breed in North American grasslands and fields. They spend the non-breeding season in South America and are found in Belize's savannas during migration.



Tree Swallow (Tachycineta bicolor, Christmas Bird). These birds breed in tree cavities or nest boxes near water in North America and spend the nonbreeding season from the southern U.S.A. south to Central America and the Greater Antilles. Tree Swallows are found in Belize's savannas during migration.



Montezuma Oropendolas (Psαrocolius montezuma, Yellow-tail) roost (sleep) in savannas in Caribbean pines (Pinus cαribαeα)



Black Vultures (Coragyps atratus, John Crow) roost (sleep) in savannas in Caribbean pines (*Pinus caribaea*).





Turkey Vultures (Cathartes aura, Doctor John Crow) roost (sleep) in savannas in Caribbean pines (*Pinus caribaea*).

FORESTS FOUND ALONG BELIZE'S RIVERS ARE IMPORTANT TO MANY BIRDS

Birds Without Borders – Aves Sin Fronteras® studied the birds found in riverine forest along the Sibun River in central Belize. In a very small area (49.4 acres or 20 ha) we found 196 different species of birds. Most of the birds (151, or 77.0%) were Belize residents; 28, or 14.3%, were Neotropical migrants. The others were migrants (6, or 3.1%), transients (4, or 2.0%) and seasonal residents (4, or 2.0%), and resident/Neotropical migrants (3, or 1.5%). (Please see the table on pages 39-42 and the pictures on pages 37-38.)

BWB-ASF found 19 species of conservation concern (bird species that need special protection) and 31 regional endemic species (birds found only in a certain area) in the Sibun riverine forest. Because these birds in need of special protection live in Belize's riverine forests, these forests are important to birds on local, regional and international conservation scales.

Spiny bamboo (Guadua longifolia) grows near riverbanks. In these areas, a dense concentration of thorny vines and lianas such as Haul-me-back (Mimosα sp.) and Tear coat (Byttneria αculeαta) were also present.





Blue Seedeater (Amaurospiza concolor) is found in habitats with Spiny bamboo.



GIL BOESE PH.D.

Riverine forest along the Sibun River.



Area of riverine forest along the Sibun River showing a large tree with vines that many birds fed on.



Area of riverine forest along the Sibun River with Cohune (Attaleα cohune) trees.



Non-native bamboo (Bambusa vulgaris) also can be found along the Sibun River, but is very invasive and crowds out the native plants that are important to birds and other wildlife.

PRESERVING THE FORESTS FOUND ALONG BELIZE'S RIVERS WILL HELP MANY SPECIES OF BIRDS, INCLUDING THOSE THAT NEED SPECIAL PROTECTION.

The habitat studied had an area dominated by Spiny bamboo (Guadua longifolia) near the river edge that transitioned into forest with Cohune (Attalea cohune) and Coccoloba (Coccoloba schiedeana), with scattered large, emergent Quamwood (Schizolobium parahybum) trees. A few large fig (Ficus sp.) trees were also present along the riverbank. Ferns, Dieffenbachia sp., Heliconia sp., vines, lianas and graminoids were common near the ground.

Two types of bamboo can be found along Belize's riverbanks. One, Spiny bamboo (Guadua longifolia),

is native and grows there naturally. Areas of Spiny bamboo are very important because some birds such as the Blue Seedeater (*Amaurospiza concolor*, see photo below) are found only in this habitat type. Non-native bamboo (*Bambusa vulgaris*) also can be seen growing along the banks of some of Belize's rivers. Non-native bamboo is very invasive and crowds out the native plants that are important to birds and other wildlife.

Please don't plant non-native bamboo, especially along the river!

BIRDS FOUND IN THE SIBUN RIVERINE FOREST:



Blue Ground-Dove (Claravis pretiosa, Blue Dove)



Yellow-billed Cacique (Amblycercus holosericeus, Bamboo Cracker)



Rufous-breasted Spinetail (Synallaxis erythrothorax)



Keel-billed Toucan (Ramphastos sulfuratus, Belizean Bill Bird, Big-Bill Pillis)



Northern Waterthrush (Seiurus noveboracensis)



Worm-eating Warbler (Helmitheros vermivorum)



American Redstart (Setophaga ruticilla)



Gray Catbird
(Dumetella carolinensis)



Wood Thrush (Hylocichla mustelina)



Rufous-tailed Jacamar (Galbula ruficauda)



Blue Seedeater (Amaurospiza concolor)



Great Antshrike

BIRDS FOUND IN THE SIBUN RIVERINE FOREST (CONTINUED):

KELLEY HOPWOOD

Barred Antshrike (Thamnophilus doliatus)



Dusky Antbird (Cercomαcrα tyrannina) male



Dusky Antbird female



Black-headed Trogon (Trogon melanocephalus, Ramatatu)



Smoky-brown Woodpecker (Veniliornis fumigatus)



Sepia-capped flycatcher (Leptopogon amaurocephalus)



Violaceous Trogon (Trogon violaceus)



Kentucky Warbler (Oporornis formosus)



Royal Flycatcher (Onychorhynchus coronatus)

BIRD SPECIES THAT WERE DETECTED IN RIVERINE FOREST ALONG THE SIBUN RIVER.

PECIES	BELIZE SEASONALITY	ENDEMIC STATUS'	CONSERV. CONCERN ²	PHOTO PAGE #
Great Tinamou (<i>Tinamus major</i>)	R	i 		
Little Tinamou (Crypturellus soui)	R	 		
Plain Chachalaca (Ortalis vetula)	R	 		17
Least Grebe (Tachybaptus dominicus)	R			
Neotropic Cormorant (Phalacrocorax brasilianus)	R	i 	X	
Anhinga (Anhinga anhinga)	R	 	X	
Bare-throated Tiger-Heron (Tigrisoma mexicanum)	R		X	
Great Blue Heron (Ardea herodias)	R	 		32
Great Egret (Ardea alba)	R	 		32
Snowy Egret (Egretta thula)	R	 	Χ	67
Little Blue Heron (Egretta caerulea)	М	 	X	
Green Heron (Butorides virescens)	R	 		<u> </u>
Jabiru (Jabiru mycteria)	R		Χ	63
Wood Stork (Mycteria americana)	R		X	67
Black Vulture (Coragyps atratus)	R			4, 35
Turkey Vulture (Cathartes aura)	R/M			4
King Vulture (Sarcoramphus papa)	R		Х	
Swallow-tailed Kite (Elanoides forficatus)	S		Х	
Plumbeous Kite (Ictinia plumbea)	S			
Black-collared Hawk (Busarellus nigricollis)	R			
Gray Hawk [Asturina nitida (plagiata)]	R			
Common Black-Hawk (Buteogallus anthracinus)	R	 		
Great Black-Hawk (Buteogallus urubitingα)	R			
Roadside Hawk (Buteo magnirostris)	R			4
Short-tailed Hawk (Buteo brachyurus)	R		 	
Zone-tailed Hawk (Buteo albonotatus)	М			
Ornate Hawk-Eagle (Spizaetus ornatus)	R		Х	
Collared Forest-Falcon (Micrastur semitorquatus)	R			
Laughing Falcon (Herpetotheres cachinnans)	R		1	65
Aplomado Falcon (Falco femoralis)	R	r		
Bat Falcon (Falco rufigularis)	R			
Spotted Wood-Quail (Odontophorus guttatus)	R			
Ruddy Crake (Laterallus ruber)	R			
Gray-necked Wood-Rail (Aramides cajaneα)	R			
Sungrebe (Heliornis fulica)	R	r		
Killdeer (Charadrius vociferus)	М			
Spotted Sandpiper (Actitis macularius)	М			62
Pale-vented Pigeon (Patagioenas cayennensis)	R			14
Scaled Pigeon (Patagioenas speciosa)	R			
Red-billed Pigeon (Patagioenas flavirostris)	R	;	· †	
Short-billed Pigeon (Patagioenas nigrirostris)	R		·	
Ruddy Ground-Dove (Columbina talpacoti)	R			34
Blue Ground-Dove (Claravis pretiosa)	R	L	· +	37
White-tipped Dove (Leptotila verreauxi)	R		- 1	
Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)]	R			
Gray-chested Dove (Leptotila cassini)	R			46
Ruddy Quail-Dove (Geotrygon montana)	R			
Olive-throated Parakeet (Aratinga nana)	R			-
White-crowned Parrot (Pionus senilis)	R	Middle Amer. Endemic	X	
White-fronted Parrot (Amazona albifrons)	R	Middle Amer. Endemic	X	†

¹ Endemic species are found only in a certain area. Information on endemic status from Miller and Miller 1997.

² Sources used to determine if a species is of conservation concern: Miller and Miller 1997, Kushlan et al. 2002, and Rich et al. 2004.

BIRD SPECIES THAT WERE DETECTED IN RIVERINE FOREST ALONG THE SIBUN RIVER (CONTINUED).

PECIES E SEAS		Endemic status¹	CONSERV. CONCERN ²	PHOTO Page #	
Red-lored Parrot (Amazona autumnalis)	R		Χ	13	
Squirrel Cuckoo (Piaya cayana)	R				
Striped Cuckoo (Tapera naevia)	R				
Groove-billed Ani (Crotophaga sulcirostris)	R				
Vermiculated Screech-owl (Megascops guatemalae)	R				
Mottled Owl (Ciccaba virgata)	R				
Common Pauraque (Nyctidromus albicollis)	R				
White-collared Swift (Streptoprocne zonaris)	R				
Vaux's Swift (Chaetura vauxi)	R				
Long-billed Hermit (Phaethornis longirostris)	R			16	
Stripe-throated Hermit (Phaethornis striigularis)	R			16	
Wedge-tailed Sabrewing (Campylopterus curvipennis)	R	Middle Amer. Endemic			
White-necked Jacobin (Florisuga mellivora)	R				
Green-breasted Mango (Anthracothorax prevostii)	R				
White-bellied Emerald (Amazilia candida)	R	Middle Amer. Endemic		16	
Rufous-tailed Hummingbird (Amazilia tzacatl)	R			5, 16	
Buff-bellied Hummingbird (Amazilia yucatanensis)	R	N. Middle Amer. Endemic			
Ruby-throated Hummingbird (Archilochus colubris)	N			4	
Black-headed Trogon (Trogon melanocephalus)	R	Middle Amer. Endemic		15	
Violaceous Trogon (Trogon violaceus)	R	Tildale Amer. Endemic		38	
Blue-crowned Motmot (Momotus momota)	R			46	
Ringed Kingfisher (Ceryle torquatus)	R			40	
	!				
Green Kingfisher (Chloroceryle americana)	R			/7	
American Pygmy Kingfisher (Chloroceryle aenea)	R			67	
White-necked Puffbird (Notharchus macrorhynchos)	R			77	
Rufous-tailed Jacamar (Galbula ruficauda)	R			37	
Collared Aracari (Pteroglossus torquatus)	R			12, 16	
Keel-billed Toucan (Ramphastos sulfuratus)	R			5, 31	
Black-cheeked Woodpecker (Melanerpes pucherani)	R				
Golden-fronted Woodpecker (Melanerpes aurifrons)	R			18	
Smoky-brown Woodpecker (Veniliornis fumigatus)	R			38	
Golden-olive Woodpecker (Piculus rubiginosus)	R				
Lineated Woodpecker (Dryocopus lineatus)	R				
Pale-billed Woodpecker (Campephilus guatemalensis)	R	Middle Amer. Endemic		65	
Rufous-breasted Spinetail (Synallaxis erythrothorax)	R	Middle Amer. Endemic		37	
Plain Xenops (Xenops minutus)	R				
Tawny-winged Woodcreeper (Dendrocincla anabatina)	R	Middle Amer. Endemic			
Ruddy Woodcreeper (Dendrocincla homochroa)	R				
Olivaceous Woodcreeper (Sittasomus griseicapillus)	R				
Wedge-billed Woodcreeper (Glyphorynchus spirurus)	R			47	
Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae)	R				
Ivory-billed Woodcreeper (Xiphorhynchus flavigaster)	R	Middle Amer. Endemic		46	
Streak-headed Woodcreeper (Lepidocolaptes souleyetii)	R				
Great Antshrike (Taraba major)	R			37	
Barred Antshrike (Thamnophilus doliatus)	R			38	
Dusky Antbird (Cercomacra tyrannina)	R			38	
Black-faced Antthrush [Formicarius analis (moniliger)]	R			65	
Yellow-bellied Tyrannulet (Ornithion semiflavum)	R	Middle Amer. Endemic			
Northern Beardless-Tyrannulet (Camptostoma imberbe)	R				
Greenish Elaenia (Myiopagis viridicata)	R				
Yellow-bellied Elaenia (Elaenia flavogaster)	R				

¹ Endemic species are found only in a certain area. Information on endemic status from Miller and Miller 1997.

² Sources used to determine if a species is of conservation concern: Miller and Miller 1997, Kushlan et al. 2002, and Rich et al. 2004.

BIRD SPECIES THAT WERE DETECTED IN RIVERINE FOREST ALONG THE SIBUN RIVER (CONTINUED).

Species	Belize seasonality	ENDEMIC STATUS¹	CONSERV. CONCERN ²	PHOTO PAGE #
Ochre-bellied Flycatcher (Mionectes oleagineus)	R			16
Sepia-capped Flycatcher (Leptopogon amaurocephalus)	R			38
Northern Bentbill (Oncostoma cinereigulare)	R			
Slate-headed Tody-Flycatcher (Poecilotriccus sylviα)	R			47
Common Tody-Flycatcher (Todirostrum cinereum)	R			44
ye-ringed Flatbill (Rhynchocyclus brevirostris)	R			
Yellow-olive Flycatcher (Tolmomyias sulphurescens)	R			
Stub-tailed Spadebill (Platyrinchus cancrominus)	R	Middle Amer. Endemic		
Royal Flycatcher (Onychorhynchus coronatus)	R			38
Tropical Pewee (Contopus cinereus)	R			
Yellow-bellied Flycatcher (Empidonax flaviventris)	N			
Nhite-throated Flycatcher (Empidonax albigularis)	М	Middle Amer. Endemic		
-east Flycatcher (Empidonax minimus)	N			
Bright-rumped Attila (<i>Attila spadiceus</i>)	R			21
Dusky-capped Flycatcher (Myiarchus tuberculifer)	R			
Brown-crested Flycatcher (Myiarchus tyrannulus)	S			65
Great Kiskadee (Pitangus sulphuratus)	R			44
Boat-billed Flycatcher (Megarynchus pitangua)	R			
Social Flycatcher (Myiozetetes similis)	R			44
Fropical Kingbird (Tyrannus melancholicus)	R			34
Couch's Kingbird (<i>Tyrannus couchii</i>)	R			
	R			
Rose-throated Becard (Pachyramphus aglaiae)	R			
Masked Tityra (Tityra semifasciata)	R			21
Mhite-collared Manakin (Mαnαcus candei)	R	Middle Amer. Endemic		47
Red-capped Manakin (Pipra mentalis)	R	r nadic Amer. Endemic		15
White-eyed Vireo (Vireo griseus)	N			21
Mangrove Vireo [Vireo griseus)	R	Middle Amer. Endemic		34
/ellow-throated Vireo (Vireo flavifrons)	N	Middle Amer. Endemic		J
/ellow-green Vireo (Vireo flavoviridis)	S			
Lesser Greenlet (Hylophilus decurtatus)	R			
Rufous-browed Peppershrike (Cyclarhis gujanensis)	R	N4:111 A F I :		10
Brown Jay (Cyanocorax morio)	R	Middle Amer. Endemic		12
Tree Swallow (Tachycineta bicolor)	N D/M			35
Northern Rough-winged Swallow (Stelgidopteryx serripennis)	R/M	M:-LIL A F ! ·		65
pot-breasted Wren (Thryothorus maculipectus)	R	Middle Amer. Endemic		44
Nhite-bellied Wren (Uropsila leucogastra)	R	N. Middle Amer. Endemic		İ
White-breasted Wood-Wren (Henicorhina leucosticta)	R			
Long-billed Gnatwren (Ramphocaenus melanurus)	R			
Blue-gray Gnatcatcher (Polioptila caerulea)	R/M			35
Nood Thrush (Hylocichla mustelina)	N		X	37
Clay-colored Robin (Turdus grayi)	R			14
Gray Catbird (Dumetella carolinensis)	N			13
Blue-winged Warbler (Vermivora pinus)	N -		X	
ennessee Warbler (Vermivora peregrina)	T			4
Drange-crowned Warbler (Vermivorα celαtα)	M			
Yellow Warbler (Dendroica petechia)	N			
Chestnut-sided Warbler (Dendroica pensylvanica)	N			
Magnolia Warbler (Dendroicα magnoliα)	N			17
Black-throated Green Warbler (Dendroicα virens)	N			47

¹ Endemic species are found only in a certain area. Information on endemic status from Miller and Miller 1997.

² Sources used to determine if a species is of conservation concern: Miller and Miller 1997, Kushlan et al. 2002, and Rich et al. 2004.

BIRD SPECIES THAT WERE DETECTED IN RIVERINE FOREST ALONG THE SIBUN RIVER (CONTINUED).

Species	Belize seasonality	ENDEMIC STATUS'	CONSERV. CONCERN ²	PHOTO PAGE #
Yellow-throated Warbler (Dendroicα dominicα)	N			
Black-and-white Warbler (Mniotilta varia)	N			44
American Redstart (Setophaga ruticilla)	N			18
Prothonotary Warbler (Protonotaria citrea)	T	i 	Χ	
Norm-eating Warbler (Helmitheros vermivorum)	N		Χ	37
Swainson's Warbler (Limnothlypis swainsonii)	N		Χ	
Ovenbird (Seiurus aurocapilla)	N			47
Northern Waterthrush (Seiurus noveboracensis)	N			37
-ouisiana Waterthrush (Seiurus motαcillα)	Т			
Kentucky Warbler (Oporornis formosus)	N		Χ	38
Common Yellowthroat (Geothlypis trichas)	N			18
łooded Warbler (Wilsoniα citrinα)	N	1		46
/ellow-breasted Chat (Icteriα virens)	N	†		13
Gray-throated Chat (Granatellus sallaei)	R	Yucatan Pen. Epidemic		47
Gray-headed Tanager (Eucometis penicillata)	R			44
Red-throated Ant-Tanager (Habia fuscicauda)	R	·		4
Summer Tanager (Piranga rubra)	N	-1		
carlet Tanager (<i>Piranga olivacea</i>)	T			46
Crimson-collared Tanager (Ramphocelus sanguinolentus)	R	Middle Amer. Endemic		22
Passerini's Tanager (Ramphocelus passerinii)	R	Middle Amer. Endemic		.i
slue-gray Tanager (Thraupis episcopus)	R	Thadic Antol. Endernie		13
/ellow-winged Tanager (Thraupis abbas)	R	Middle Amer. Endemic		12
Red-legged Honeycreeper (Cyanerpes cyaneus)	R	I liadic Allici. Ellacille		13
/ariable Seedeater (Sporophila americana)	R			10
Vhite-collared Seedeater (Sporophilia torqueola)	R			34
hick-billed Seed-Finch (Oryzoborus funereus)	R			
llue Seedeater (Amaurospiza concolor)	R		i 	36
Green-backed Sparrow (Arremonops chloronotus)	R	N. Middle Amer. Endemic	i 	34
Grayish Saltator (Saltator coerulescens)	R	N. Middle Amer. Endemic	 	54
buff-throated Saltator (Saltator maximus)	R		i 	
		Middle Amer. Endemic		
Black-headed Saltator (Saltator atriceps)	R R	Middle Amer. Endemic		
Black-faced Grosbeak (Caryothraustes poliogaster)		Middle Amer. Endemic		14
Blue-black Grosbeak (Cyanocompsa cyanoides)	R			14
ndigo Bunting (Passerina cyanea)	N	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		21
Aelodious Blackbird (Dives dives)	R	Middle Amer. Endemic		
Giant Cowbird (Molothrus oryzivorus)	R			·
Black-cowled Oriole (Icterus prosthemelas)	R	Middle Amer. Endemic		13
Orchard Oriole (Icterus spurius)	N		 	17
'ellow-backed Oriole (Icterus chrysater)	R	N. Middle Amer. Endemic		
'ellow-tailed Oriole (Icterus mesomelαs)	R			
Baltimore Oriole (Icterus galbula)	N			13
'ellow-billed Cacique (Amblycercus holosericeus)	R			17
1ontezuma Oropendola (Psarocolius montezuma)	R	Middle Amer. Endemic		13
crub Euphonia (Euphoniα affinis)	R	Middle Amer. Endemic		
/ellow-throated Euphonia (Euphonia hirundinacea)	R	Middle Amer. Endemic		12

¹ Endemic species are found only in a certain area. Information on endemic status from Miller and Miller 1997.

² Sources used to determine if a species is of conservation concern: Miller and Miller 1997, Kushlan et al. 2002, and Rich et al. 2004.

BIRDS FOUND AT THE BIRDS WITHOUT BORDERS AVES SIN FRONTERAS® BELIZE STUDY SITES

Birds Without Borders – *Aves Sin Fronteras** studied birds at three sites in central Belize. They were:

- 1. The Runaway Creek Nature Preserve (RCNP), a 2,432-ha (6,009-acre) preserve owned and managed by the Foundation for Wildlife Conservation, Inc., of Milwaukee, Wisconsin. It is located in the Belize District (17°18'05.1"N, 88°27'31.8"W) at 16 m above sea level (a.s.l.)
- 2. The **Tropical Education Center (TEC)** site consisted of the Tropical Education Center of
- the Belize Zoo and adjacent privately owned lands. It is located in the Belize District (17°21'26.9"N, 88°32'26"W) 10 km west of the RCNP site at 46 m a.s.l. and encompasses an area of approximately 438 ha (1,082 acres).
- 3. The 180-ha (445-acre) **Chaa Creek (CHAA)** study site consisted of the Chaa Creek Nature Reserve and adjacent privately owned lands. It is located in the Cayo District (17°06'15.9"N, 89°04'53.2"W) at 80 m a.s.l.





TROPICAL EDUCATION CENTER STUDY SITE:

Bird banding, censusing and point counts were conducted in scrub-shrub habitat. The common trees were Caribbean pine (Pinus caribaea) and Live oak (Quercus oleoides). The common plants found near the ground were Dodder (Cuscuta sp.), Philodendron sp., ferns, Wild cane (Tripsacum andersonii) and Cutting grass (Scleria bracteata). Point counts were also conducted in the following habitats: cashew plantation, scrub-swamp forest, pine savanna and a strip of broadleaf forest along the Sibun River. In addition, bird surveys were conducted by canoe along the Sibun River.

The following birds were found at the Tropical Education Center study site:



RUNAWAY CREEK NATURE PRESERVE STUDY SITE:



Aerial of RCNP broadleaf forested karst hills.



RCNP forested karst hill.



Close-up of karst hill broadleaf forest.



Vice Passowskii

Transition zone from a karst hill broadleaf forest to an adjacent seasonal wetland habitat.



Pine savanna habitat.

Research at the RCNP study site was conducted in a number of habitats. In the karst hill broadleaf forest, common trees were Black poisonwood (Metopium browneii), Logwood (Haematoxylon campechianum) and Give-and-take palm (Cryosophila stauracantha). Vines and Cutting grass (Scleria bracteata) grew near the ground. In the pine savanna, the common trees were Live oak (Quercus oleoides), and Caribbean pine (Pinus caribaea) with a few Craboo (Byrsonima crassifolia), Schippea palm (Schippia concolor) and Yaha (Curatella americana). Graminoids (sedges, rushes and grasses) grew near the ground. In the **transition zone** from a karst hill broadleaf forest to an adjacent seasonal wetland, the common trees were Logwood (Haematoxylon campechianum) and Calabash (Crescentia cujete). Vines and graminoids grew near the ground. Research was also conducted in riverine forest habitat (pages 36-42).

The following bird species were found in the habitats present on the Runaway Creek Nature Preserve:



CHAA CREEK STUDY SITE:

In the secondary broadleaf forest habitat where bird banding was conducted, the majority of the trees had not been cleared for approximately 45 years. The common trees were Grande betty (Cupania belizensis), Red qumbolimbo (Bursera simaruba) and Cortes (Tabebuia chrysantha), with moderate Fiddlewood (Vitex gaumeri), Prickly yellow (Zanthoxylum kellermanii) and Cohune (Attalea cohune). Vines and a few graminoids grew near the ground.

Point counts were conducted in the following habitats: pasture, two citrus plantations, dry upland forest, second growth upland forest along the Macal River, and along a seasonal creek bed surrounded by second growth Cohune forest. Bird surveys were also conducted by canoe along the Macal River.

The following bird species were found at the Chaa Creek study site:

Slate-headed Tody-Flycatcher

(Poecilotriccus sylvia)



Secondary broadleaf forest habitat.

GORDON MACDONALD

Wedge-billed Woodcreeper

(Glyphorynchus spirurus)

DICHARD RECOZELLES

Bright-rumped Attila

(Attila spadiceus)

Roadside Hawk

(Buteo magnirostris, Chicken Hawk)

Runaway Creek Nature Preserve study site: 304 species of birds.

Tropical Education Center study site: 266 species of birds.

Chaa Creek study site: 259 species of birds.

The preferred habitats in Belize listed in the table below are based on Jones 2003 and BWB-ASF field observations. (Please see Appendix 1B on pages 75-82 for the page number on which the bird's photo can be found.)

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
TINAMOUS - TINAMIDAE	•				
Great Tinamou (<i>Tinamus major</i>)	R	Х	Х		Primary and secondary broadleaf forest, less common in pine forest (ground-dweller)
Little Tinamou (Crypturellus soui)	R	Х	Χ	Χ	Tall second growth scrub and secondary forest (ground-dweller)
Thicket Tinamou (Crypturellus cinnamomeus)	R	Χ	Х	Х	Semi-deciduous northern broadleaf forest, second-growth scrub (ground dweller)
Slaty-breasted Tinamou (Crypturellus boucardi)	R	Χ		Χ	Broadleaf forest (ground-dweller)
SWANS, GEESE & DUCKS - ANATIDAE					
Black-bellied Whistling-Duck	R/M	Х	Χ	Χ	Rice fields, coastal lagoons, ponds and
(Dendrocygna autumnalis)					other wet areas including savannas
Muscovy Duck (Cairina moschata)	R	Х	Х		Wooded edges of rivers, wooded lagoons and swamps, marshes
Blue-winged Teal (Anαs discors)	N	 	i i i i	Х	Areas with shallow water, including rice fields and freshwater marshes
CURASSOWS & GUANS - CRACIDAE					
Plain Chachalaca (Ortalis vetula)	R	Х	Х	Х	Open woodland and scrub, forest interior and edges
Crested Guan (Penelope purpurascens)	R	Χ		Χ	Forested areas (broadleaf and pine)
Great Curassow (Crax rubra)	R	Χ		Х	Primary broadleaf forest interior, sometimes in secondary and fragmented forest
NEW WORLD QUAIL - ODONTOPHORIDAE					
Black-throated Bobwhite (Colinus nigrogularis)	R	Х	Х		Savannas and meadows, sometimes second- ary scrub bordering agricultural fields
Spotted Wood-Quail (Odontophorus guttatus)	R	Χ		Χ	Primary broadleaf forest (ground-dweller)
Singing Quail (Dactylortyx thoracicus)	R	i 	 	Χ	Primary northern deciduous subtropical forest and second growth (ground-dweller)
GREBES - PODICIPEDIDAE					
Least Grebe (Tachybaptus dominicus)	R	Х	Х	Х	Rivers, streams, swamps and lagoons bordered by forests, small ponds, marshes
PELICANS - PELECANIDAE					
Brown Pelican (Pelecanus occidentalis)	R	X	Х	Х	Coastlines, inshore and offshore waters, offshore islands, sometimes estuaries and shrimp farms, rarely inshore lagoons and ponds
CORMORANTS - PHALACROCORACIDAE					
Neotropic Cormorant (Phalacrocorax brasilianus)	R	Х	Х	Х	Lagoons, estuaries, shrimp farms, rice fields, rivers, coastline and inner cayes (especially in south)
ANHINGAS - ANHINGIDAE			i		
Anhinga (Anhinga anhinga)	R	Х	Х	Х	Lagoons, swamps and slow rivers that are tree-lined coastal estuaries, mangrove forests and mangrove cayes
FRIGATEBIRDS - FREGATIDAE					
Magnificent Frigatebird (Fregata magnificens)	R	Х	Х		Estuaries and other coastal areas, inshore and offshore waters, mangrove cayes
BITTERNS & HERONS - ARDEIDAE					y
Bare-throated Tiger-Heron (Tigrisoma mexicanum)	R	Х	Х	Х	Marshes, lagoons, streamsides, swamp forest, sometimes mangroves
Great Blue Heron (Ardea herodias)	R	Χ	Χ	Х	Wet areas that are not densely forested and rivers
Great Egret (Ardea alba)	R	Х	Χ	X	Wet areas without forest, pastures and river edges
Snowy Egret (Egretta thula)	R	Х	Χ	Χ	Wet areas without forest, pastures and river edges
Little Blue Heron (Egretta caerulea)	М	Х	Χ	Х	Wet areas without forest, pastures and river edges
Cattle Egret (Bubulcus ibis)	R/M	Х	Х	Х	Pastures, wet agricultural fields and grasslands, lawns, mangroves

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
BITTERNS & HERONS - ARDEIDAE (CON'T)					
Green Heron (Butorides virescens)	R	Х	Х	Х	Lagoons, ponds, rivers and streams that are lined with forest, littoral forest
Agami Heron (Agamia agami)	R	Х			Edges of swamps, rivers, lagoons that have dense foliage
Black-crowned Night Heron (Nycticorax nycticorax)	М	X		Χ	Marshes, lagoons, estuaries, mangroves
Yellow-crowned Night Heron (Nyctanassa violacea)	R	Х		Х	Towns, lawns, shores of rivers, estuaries, ponds, swamps, marshes, mudflats, mangroves (can be
Boat-billed Heron (Cochlearius cochlearius)	R	Х	Χ	X	seen feeding below streetlights) Shores of estuaries, ponds, rivers, lakes and swamp
IBISES & SPOONBILLS -					
THRESKIORNITHIDAE					
White Ibis (Eudocimus albus)	R	Х			Marshes, rice fields, shrimp farms, rivers, mangroves, swamp and littoral forests
Roseate Spoonbill (Plαταleα αjαjα)	R		Χ		Lagoons, flooded rice fields, shrimp farms
STORKS - CICONIIDAE					
Jabiru (Jabiru mycteria)	R	Х	Х		Estuaries, rice fields, shrimp farms, wet meadows, lagoons
Wood Stork (Mycteria americana)	R	Х	Х	X	Lagoons, estuaries, marshes, shrimp farms, rice fields
AMERICAN VULTURES - CATHARTIDAE					
Black Vulture (Coragyps atratus)	R	Х	Х	Х	Everywhere except dense forest and open ocean. Can be seen feeding in urban areas and on beache
Turkey Vulture (Cathartes aura)	R/M	Χ	Χ	Х	Everywhere over land
Lesser Yellow-headed Vulture (Cathartes burrovianus)	R	X	Χ	ļ	Open country. Often found with Turkey vultures
King Vulture (Sarcoramphus papa)	R	X	X	X	Open country, also patchy and large woodlands
KITES, EAGLES, HAWKS & ALLIES - ACCIPITRIDAE					
Osprey (Pandion haliaetus)	R	Х	Х		Coastal and offshore areas that have open water for feeding and trees or poles for perching
Gray-headed Kite (Leptodon cayanensis)	R	Χ		Х	River edges with forest, heavily forested areas
Hook-billed Kite (Chondrohierax uncinatus)	R			X	Primary and old secondary forest, sometimes forest edge.
Swallow-tailed Kite (Elanoides forficatus)	S	Х		Х	Open broadleaf and pine forests, most common in upland areas
White-tailed Kite (Elanus leucurus)	R	Χ	Χ	Х	Open areas
Snail Kite (Rostrhamus sociabilis)	R	Х			Lagoons and freshwater marshes, sometimes rice fields
Double-toothed Kite (Harpagus bidentatus)	R	Х			Primary forest, sometimes broken forest and second growth
Plumbeous Kite (Ictinia plumbea)	S	Х	Х	Х	Open forest, savanna, cleared second growth, milpas
Black-collared Hawk (Busarellus nigricollis)	R	Χ			Forested edges of slow rivers and lagoons
White Hawk (Leucopternis albicollis)	R	Х			Primary and old secondary broadleaf forest and forest edge
Gray Hawk [Asturinα nitidα (plagiαtα)]	R	Х	Х	Х	Forest edge, roadsides, open country with scattered large trees
Common Black-Hawk (Buteogallus anthracinus)	R	Х	Х	Х	Open wooded areas near water, forest edge, towns mangrove forests
Great Black-Hawk (Buteogallus urubitinga)	R	Х	Х		Densely wooded areas, often that are near water, rice fields and other open areas
Roadside Hawk (Buteo magnirostris)	R	Х	Х	Х	Broken woodland and forest edge, roadsides, tree- lined rivers. Sometimes in forests at army ant swarms
Short-tailed Hawk (Buteo brachyurus)	R	Х	Χ	Х	Most habitats from dense woodlands to savannas
White-tailed Hawk (Buteo albicaudatus)	R	Х	Χ		Open country, mainly savannas and pastures
Zone-tailed Hawk (Buteo albonotatus)	М	Х			Open country including pastures, savannas, rice fields and shrimp farms
Black Hawk-Eagle (Spizaetus tyrannus)	R	X	ļ	Х	Open forest and pine woodland
Ornate Hawk-Eagle (Spizaetus ornatus)	R	Χ	<u> </u>	.i	Primary broadleaf forest, sometimes pine forest

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
CARACARAS & FALCONS - FALCONIDAE					
Barred Forest-Falcon (Micrastur ruficollis)	R	Χ			Primary broadleaf forest
Collared Forest-Falcon (Micrastur semitorquatus)	R	X	Х	Х	Primary and secondary broadleaf forest, sometimes second-growth scrub and pine forest
Laughing Falcon (Herpetotheres cachinnans)	R	Х	Х	Х	Forested and semi-forested areas including open woodland and savanna
American Kestrel (Falco spαrverius)	М			Х	Open areas including pastures, agricultural fields, meadows and towns. Often perches on power pole and lines
Aplomado Falcon (Falco femoralis)	R	Χ	Χ		Savannas, sometimes other open areas
Bat Falcon (Falco rufigularis)	R	Х	Х	Χ	Most habitats, can be found on buildings and communication towers in urban areas
RAILS, GALLINULES, & COOTS - RALLIDAE					
Ruddy Crake (Laterallus ruber)	R	Х	Х	Х	Weedy fields, grass-lined ditches, wet meadows, rice fields, sometimes by river edges
Gray-necked Wood-Rail (Aramides cajanea)	R	Х	Х	Х	Wet areas including meadows, marshes, river edges, rice fields and open woodland
Purple Gallinule (Porphyrio martinica)	R			Χ	Freshwater marshes, rice fields
American Coot (Fulica americana)	М			X	Freshwater and brackish marshes, ponds, lagoons, rice fields with open water
SUNGREBES - HELIORNITHIDAE					
Sungrebe (Heliornis fulica)	R	Х	Χ	Х	Swamp forest and forest-lined streams
LIMPKINS - ARAMIDAE					
Limpkin (Aramus guarauna)	R	Х	Х	Х	Freshwater marshes, lagoons, wet savannas, sometimes wet meadows and roadside ditches
PLOVERS - CHARADRIIDAE					
Killdeer (Charadrius vociferus)	М	Х	Х	Х	Open short-grass habitats including lawns, agricultural fields and pasture
JACANAS - JACANIDAE					
Northern Jacana (Jacana spinosa)	R	Х		Х	Freshwater marshes, rice fields, shallow ponds
SANDPIPERS & ALLIES - SCOLOPACIDAE					
Solitary Sandpiper (<i>Tringa solitaria</i>)	N	Х	Х		Freshwater marshes, rice fields, small ponds and stream edges
Spotted Sandpiper (Actitis macularius)	М	Х	Х	Х	Rice fields, farm ponds, lagoons, streamsides, shrim farms, mudflats and sandflats, beaches
Common Snipe (Gallinago gallinago)	М		Х		Wet drainage ditches, muddy pastures, marshes, ric fields, in vegetation at edge of mudflats
PIGEONS & DOVES - COLUMBIDAE				!	
Pale-vented Pigeon (Patagioenas cayennensis)	R	Х	Х	Х	Open and patchy broadleaf and pine forest, second growth, forest edge, mangroves, littoral forests, towns and villages
Scaled Pigeon (Patagioenas speciosa)	R	Χ	Χ	Χ	Most broadleaf forests, sometimes in pines
Red-billed Pigeon (Patagioenas flavirostris)	R	Х	Х	Х	Semi-deciduous and deciduous broadleaf forest, submontane pine forest
Short-billed Pigeon (Patagioenas nigrirostris)	R	Χ	Χ		Primary and secondary broadleaf forest, forest edge
Mourning Dove (Zenaida macroura)	Т		Χ	Χ	Pasture, fallow fields, savannas, towns, villages
Plain-breasted Ground-Dove (Columbinα minutα)	R	Х	Х	Х	Pine and pine-oak savannas, also fallow fields, pasture and other disturbed areas
Ruddy Ground-Dove (Columbina talpacoti)	R	Х	Х	Х	Well-drained unforested areas, roadsides, urban areas, savannas
Blue Ground-Dove (Claravis pretiosa)	R	X	Χ	Χ	Broadleaf forest (mainly) and pine forest
White-tipped Dove (Leptotila verreauxi)	R	Х	Х	Χ	Deciduous and semi-deciduous broadleaf forest, second-growth scrub, pine woodland, savannas
Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)]	R	Х	Х	Χ	Primary and secondary broadleaf forest, patchy forest
Gray-chested Dove (Leptotila cassini)	R	Χ	Χ	Х	Primary and secondary humid broadleaf forest
Ruddy Quail-Dove (Geotrygon montana)	R	Х	Х	Χ	Primary and secondary broadleaf forest

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	CHAA	Preferred Habitats in Belize
PARROTS - PSITTACIDAE					
Olive-throated Parakeet (Aratinga nana)	R	Х	Х	Х	Forest edge and second-growth scrub, and pine savanna
Brown-hooded Parrot (Pionopsitta haematotis)	R	Х	Х	Х	Primary and secondary broadleaf forest and forest edge
White-crowned Parrot (Pionus senilis)	R	Χ	Χ	Х	Broadleaf and pine forest and forest edge
White-fronted Parrot (Amazona albifrons)	R	Х	Х	Х	Second-growth scrub, forest edge, savanna, cultivated fields
Yellow-lored Parrot (Amazona xantholora)	R	X	Х		Second-growth scrub, forest edge, savanna, cultivated fields
Red-lored Parrot (Amazona autumnalis)	R	Х	Х	Х	Most forested areas, including pine savanna and patchy forest
Mealy Parrot (Amazona farinosa)	R	X	Х	Х	Primary and tall secondary forest, gallery forest, forest edge
Yellow-headed Parrot (Amazonα oratrix)	R	Х	Х		Pine savanna, occasionally other open forested habitats
CUCKOOS & ALLIES - CUCULIDAE	 				
Mangrove Cuckoo (Coccyzus minor)	R		Х		Littoral forest, mangroves, riverine forest, forest edge, scrub
Squirrel Cuckoo (Piaya cayana)	R	Х	Х	Х	Most broadleaf forests and forest edge, less common in pine forest
Striped Cuckoo (Tapera naevia)	R R	Х	Χ	Х	Open second-growth scrub and fallow fields
Pheasant Cuckoo (Dromococcyx phasianellus)	R	X			Primary and secondary broadleaf forest, dense second growth
Groove-billed Ani (Crotophaga sulcirostris)	R	X	X	X	Second-growth scrub, fallow fields, forest edge, and pastures
BARN OWLS - TYTONIDAE					
Barn Owl (Tyto αlbα)	R		Х	X	Urban areas, agricultural fields, quarries
TYPICAL OWLS - STRIGIDAE					
Vermiculated Screech-Owl (Megascops guatemalae)	R	X	Х	Х	Broadleaf forest, also, but not as commonly in pine forest
Central American Pygmy-Owl (Glaucidium griseiceps)	R			X	Primary and secondary broadleaf forest
Ferruginous Pygmy-Owl (Glaucidium brasilianum)	R	Х	Х	Х	Deciduous and semi-deciduous broadleaf forest, submontane pine and broadleaf forest, sometimes in urban areas
Mottled Owl (Ciccaba virgata)	R	Χ	Χ	Х	Forested areas including forest edge
Striped Owl (Pseudoscops clamator)	R	Х			Open disturbed areas, marshes, meadows, savanna with scattered trees
GOATSUCKERS - CAPRIMULGIDAE					
Lesser Nighthawk (Chordeiles acutipennis)	М	Х	Х	Х	Feeds in air at night and can be seen at dawn and dusk in many areas including urban areas. Perches on ground or on tree branch during the day.
Common Nighthawk (Chordeiles minor)	S	Х	Х	Х	Feeds in air at night and is easiest to see at dawn and dusk in many areas including urban areas.
Common Pauraque (Nyctidromus albicollis)	R	Χ	Χ	X	Perches on tree branch during the day. Forest edge, second-growth scrub, roadsides
Yucatan Nightjar (Caprimulgus badius)	М	ļ	X	† *	Forest edge
POTOOS - NYCTIBIIDAE					
Northern Potoo (Nyctibius jamaicensis)	R			Х	Forest clearings and edge, second growth and othe disturbed habitats, rural areas
SWIFTS - APODIDAE					
White-collared Swift (Streptoprocne zonaris)	R	Х	Х	Х	In air, over most habitats but mainly near or over forested areas
Chimney Swift (Chaetura pelagica)	Т			Х	In air over most habitats, but usually not over forested streams or forest clearings
Vaux's Swift (Chaetura vauxi)	R	X	Х	X	In air, mostly over forested and semi-forested areas and small and large clearings including agricultural fields. Usually not near coastal plain.
Lesser Swallow-tailed Swift (Panyptila cayennensis)	R	Χ	Χ	Χ	In air, most habitats, usually near or over forests

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
HUMMINGBIRDS - TROCHILIDAE	1				
Long-billed Hermit (Phaethornis longirostris)	R	Х	Х	Х	Broadleaf forest edge and clearings, second- growth scrub
Stripe-throated Hermit (Phaethornis striigularis)	R	Х	Х	Х	Broadleaf forest and forest edge, clearings, second-growth scrub
Scaly-breasted Hummingbird (Phaeochroa cuvieri)	R	Χ	·	†	Broadleaf forest edge, clearings
Wedge-tailed Sabrewing (Campylopterus curvipennis)	R	Х	Х	Х	Broadleaf and submontane pine forest clearings and edge
White-necked Jacobin (Florisugα mellivorα)	R	Х	Х	Х	Broadleaf forest edge and clearings, often over wooded streams and ponds
Green-breasted Mango (Anthracothorax prevostii)	R	Х	Х	Х	Littoral forest, second-growth scrub, broadleaf forest edge, cultivated areas, towns and villages
Canivet's Emerald (Chlorostilbon cαnivetii)	R	Х	Х	Х	Deciduous and semi-deciduous forest edge, second-growth scrub, savannas, cultivated areas
White-bellied Emerald (Amazilia candida)	R	X	Χ	Х	Broadleaf forest and forest edge
Azure-crowned Hummingbird (Amazilia cyanocephala)	R	Х	Х	X	Pine woodland and savanna, broadleaf forest and forest edge
Rufous-tailed Hummingbird (Amazilia tzacatl)	R	Х	Х	X	Most habitats except for interior of extensive forests
Buff-bellied Hummingbird (Amazilia yucatanensis)	R	X	Х		Pinelands, arid scrub, open second growth. Not found in areas with high annual rainfall and dense forest.
Cinnamon Hummingbird (Amazilia rutila)	R	Х	Х		Littoral forest and forest edge, mangroves, cultivated areas
Purple-crowned Fairy (Heliothryx barroti)	R	Χ			Broadleaf forest and forest edge
Long-billed Starthroat (Heliomaster longirostris)	X	Χ		ļ	Forest edge and clearings, plantations
Ruby-throated Hummingbird (Archilochus colubris)	N	X	X	Х	Forest edge and clearings, second-growth scrub, landscaped yards in towns and villages
TROGONS - TROGONIDAE					
Black-headed Trogon (Trogon melanocephalus)	R	Х	Х	Х	Broadleaf forest, also pine forest, forest edge, broken forest with scrub. Usually not in large areas of primary forest.
Violaceous Trogon (Trogon violαceus)	R	Х	Х	Х	Broadleaf forest, also pine forest, forest edge, broken forest with scrub.
Slaty-tailed Trogon (Trogon massena)	R	X		X	Primary broadleaf forest and forest edge
MOTMOTS - MOMOTIDAE					
Tody Motmot (Hylomanes momotula)	R	Х		Х	Primary broadleaf forest interior
Blue-crowned Motmot (Momotus momota)	R	Х	Х	Х	Primary and secondary broadleaf forest interior, sometimes pine forest
KINGFISHERS - ALCEDINIDAE					
Ringed Kingfisher (Ceryle torquatus)	R	Х	Х	Х	Widespread wherever there is water including open areas, forested streams, swamps and rivers
Belted Kingfisher (Ceryle alcyon)	М	Х	Х	Х	Roadside ditches and creeks, coastal lagoons, mangrove swamps, rice fields, power lines near water. Avoids forested rivers and creeks.
Amazon Kingfisher (Chloroceryle αmαzonα)	R		Х	Х	Forested rivers, streams, lagoons; sometimes open areas like field edges and roadside ditches
Green Kingfisher (Chloroceryle americana)	R	Χ	Χ	Χ	Wood-lined streams and rivers
American Pygmy Kingfisher (Chloroceryle αeneα)	R	Х	Х	X	Quiet pools of water, swamps, backwaters, heavily vegetated lagoon edges. Usually avoids fast-flowing streams.
PUFFBIRDS - BUCCONIDAE					
White-necked Puffbird (Notharchus macrorhynchos)	R	Х	Х	Х	Forest edge, semi-open to open areas with scattered trees
JACAMARS - GALBULIDAE					
Rufous-tailed Jacamar (Galbula ruficauda)	R	X	Х	Х	Broadleaf forest interior and edge, river sides
TOUCANS - RAMPHASTIDAE					
Emerald Toucanet (Aulacorhynchus prasinus)	R			Х	Submontane and foothill broadleaf forest interior and edge, less often in submontane pine forest
Collared Aracari (Pteroglossus torquatus)	R	X	Х	Х	Broadleaf forest and forest edge
Keel-billed Toucan (Ramphastos sulfuratus)	R	X	Χ	X	Broadleaf forest and forest edge

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
WOODPECKERS - PICIDAE					
Acorn Woodpecker (Melanerpes formicivorus)	R	Х	Х		Pine and pine-oak forest, dependant on acorns from oaks
Black-cheeked Woodpecker (Melanerpes pucherani)	R	Χ	Χ	Х	Broadleaf forest edge and forest clearings
Yucatan (Red-vented) Woodpecker (Melanerpes pygmaeus)	R	Х	Х		Open forest types including broadleaf and pine
Golden-fronted Woodpecker (Melanerpes aurifrons)	R	Х	Х	Х	Forest edge and most open areas with trees. Foun in some plantations. Most common woodpecker in towns
Yellow-bellied Sapsucker (Sphyrapicus varius)	N	X	Χ	t	Broadleaf and pine forest and forest edge
Ladder-backed Woodpecker (Picoides scalaris)	R	X	X	 	Open pine woodlands
Smoky-brown Woodpecker (Veniliornis fumigatus)	R	X	X	†	Broadleaf forest interior and edge, scrub
Golden-olive Woodpecker (Vertilion is Junigatus)	R	X	X	Х	Pine and broadleaf forest and forest edge
Chestnut-colored Woodpecker (Celeus castaneus)	R	X	····	·····	Broadleaf forest interior
Lineated Woodpecker (Dryocopus lineatus)	R	X	Х	X	Most areas with large trees, including primary and secondary broadleaf forest, open areas with large trees, pines, towns and villages
Pale-billed Woodpecker (Campephilus guatemalensis)	R	X	X	X	Most areas with large trees, including primary and secondary broadleaf forest, open areas with large trees. (Found less often than Lineated Woodpecke in pines, towns and villages.)
OVENBIRDS - FURNARIIDAE					
Rufous-breasted Spinetail (Synallaxis erythrothorax)	R	Х	Χ		Dense tangles, especially along roads and riverban
Plain Xenops (Xenops minutus)	R	Х	ļ	Х	Broadleaf forest interior and edge
Scaly-throated Leaftosser (Sclerurus guatemalensis)	R	Χ			Primary and secondary broadleaf forest
WOODCREEPERS - DENDROCOLAPTIDAE					
Tawny-winged Woodcreeper (Dendrocincla anabatina)	R	Х	X	X	Primary and secondary broadleaf forest, forest
					edge, high scrub. Found at army ant swarms.
Ruddy Woodcreeper (Dendrocincla homochroa)	R	Х	Х	Х	Primary and secondary broadleaf forest, forest edge, high scrub. Found at army ant swarms.
Olivaceous Woodcreeper (Sittasomus griseicapillus)	R	Х	Х	Х	Primary and secondary broadleaf and pine forest and forest edge.
Wedge-billed Woodcreeper (Glyphorynchus spirurus)	R	Х	Χ		Primary and secondary broadleaf and pine forest and forest edge.
Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae)	R	Х	Х	Х	Broadleaf and pine forest interior, occasionally forest edge
Ivory-billed Woodcreeper (Xiphorhynchus flavigaster)	R	Χ	Χ	Χ	Forested areas and forest edge, including pines
Streak-headed Woodcreeper (Lepidocolaptes souleyetii) ANTBIRDS - THAMNOPHILIDAE	R	X	Χ	X	Broadleaf and pine forest and forest edge
Great Antshrike (Taraba major)	R	Х	Х	Х	Dense tangles, second-growth scrub, forest edge, occasionally forest interior.
Barred Antshrike (Thamnophilus doliatus)	R	Х	Χ	Χ	Dense tangles, second-growth scrub, broadleaf and pine forest edge
Dusky Antbird (Cercomacra tyrannina)	R	X	Χ	X	Dense second-growth scrub, tangles, forest edge
ANTTHRUSHES - FORMICARIIDAE		ļ	†	<u>/</u>	Second & Second
	<u> </u>	V	X	V	Broadleaf forest interior
Black-faced Antthrush [Formicarius analis (moniliger)] TYRANT FLYCATCHERS - TYRANNIDAE	R	X	X	X	Broadleaf forest interior
Tyrannulets and Elaenias - Elaeniinae			ļ	ļ	
Yellow-bellied Tyrannulet (Ornithion semiflavum)	R	X	Χ	X	Broadleaf forest and forest edge
Northern Beardless-Tyrannulet (Camptostoma imberbe)	R	Х	Х	Х	Open pine forest and savanna, broadleaf forest edge, second-growth scrub
Greenish Elaenia (Myiopagis viridicαtα)	R	X	Х	Х	Broadleaf and pine forest, forest edge, tall second growth, also parks and urban areas with large shade trees
Yellow-bellied Elaenia (Elαeniα flαvogaster)	R	Х	Х	Х	Forest edge, pine woodlands, open areas with scattered trees including towns and villages
Ochre-bellied Flycatcher (Mionectes oleagineus)	R	X	Χ	Χ	Broadleaf forest interior and clearings
Sepia-capped Flycatcher (Leptopogon amaurocephalus)	R	Χ		Χ	Broadleaf forest interior

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
Tody-Tyrants & Flatbills - Platyrinchinae					
Northern Bentbill (Oncostoma cinereigulare)	R	Х	Х	Х	Broadleaf forest, forest edge, second-growth scrub, sometimes dense roadside and riverbank tangles
Slate-headed Tody-Flycatcher (Poecilotriccus sylvia)	R	Х	Х	Х	Dense tangles along roadsides and riverbanks and broadleaf forest edge
Common Tody-Flycatcher (Todirostrum cinereum)	R	X	Х	Х	Open areas with scattered large trees, including plantations, orchards, towns and villages. Also in forest edge
Eye-ringed Flatbill (Rhynchocyclus brevirostris)	R	Χ	Χ	Χ	Broadleaf forest interior
Yellow-olive Flycatcher (Tolmomyias sulphurescens)	R	Х	Х	Х	Broadleaf forest and forest edge, less often in pine forest
Stub-tailed Spadebill (Platyrinchus cancrominus)	R	Χ	Х	Χ	Broadleaf forest interior
Fluvicoline Flycatchers - Fluvicolinae			ļ		
Royal Flycatcher (Onychorhynchus coronatus)	R	X	X	Χ	Broadleaf forest and forest edge
Sulphur-rumped Flycatcher (Myiobius sulphureipygius)	R	Х	X		Broadleaf forest interior
Eastern Wood-Pewee (Contopus virens)	Т	X			Widespread, found in nearly all habitats with wood vegetation during migration
Tropical Pewee (Contopus cinereus)	R	Х	Х	Х	Open broadleaf forest and forest edge, less often in pines, occasionally in more open habitats with scattered trees
Yellow-bellied Flycatcher (Empidonax flaviventris)	N	X		Х	Forest interior and edge. During migration is found in a wider range of habitats
White-throated Flycatcher (Empidonax albigularis)	М	Х		Х	Edge of freshwater marshes. Secondary broadleaf forest. May be more widespread during migration
Least Flycatcher (Empidonax minimus)	N	X	Х	Х	Most habitats with woody vegetation except broadleaf forest interior. Most common at woodlan and second-growth edge
Black Phoebe (Sayornis nigricans)	R	Χ	Χ	Х	Fast-flowing forest-lined streams
Vermilion Flycatcher (Pyrocephalus rubinus)	R	X	Х	Х	Savannas, fallow fields, pasture and agricultural areas, parks and other landscaped areas in towns and villages
Tyrannine Flycatchers - Tyranninae					
Bright-rumped Attila (Attila spadiceus)	R	Χ	Χ	Х	Broadleaf and pine forest, less often at forest edge
Yucatan Flycatcher (Myiarchus yucatanensis)	R	Х		Х	Open woodlands and forest edge including broadleaf and pine
Dusky-capped Flycatcher (Myiαrchus tuberculifer)	R	Х	Х	Х	Broadleaf and pine forest interior, forest edge and second-growth scrub
Great Crested Flycatcher (Myiarchus crinitus)	N	Х	Х	Х	Broadleaf forest interior, pine savanna. More widespread during migration
Brown-crested Flycatcher (Myiarchus tyrannulus)	S	Х	Χ	Χ	Broadleaf and pine forest interior, forest edge
Great Kiskadee (Pitangus sulphuratus)	R	X	X	X	Most open habitats and forest edge, including broadleaf and pine, second growth, fields, marshes with scattered trees, parks, towns and villages
Boat-billed Flycatcher (Megarynchus pitangua)	R	Х	Х	Х	Broadleaf forests near rivers, streams and natural clearings, forest edge
Social Flycatcher (Myiozetetes similis)	R	X	Х	Х	Wide-ranging. Broadleaf and pine forest and forest edge, second growth, open areas with scattered trees, towns and villages
Streaked Flycatcher (Myiodynastes maculatus)	S			Х	Broadleaf and pine savanna edges, forest interior and edge
Sulphur-bellied Flycatcher (Myiodynastes luteiventris)	S	Х	Х	Х	Broadleaf and pine forest interior and edge, open habitats with scattered trees
Piratic Flycatcher (Legatus leucophaius)	S	Χ	Χ	Χ	Broadleaf forest interior and edge, pine savanna
Tropical Kingbird (<i>Tyrannus melancholicus</i>)	R	X	X	X	Open areas wherever there are exposed perches,
O 11 1/2 1 1/T					sometimes in forested areas
Couch's Kingbird (Tyrannus couchii)	R	X	Х	X	Similar to Tropical Kingbird, but Couch's found in drier areas such as upland savannas and Mountain Pine Ridge, also forest edge
Eastern Kingbird (Tyrannus tyrannus)	Т	Х	Х	Х	Most wooded areas, both interior and edge, less often in open areas with exposed perches
Fork-tailed Flycatcher (Tyrannus savana)	R	Χ	Χ	Χ	Pine and pine-oak savanna, pasture

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
TITYRAS & BECARDS - GENERA INCERTAE SEDIS		 			
Thrush-like Schiffornis (Schiffornis turdina)	R	Х	Х	Х	Broadleaf forest
White-winged Becard (Pachyramphus polychopterus)	R	X			Broadleaf forest edge, second growth, open areas with scattered trees
Gray-collared Becard (Pachyramphus major)	R	Χ	Χ		Broadleaf and pine forest and forest edge
Rose-throated Becard (Pachyramphus aglaiae)	R	Χ	Χ	X	Deciduous to evergreen broadleaf forest and forest edge, second-growth scrub
Masked Tityra (Tityra semifasciata)	R	Χ	Χ	Х	Broadleaf forest interior and edge, open areas with scattered trees, pines
Black-crowned Tityra (Tityra inquisitor)	R		Χ	Х	Broadleaf forest interior and edge, open areas with scattered trees, pines
MANAKINS - PIPRIDAE					
White-collared Manakin (Mαnαcus candei)	R	Х	Х	Х	Broadleaf forest and forest edge, second-growth scrub
Red-capped Manakin (Piprα mentalis)	R	Х	Χ	Χ	Broadleaf forest, sometimes at forest edge, found in more mature forest than White-collared Manakin
VIREOS - VIREONIDAE					
White-eyed Vireo (Vireo griseus)	N	Х	Х	Х	Second-growth scrub, roadside tangles, mangroves, forest edge, occasionally forest interior
Mangrove Vireo [Vireo pallens (semiflavus)]	R	Х	Х	Х	Second-growth scrub, roadside tangles, forest edge. Occasionally found in mangroves, but more commor in scrubby habitats both near the coast and inland
Yellow-throated Vireo (Vireo flavifrons)	N	Х	Х	X	Mature and old second-growth broadleaf and pine forests and forest edge, less often in younger second growth
Red-eyed Vireo (Vireo olivαceus)	Т	Χ			Tall second growth and forest edge, less often in mature forest
Yellow-green Vireo (Vireo flavoviridis)	S	X	Χ	Χ	Broadleaf forest, tall second growth, forest edge, open woodland with scattered large trees
Tawny-crowned Greenlet (Hylophilus ochraceiceps)	R	X	Х	Х	Mature and old second-growth broadleaf forest interior
Lesser Greenlet (Hylophilus decurtatus)	R	Х	Х	Х	Tall second-growth to mature broadleaf forest, riverine forest
Rufous-browed Peppershrike (Cyclarhis gujanensis)	R	Х	Х		Open country with scattered trees and shrubs, roadside brush, forest and second-growth edge, pinelands and occasionally mangroves
JAYS - CORVIDAE					
Green Jay (Cyanocorax yncas)	R	Х	Χ	Х	Broadleaf and pine forest interior and forest edge
Brown Jay (Cyanocorax morio)	R	Χ	Х	Х	Most forest types, usually near edge, open country with scattered trees
Yucatan Jay (Cyanocorax yucatanicus)	R	Х		1	Semi-deciduous and deciduous broadleaf forest, scrub forest, pine and pine-oak forest, forest edge
SWALLOWS - HIRUNDINIDAE					
Purple Martin (<i>Progn</i> e subis)	Т	Х	Х		In air over open country, perches on power lines and tall dead trees in open areas, can be found roosting (sleeping) on power lines in towns
Gray-breasted Martin (Progne chalybea)	S	X	Х	Х	Open country, can be found roosting (sleeping) on power lines in towns
Tree Swallow (Tachycineta bicolor)	N	Х	Х	X	Mainly in air over open areas, often groups can be found over wetlands, perches on power lines and dead trees
Mangrove Swallow (Tαchycinetα albilineα)	R	Χ	Х	Х	Lagoons, coastal areas, rivers, found more widely when not nesting
Northern Rough-Winged Swallow (Stelgidopteryx serripennis)	R/M	Х	Х	Х	Residents found in forest clearings, (similar in appearance to Ridgeway Rough-Winged Swallow so habitat preferences of Northern not clear). Migrants can be found in most open areas, especially along the coast and over lagoons, agricultural fields, orchards, pasture, roadways
Ridgeway Rough-winged Swallow	R	Χ			Forest clearings and wooded streams in karst limestone areas
Barn Swallow (Hirundo rusticα)	Т	Х	Х	Х	Widespread, concentrations can be found along coast and offshore, in interior over wetlands, farms and pastures

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
WRENS - TROGLODYTIDAE					
Band-backed Wren (Campylorhynchus zonatus)	R			Х	Broadleaf forest and forest edge, feeds on bromeliads in large trees
Spot-breasted Wren (Thryothorus maculipectus)	R	Х	Х	Х	Forest edge, second-growth scrub, roadside tangles also forest interior
Carolina Wren (Thryothorus ludovicianus)	R	L		X	Low semi-deciduous and deciduous forest and forest edge, locally in savannas along streamside trees and brush
House Wren (Troglodytes aedon)	R	X	Х		Towns and villages, orchards, open country with scattered trees and brush, less common in pine forest and savanna
White-bellied Wren (Uropsila leucogastra)	R	Х	Χ	Х	Broadleaf forest and forest edge, second-growth scrub
White-breasted Wood-Wren (Henicorhina leucosticta)	R	Χ	Χ	Х	Broadleaf forest interior and forest edge
GNATCATCHERS - SYLVIIDAE]	
Long-billed Gnatwren (Ramphocaenus melanurus)	R	Х	Х	Х	Vines and tangles at forest edge, second-growth
Blue-gray Gnatcatcher (Polioptila caerulea)	R/M	X	Χ	X	scrub, forest interior Residents in pine and pine-oak woodlands and savannas, also Calabash-Palmetto savannas without
Tropical Gnatcatcher (Polioptilα plumbeα)	R	Χ	Х	X	pines. Migrants found in any wooded habitats. Broadleaf forest interior and edge
SOLITAIRES, THRUSHES & ALLIES -					
TURDIDAE					
Veery (Catharus fuscescens)	T	Χ		<u> </u>	Broadleaf forests
Gray-cheeked Thrush (Catharus minimus)	Т	Χ			Broadleaf forests
Swainson's Thrush (Catharus ustulatus)	Т	Χ		Χ	Broadleaf forests
Wood Thrush (Hylocichla mustelina)	Ν	Χ	Х	Χ	Broadleaf forests
Clay-colored Robin (Turdus grayi)	R	Х	Х	Х	Broadleaf forests, usually near edge, parks, towns, open areas with scattered trees
White-throated Robin (Turdus assimilis)	R	Х			Montane and foothill broadleaf forest interior and edge
MOCKINGBIRDS, THRASHERS, & ALLIES -		 			7
Gray Catbird (Dumetella carolinensis)	N	X	X	Х	Forest edge and occasionally interior, second-
·			^	^	growth scrub, fruiting trees, and savanna
Black Catbird (Melanoptila glabirostris)	R	X			On cayes within littoral forest, on mainland semi- deciduous to deciduous forest interior and edge
Tropical Mockingbird (Mimus gilvus)	R	Х	Х	Х	Open country including towns, villages, open pine woodland, savannas, pasture, orchards, areas with scattered shrubs and trees
WOOD WARBLERS - PARULIDAE					
Blue-winged Warbler (Vermivora pinus)	N	Х	Х	Х	Forest interior and edges, and second-growth scrub
Tennessee Warbler (Vermivora peregrina)	T	X	Χ	X	Forest edge and high second-growth scrub
Orange-crowned Warbler (Vermivora celata)	M	X			Forest interior and edges, and second-growth scrub
Nashville Warbler (Vermivora ruficapilla)	T			Х	Forest edge, second-growth scrub, fallow fields, roadside brush
Northern Parula (Parula americana)	N	Χ	Χ	Χ	Forest interior and edge, tall second-growth scrub
Yellow Warbler (Dendroica petechia)	N	X	X	X	Second-growth scrub, forest edge, fallow fields, roadside brush, open country with scattered woody vegetation, towns and villages
Chestnut-sided Warbler (Dendroica pensylvanica)	N	Χ	Χ	Χ	Second-growth scrub, forest edge
Magnolia Warbler (Dendroica magnolia)	N	X	X	X	Most forest types in both interior and edge, second-growth scrub, open country with trees
Yellow-rumped Warbler (Dendroica coronata)	М	L	Х	Х	Open pine forest, pine and pine-oak savannas, fallow fields, occasionally second-growth scrub
Black-throated Green Warbler (Dendroicα virens)	N	Χ	Х	Χ	Pine and broadleaf forest interior and forest edge
Blackburnian Warbler (Dendroicα fuscα)	T	X	X	X	Broadleaf forest interior and edge
Yellow-throated Warbler (Dendroica dominica)	N	X	X	X	Open areas with trees including towns, villages, pine forest and broadleaf forest edge. Found often in coconut palms and pines and around eaves of houses

Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
WOOD WARBLERS - PARULIDAE (CONTINUED)					
Grace's Warbler (Dendroica graciae)	R	Х	Х		Pine woodlands
Bay-breasted Warbler (Dendroica castanea)	Т	Χ	Χ	Χ	Broadleaf forest interior and edge
Black-and-white Warbler (Mniotiltα ναriα)	N	Χ	Χ	Χ	Broadleaf and pine forest interior and edge
American Redstart (Setophaga ruticilla)	N	X	Χ	X	Widespread, broadleaf and pine forest interior and
					edge, second-growth scrub, open areas with scattered woody vegetation
Prothonotary Warbler (Protonotαria citrea)	Т	Х		Х	Swamp forest, river and stream edge, mangrove forest
Worm-eating Warbler (Helmitheros vermivorum)	N	Х	Х	Χ	Broadleaf forest interior and edge (often feeds in hanging clumps of dead leaves)
Swainson's Warbler (Limnothlypis swαinsonii)	N	X	Х		Broadleaf swamp forest interior, especially swamp and littoral forest
Ovenbird (Seiurus aurocapilla)	N	Х	Χ	Х	Broadleaf forest interior, scrub-shrub
Northern Waterthrush (Seiurus noveboracensis)	N	Х	Χ	Х	Mangroves, woody streamsides, wooded shores of estuaries, swamp forests
Louisiana Waterthrush (Seiurus motacilla)	Т	Х	Х	Х	Wooded areas with flowing streams, ranges more widely during migration
Kentucky Warbler (Oporornis formosus)	N	Χ	Χ	Χ	Broadleaf forest interior
Common Yellowthroat (Geothlypis trichas)	N	Х	Х	Х	Second-growth scrub, fallow fields, marshes, seasonally wet and dry savannas, roadside brush
Gray-crowned Yellowthroat (Geothlypis poliocephala)	R	Х	Х	Х	Open pine forest, pine and pine-oak savannas, wooded edge of marshes
Hooded Warbler (<i>Wilsonia citrina</i>)	N	X	Χ	Х	Broadleaf forest interior, scrub-shrub
Golden-crowned Warbler (Basileuterus culicivorus)	R	X	X	X	Mature broadleaf forest interior
Yellow-breasted Chat (Icteria virens)	N	X	X	X	Second-growth scrub, forest edge
Gray-throated Chat (Granatellus sallaei)	R	X	· · · · ·	X	Deciduous and semi-deciduous forest, flooded
Gray-tilloated Chat (Grandtellus sullder)	ĸ	^		^	and swamp forest interior and edge, less often in non-flooded tropical moist forest
BANANAQUITS - COEREBIDAE					
Bananaquit (Coereba flaveola)	R	1	<u> </u>	X	Broadleaf forest interior and edge
TANAGERS - THRAUPIDAE					
Gray-headed Tanager (Eucometis penicillαtα)	R	Х	Χ	Х	Broadleaf forest interior and edge
Black-throated Shrike-Tanager (Lanio aurantius)	R	Χ	<u></u>	Χ	Mature broadleaf forest interior
Red-crowned Ant-Tanager (Habia rubica)	R	Χ	Χ	Χ	Broadleaf forest interior and forest edge
Red-throated Ant-Tanager (Habia fuscicauda)	R	Χ	Χ	X	Broadleaf forest interior and forest edge
Rose-throated Tanager (<i>Piranga roseogularis</i>)	R	Х		Х	Deciduous and semi-deciduous seasonally flooded broadleaf forest interior
Hepatic Tanager (Pirαngα flανα)	R	Χ	Χ	†	Pine forest
Summer Tanager (<i>Piranga rubra</i>)	N	X	X	Х	Broadleaf and pine forest interior and edge, open country with scattered trees. Feeds at fruiting tree
Scarlet Tanager (Pirαngα olivαceα)	Т	X		İ	Broadleaf forest interior and edge
Crimson-collared Tanager (Ramphocelus sanguinolentus)	R	X	Х	Χ	Second-growth scrub, roadside brush and tangles, riverine forest
Passerini's Tanager (Ramphocelus passerinii)	R	Х	Х	Χ	Second-growth scrub, riverine forest, roadside brus and tangles
Blue-gray Tanager (Thrαupis episcopus)	R	Х	Х	Χ	Open areas with scattered trees, towns and village parks, orchards, forest edge. Feeds at fruiting tree
Yellow-winged Tanager (Thraupis abbas)	R	X	Х	Х	Forest edge, open areas with scattered trees, town and villages. Feeds at fruiting trees.
Red-legged Honeycreeper (Cyanerpes cyaneus)	R	Х	X	Х	Broadleaf forest interior and edge, less often in pir forest, open areas with scattered trees. Feeds at
EMBERIZINES - EMBERIZIDAE			<u> </u>		flowering and fruiting trees.
Blue-black Grassquit (Volatinia jacarina)	R	Х	Х	Х	Rice fields, fallow fields, roadside brush, low
Variable Seedeater (Sporophila americana)	R	X	X	X	second growth Fallow fields and low second-growth scrub, roadsid
	R	X	X	Х	brush, orchards, broadleaf and pine forest edge Fallow fields and low second-growth scrub, roadsid
Thick-billed Seed-Finch (Oryzoborus funereus)	R	X	X	X	brush, orchards, broadleaf and pine forest edge Open pine forest and savannas, also broadleaf fores
· • • • • • • • • • • • • • • • • • • •	.]	57	<u> </u>	İ	edge, second-growth scrub, roadside brush

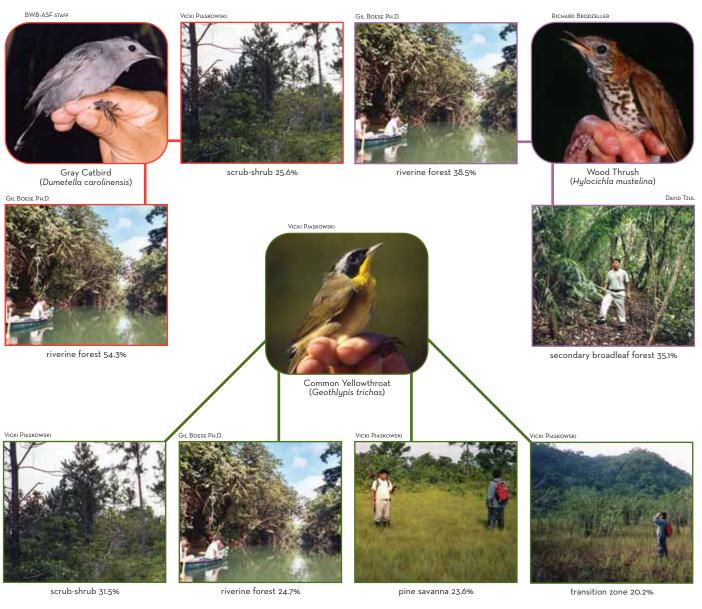
Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	CHAA	Preferred Habitats in Belize
MBERIZINES - EMBERIZIDAE (CONTINUED)				J	
Blue Seedeater (Amaurospiza concolor)	R	Χ			Riverside bamboo thickets
Yellow-faced Grassquit (Tiaris olivaceus)	R	Х	Х	Х	Roadside thickets, orchards, second-growth scrub, pastures
Grassland Yellow-Finch (Sicαlis luteolα)	R		Χ		Seasonally flooded savannas, fallow fields
Orange-billed Sparrow (Arremon aurantiirostris)	R		Χ]	Broadleaf forest interior, riverine forest
Olive Sparrow (Arremonops rufivirgatus)	R	Х	Х		Dry and semi-dry broadleaf and pine forest edge, second-growth scrub
Green-backed Sparrow (Arremonops chloronotus)	R	X	Х	X	Broadleaf second-growth woodland, thickets and forest edge, open pine woodland and second growth
Chipping Sparrow (Spizella passerina)	R	Χ	Χ		Pine woodland
Savannah Sparrow (Passerculus sandwichensis)	М	Χ			Fallow fields, flooded and dry meadows
Grasshopper Sparrow (Ammodramus savannarum)	R/M	X	Χ	 	Low bushes, savannas. Migrants can be found in an open, weedy habitat.
CARDINALS & ALLIES - CARDINALIDAE					
Grayish Saltator (Sαltαtor coerulescens)	R	Х	Х	Х	Open habitats with scattered brush or trees, edges of towns and villages
Buff-throated Saltator (Saltator maximus)	R	Χ	Χ	Χ	Broadleaf forest edge
Black-headed Saltator (Saltator atriceps)	R	Х	Х	Х	Broadleaf forest edge, second-growth scrub. Feeds at fruiting trees.
Black-faced Grosbeak (Caryothraustes poliogaster)	R	Χ	Χ	Χ	Broadleaf forest interior, forest edge
Northern Cardinal (Cardinalis cardinalis)	R	Х	Х		Broadleaf and pine forest edge, second-growth scrub
Rose-breasted Grosbeak (Pheucticus Iudovicianus)	N	Х	Х	Х	Broadleaf forest edge, open areas with scattered trees
Blue-black Grosbeak (Cyanocompsa cyanoides)	R	Х	Х	Χ	Broadleaf forest interior and edge, second-growth scrub
Blue Bunting (Cyanocompsa parellina)	R	Χ	Χ	Χ	Deciduous and semi-deciduous forest edge
Blue Grosbeak (Passerina caerulea)	N	Χ		Х	Fallow fields, roadside brush, rice fields
Indigo Bunting (Passerina cyanea)	N	X	Х	Χ	Rice fields, fallow fields, roadside brush, second- growth scrub, forest edge
Painted Bunting (Passerina ciris)	N	Χ	Χ		Fallow fields, roadside brush, second-growth scrub
Dickcissel (Spiza americana)	Т	Х	Х		Rice fields, fallow fields, second-growth scrub, savanna
LACKBIRDS & ALLIES - ICTERIDAE					
Red-winged Blackbird (Agelαius phoeniceus)	R		Х		Nesting: freshwater marshes, Feeding: fallow fields recently plowed agricultural fields, pastures
Eastern Meadowlark (Sturnella magna)	R	Χ	Χ	Χ	Savannas, farmland, mowed fields
Melodious Blackbird (<i>Dives dives</i>)	R	Х	Х	X	Open areas with scattered trees, forest edge, clear ings within forest interior, occasionally feeds in fiel away from trees
Great-tailed Grackle (Quiscalus mexicanus)	R	X	Х	X	Nearly all open areas, including rice fields, pasture plowed fields, less common in wooded habitats su as pine forest and mangroves, urban areas
Bronzed Cowbird (Molothrus aeneus)	R		Х	Х	Fallow fields, pasture and agricultural fields, brush and second-growth, open areas with scattered tree
Giant Cowbird (Molothrus oryzivorus)	R	Х	Х	Х	Feeds in plowed fields and other fields with low or little vegetation, nests in oropendola colonies
Black-cowled Oriole (Icterus prosthemelas)	R	Х	Х	Х	Broadleaf, pine and palm forest interior and edge, open areas with scattered trees, especially coconu palms
Orchard Oriole (Icterus spurius)	N	X	Х	X	Broadleaf and pine forest edge, open areas with scattered trees, second-growth scrub, fallow fields (including rice). Feeds at flowering and fruiting tree
Hooded Oriole (Icterus culcullatus)	R		Х		Open areas with scattered trees, especially palms and flowering and fruiting trees.
Yellow-backed Oriole (Icterus chrysater)	R	Χ	Χ	Х	Mainly pines, also locally in open broadleaf forest and forest edge
Yellow-tailed Oriole (Icterus mesomelas)	R	Х	Х	Х	Broadleaf forest edge, often along stream edges, sometimes in open areas with scattered trees around towns and villages

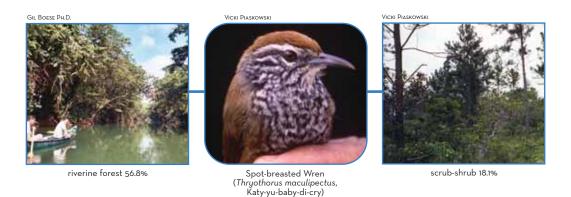
Species (Families in bold & caps)	Belize seasonality	RCNP	TEC	СНАА	Preferred Habitats in Belize
BLACKBIRDS & ALLIES - ICTERIDAE (CONTINUED)					
Baltimore Oriole (Icterus galbula)	N	Х	Х	Х	Broadleaf forest interior and edge, open areas with scattered trees. Feeds at flowering and fruiting trees. During migration, second-growth scrub and roadside brush.
Yellow-billed Cacique (Amblycercus holosericeus)	R	Х	Х	Х	Broadleaf and pine forest interior and edge, second-growth scrub
Montezuma Oropendola (Psαrocolius montezuma)	R	X	Х	Х	Broadleaf forest interior and edge, open areas with scattered large trees and savanna. Feeds at fruiting trees. Nests in isolated trees, typically Cotton tree (Ceiba pentandra).
FINCHES & EUPHONIAS - FRINGILLIDAE					
Scrub Euphonia (Euphoniα affinis)	R	Х	Х	Х	Second-growth scrub, pine woodland and pine-oak savannas, broadleaf forest edge
Yellow-throated Euphonia (Euphonia hirundinacea)	R	X	Х	Х	Broadleaf forest edge, open areas with scattered trees including towns and villages. Feeds at flower- ing and fruiting trees and at bromeliads.
Olive-backed Euphonia (<i>Euphonia gouldi</i>)	R	Х	Х	Х	Broadleaf forest interior and edge. Feeds at bromeliads.

BELIZE HABITATS THAT ARE PREFERRED BY RESIDENT AND MIGRATORY BIRDS

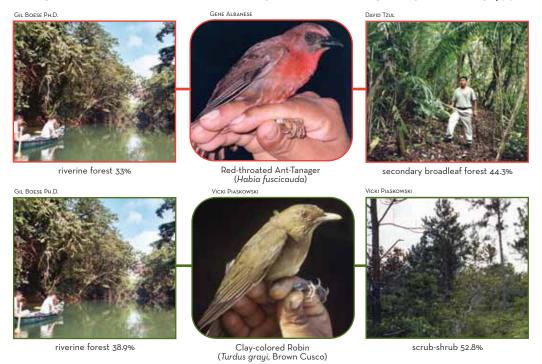
One of the techniques Birds Without Borders – Aves Sin Fronteras® researchers used to study birds was bird banding. (Please see Appendix 4 on page 100 for a description of bird banding.) BWB-ASF found that some bird species preferred specific habitats, while others were found in many different habitats. Below

are pictures of some of Belize's resident and migratory birds, the habitats in which most birds of this species were found from December through March, and the percentages of birds found in these habitats. Descriptions of the habitats are found on pages 36-37 and 44-47.





BELIZE HABITATS THAT ARE PREFERRED BY RESIDENT AND MIGRATORY BIRDS (CONTINUED)

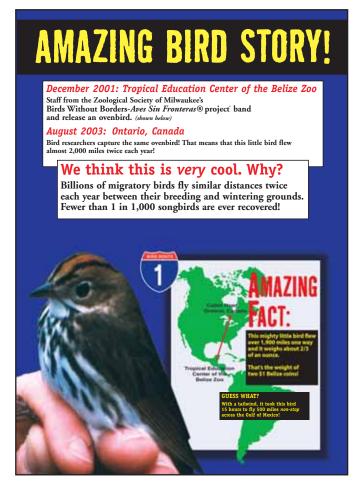


NEOTROPICAL MIGRANTS FLY MORE THAN 1,500 MILES TO RETURN TO BELIZE EACH YEAR

Neotropical migratory birds breed in North America but spend more of their lives (up to six months) in Belize. During North American winters, they are also found in southern Mexico, other parts of Central America, South America and the islands in the Caribbean Sea (Greater Antilles). They fly more than 1,500 miles between these two places twice each year.

Birds Without Borders – Aves Sin Fronteras® staff have been banding birds in Belize since 1999. When we band birds, we capture them in special nets called mist nets, carefully remove them, place a numbered U.S. Bird Banding Laboratory aluminum band on their leg, examine them and take measurements, and then release the birds. (See Appendix 4 on page 100 for more information on bird banding.) Bird banding requires very specialized training and a permit from the U.S. and Belize governments. Banding does not harm the birds in any way and provides valuable information on the birds captured.

We sometimes recapture both migrant and resident birds that we have banded. In Belize from 1999 through 2003, we recaptured 323 Neotropical migrant birds of 17 species (23.9% of the total number of Neotropical migrants banded). Many were recaptured within six months of their original banding. However, 125 birds of 15 species (9.3% of the total birds banded) were recaptured one to three years after being banded. These birds made the journey of at least 1,500 miles between Belize and North America from two to six times. Amazing, when you consider that some weigh as little as ¼ ounce (less than a Belize \$1 coin), and even the larger ones weigh only 1¾ ounces (about as much as five Belize \$1 coins)!



So, when you see a migrant, think about how far it flew just to reach Belize! Migrants will make the same long journey to fly north to breed and raise young. If they survive, many return to exactly the same place in the tropics each year. When you preserve Belize habitats, the returning birds can come back to the same area and find a home that is familiar to them.

OTHER BELIZE HABITATS THAT ARE IMPORTANT TO BIRDS

Mangroves (mangal, mangle) line Belize's coasts, lagoons and many cayes (Kricher 1997). They also may extend inland along major rivers (Jones 2003). Mangrove plants often have aerial roots and are salttolerant, but can be very slow-growing. Mangroves

provide important habitat for birds and insects and shelter and food for many fish and invertebrates (Kricher 1997). They are a very important Belize habitat.



These Red mangroves (Rhizophora mangle) can be found along the Western Highway west of Belize City.

©JAMES BEVERIDGE

©JAMES BEVERIDGI



Mangroves, like these on Caye Caulker, line many of Belize's cayes

VICKI PIASKOWSKI



Man-o'-War Caye, located 16 km (10 mi.) east of Belize's coast, is home to a nesting colony of Magnificent Frigatebirds (Fregata magnificens, Man-o'-war Bird).



Magnificent Frigatebirds can catch fish, but often steal fish from other birds, which is how they got the name Man-o'-war Bird (Kricher 1997).

Littoral forests replace mangroves above the tide line. Littoral forests are an important habitat on many of Belize's cayes (Meerman and Sabido 2001, Jones 2003). Trees found in littoral forests include the Red qumbolimbo (Bursera



Sea grapes (Coccoloba uvifera) are common in littoral forests



Cocoplum (Chrysobalanus icaco) are common in littoral forests.

simaruba), Black poisonwood (Metopium browneii), Zericote (Cordia sebestena), Sea grape (Coccoloba uvifera) and Cocoplum (Chrysobalanus icaco). The Black Catbird (Melanoptila glabirostris) and Yucatan Vireo (Vireo magister) are found in littoral forests on Belize's cayes.



Yucatan Vireos (Vireo magister) are found in littoral forests.



Black Catbirds (Melanoptila glabirostris) are found in littoral forests.

Beaches provide feeding areas for many wading birds, including shorebirds. Birds find food in the seaweeds that wash up on the shore. Please do not rake and clear beaches. Leaving the seaweeds will provide natural feeding areas for birds.



Ruddy Turnstones (Arenaria interpres) find food in the seaweeds that wash up on Belize's beaches.

©JAMES BEVERIDGE

Spotted Sandpipers (Actitis macularius, Shaky batty/body) nest in Alaska and Canada. Some spend northern winters on Belize's beaches and other areas with water.



Ruddy Turnstones (Arenaria interpres) nest in the Arctic. Some spend northern winters on Belize's beaches.

HELPING JABIRUS

Many people think that Jabirus (*Jabiru mycteria*, Fillymingo, Turk), members of the stork family, are one of Belize's most beautiful birds. They are the largest flying birds in the Americas (Howell and Webb 1995). Jabirus stand 4.3-5 feet tall (Howell and Webb 1995) and have a wingspan of about 11 feet (Jones 2003). Their huge bill is 12-13 inches long (Howell and Webb 1995). Jabirus are wading birds and feed by both sight and touch (Thomas 1985, del Hoyo et al. 1992). To detect prey by touch, they submerge their open bills in shallow water. When they feel food with their bill, they snap their bill shut to capture the prey. Jabirus feed on fish (including eels), frogs, snakes, crabs and insects (del Hoyo et al. 1992).

Birds Without Borders – Aves Sin Fronteras® has been studying the nesting cycle of the Jabiru since 2001. We have found three nests that are on or close to the Runaway Creek Nature Preserve. Each nest has had from one to three chicks (baby Jabirus) each year. To help Jabirus continue to breed successfully on the Runaway Creek Nature Preserve, we are protecting the habitats it uses for nesting and feeding.

In Belize, the Jabiru is threatened with extinction (Jones and Vallely 2001). The Jabiru is also at risk in neighboring countries. It is endangered in Guatemala (CONAP 2000) and in danger of extinction in Mexico (CONABIO 2005). By continuing to study the Jabiru, we hope to learn more about its nesting cycle and use this information to help to protect Jabirus.

You can help Jabirus by protecting the wetlands or seasonal wetlands on your property. These are very important to Jabirus and other wading birds for feeding areas.







Jabiru (*Jαbiru mycteriα*, Fillymingo, Turk) nests with young of different ages.

HELPING BIRDS THAT NEST IN HOLES OR CAVITIES

Many birds nest in holes (cavities). In Belize, these cavities can be found in living and dead standing trees and stumps, old termite or wasp nests, on cliffs and in the walls of archeological temples. In Belize, 14 families of birds use cavities to nest and raise their young (Stiles and Skutch 1989, Howell and Webb 1995, Jones 2003). Some species, such as the Mangrove Swallow (Tachycineta albilinea), return to the same nesting sites each year (D. Tzul field experience). So, if you have dead trees or termite nests on your land, save them and watch to see if birds use them to nest.



The Yellow-headed Parrot (Δmgzong oratrix, Yellow-head) is endemic to Belize, (found only in a certain area). It nests and raises its young in cavities in dead trees found in pine savanna habitats. This species is endangered because birds are taken from the wild for the pet trade Please leave birds free in their homes in the wild!





Acorn Woodpeckers (Melanerpes formicivorus) use dead standing trees and thick-barked pine trees to store seeds such as acorns (Gill 1994). They also nest in tree cavities.

There are many ways you can help cavity-nesting birds:

- Save dead trees.
- · Leave termite nests in trees.
- Clean around the base of dead trees to protect the tree from burning in
- Talk to other people about saving these important nesting sites.
- Provide wooden nest boxes. (Please contact the Birds Without Borders -Aves Sin Fronteras® office at 822-0236 or bwbasf@btl.net for information on making nest boxes for birds.)





Dead trees like these provide places for cavity-nesting birds to make nests.



Birds make nest cavities like this one in dead or soft wood.



Birds also nest in natural cavities like this one.



DAVID WINKLES

VICKI PIASKOWSKI



Nest boxes provide a place for swallows and other birds to nest.



Termite nests are used to build nest cavities



The termite nest shown here has a nest cavity.

Families of Belizean birds that nest in holes (cavities):

Falcons-some species (Falconidae) Parrots (Psittacidae) Owls (Tytonidae, Strigidae)-some species Swifts-some species (Apodidae) Trogons (Trogonidae) Toucans (Ramphastidae) Woodpeckers (Picidae)

Ovenbirds (Furnariidae)-one species Woodcreepers (Dendrocolaptidae) Antthrushes (Formicariidae)-one species Flycatchers (Genus *Myiarchus* only) Tityras (Genera *Incertae sedis*) Martins and Swallows (Hirundinidae)-some species Wrens (Genus Troglodytes only)

SOME CAVITY NESTERS FOUND IN BELIZE ARE PICTURED BELOW.



Laughing Falcons (Herpetotheres cachinnans, Guaco) nest in tree cavities.



Red-lored Parrots (Amazona autumnalis, Mangro Parrot) nest in tree cavities.



Spectacled Owls (*Pulsatrix perspicillata*) nest in tree cavities.



Ferruginous Pygmy-Owls (Glaucidium brasilianum, Screech Owl) nest in tree cavities.



Black-headed Trogons (Trogon melanocephalus, Ramatatu) nest in tree cavities or stumps, root masses or termite nests.



The termite nest shown here has a nest hole.

KELLEY HORWOOD



Emerald Toucanets (Aulacorhynchus prasinus) nest in tree cavities.

@ JAMES REVEDINGE

©JAMES BEVERIDGE



Collared Aracaris (Pteroglossus torquatus, Pillis) nest in tree cavities.



Keel-billed Toucans (Ramphastos sulfuratus, Belizean Bill Bird, Big-Bill Pillis) nest in tree cavities.

GENE ALBANESE



Golden-fronted Woodpeckers (Melanerpes aurifrons, Carpenter) nest in tree cavities.



Pale-billed Woodpeckers (Campephilus guatemalensis, Father Redcap) nest in tree cavities.



lvory-billed Woodcreepers (Xiphorhynchus flavigaster) nest in tree cavities or hollow trunks of trees.



Black-faced Antthrushes (Formicarius analis moniliger) are the only species of antbird that nest in tree cavities.

DAVID TZUL



Brown-crested Flycatchers (Myiarchus tyrannulus) nest in existing tree cavities, hollow posts and old woodpecker holes. They don't make the cavity, so must find one.



Masked Tityras (*Tityra semifasciata*, White Woodpecker) nest in existing tree cavities or old woodpecker holes. They don't make the cavity, so must find one.



Gray-breasted Martins (*Progne chalybea*) nest in existing tree cavities, holes in buildings or in small rocky islands.



Mangrove Swallows (Tachycineta albilinea) nest in existing tree cavities or in rocks or walls with holes. They also use nest boxes.



Northern Rough-winged Swallows (Stelgidopteryx serripennis) nest in holes in road cuts or in banks.



House Wrens (Troglodytes αedon) nest in existing cavities in trees and buildings. Like the Northern House Wren pictured here, they also will nest in boxes.

THE MORE COMMON CAVITY NESTING BIRDS FOUND IN BELIZE ARE LISTED BELOW:

Falcons and Forest-falcons (Falconidae)

Collared Forest-Falcon

(Micrastur semitorquatus)

Laughing Falcon

(Herpetotheres cachinnans, Guaco)

Bat Falcon

(Falco rufigularis, Lion Hawk)

Parrots (Psittacidae)

Red-lored Parrot

(Amazona autumnalis, Mangro Parrot)

Yellow-headed Parrot

(Amazona oratrix, Yellow-head)

Owls (Strigidae)

Ferruginous Pygmy-Owl

(Glaucidium brasilianum, Screech Owl)

Vermiculated Screech Owl

(Megascops guatemalae, Monkey-bird)

Swifts (Apodidae)

Vaux's Swift

(Chaetura vauxi)

Trogons (Trogonidae)

Black-headed Trogon

(Trogon melanocephalus, Ramatatu)

Toucans (Ramphastidae)

Emerald Toucanet

(Aulacorhynchus prasinus)

Collared Aracari

(Pteroglossus torquatus, Pillis)

Keel-billed Toucan

(Ramphastos sulfuratus, Belizean Bill Bird,

Biq-Bill Pillis)

Woodpeckers (Picidae)

Acorn Woodpecker

(Melanerpes formicivorus)

Golden-fronted Woodpecker

(Melanerpes aurifrons, Carpenter)

Pale-billed Woodpecker

(Campephilus quatemalensis, Father Red-cap)

Ovenbirds (Furnariidae)

Plain Xenops

(Xenops minutus)

Woodcreepers (Dendrocolaptidae)

Olivaceous Woodcreeper

(Sittasomus griseicapillus)

Ivory-billed Woodcreeper

(Xiphorhynchus flavigaster)

Antthrushes (Formicariidae)

Black-faced Antthrush

(Formicarius analis moniliger)

Flycatchers (Genus Myiarchus)

Brown-crested Flycatcher

(Myiarchus tyrannulus)

Dusky-capped Flycatcher

(Myiarchus tuberculifer)

Tityras (Genera Incertae sedis)

Masked Tityra

(Tityra semifasciata, White Woodpecker)

Martins and Swallows (Hirundinidae)

Gray-breasted Martin

(Progne chalybea)

Mangrove Swallow

(Tachycineta albilinea)

Northern Rough-winged Swallow

(Stelgidopteryx serripennis)

Wrens (Genus Troglodytes)

House Wren

(Troglodytes aedon)

NATURALLY OCCURRING WATER CAN BENEFIT BIRDS



This pond at the Tropical Education Center of the Belize Zoo provides birds with food and water.



This wetland at the Runaway Creek Nature Preserve is an important feeding area for wading birds.



The lagoon at Crooked Tree Wildlife Sanctuary provides wetland habitat and feeding areas for many species of wading birds.

Water that occurs naturally as natural waterways, flowing streams or flooded areas in savannas can attract birds and provide them with much-needed water, especially during the dry season. Even small ponds can provide food for birds like kingfishers and wading birds. Ponds and wetlands provide an important source of food for many wading birds.

Please do not drain wetlands. Wetlands filter and clean contaminated water before it enters the reef ecosystem.

Stagnant ponds or bird baths provide breeding areas for mosquitoes and therefore should not be used unless they are emptied, rinsed and filled with fresh water daily.

These birds can be found near water:



American Pygmy Kingfisher (Chloroceryle αeneα)



Wood Stork (Mycteria americana, John Crow Culu/Curlew)



Snowy Egret (Egretta thula, White Gaulin)



Great Egret (Ardea alba, White Gaulin)



Great Blue Heron (*Ardea herodia*s, Blue Gaulin, Toby Full Pot)



Northern Jacana (Jacana spinosa, Georgie Bull)



Yellow-crowned Night Heron (Nyctαnαssα violαceα, King Carpenter)



Purple Gallinule (Porphyrio martinica)



Boat-billed Heron (Cochlearius cochlearius, Cooper, Spoon-bill Carpenter)

COLLISIONS WITH GLASS WINDOWS CAN CAUSE BIRD DEATHS.

Glass is invisible to birds. Glass can reflect images of the sky, trees and other plants. When these are reflected on the outside of windows, a bird may think that it is flying toward the sky or a tree. Instead, it strikes the window and is injured or killed. If indoor plants are placed next to a window, birds may try to perch on the plant and strike the window.

Glass also poses a threat to birds at night. Many birds migrate at night and become confused by the artificial lights coming from buildings. They are injured or killed when they collide with windows. This is especially a problem on foggy or rainy nights.

In the U.S.A., it is estimated that window strikes kill millions of birds each year. In Belize's urban areas, there are a number of large buildings with glass windows that pose a significant threat to birds. Many homes in Belize have louvered screens or windows, and these do not pose the risk to birds that plain glass windows do.

You can prevent bird-window collisions by doing the following:

- Close curtains or blinds when birds are active.
- Change the appearance of windows by hanging ribbons or streamers in front of them. Or, place objects on the glass (like decals or hawk silhouettes) to make the glass more visible to birds.
 These are effective only if they cover the full length and width of the glass.
- Cover windows with external shades or sunscreens to change their appearance.
- Move houseplants so that they are not directly in front of windows. Plants can be moved away from windows and still receive enough natural light to grow.



- Place bird feeders or bird baths less than one meter (3 feet) from your windows. When feeders or baths are placed within this distance, birds approaching them usually are not flying quickly enough to injure themselves if they do collide with the window.
- If you are designing a home or building with glass windows, angle the windows downward 20 to 40 degrees so that the glass reflects the ground, not the sky.
- For large buildings with glass windows, help to prevent bird collisions by turning off building lights after dark; also turn off (or dim) atrium and outdoor decorative lighting after dark.
 This is especially important when birds are migrating.

For more information, contact the Birds without Borders – *Aves Sin Fronteras** office (822-0236 or bwbasf@btl.net) or see the following Web sites:

http://www.flap.org/

http://www.lightsout.audubon.org/

http://www.bcnbirds.org/window.html

https://www.abcbirds.org/birdconservationalliance/members/window_paper.PDF

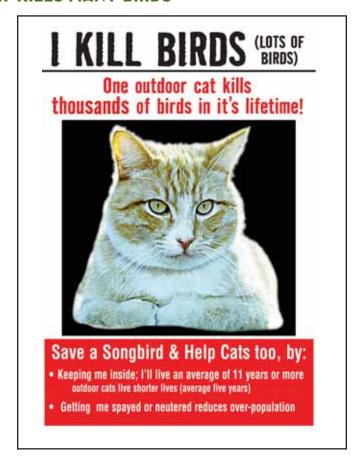
http://www.fws.gov/birds/documents/Collisions.pdf

YOUR OUTDOOR CAT KILLS MANY BIRDS

Cats hold a special place in the hearts of people who have them as pets. Farmers often use cats to control rodents (mice and rats) on their farms, in their barns, and in other buildings. Although many people believe that outdoor cats kill only rodents, studies done in the United States and Great Britain have shown that cats also kill many wild birds and other wildlife. Even cats that are well-fed by their owners still have a natural instinct to hunt when they are outdoors (Coleman and Temple 1996). A study done on free-ranging cats in rural Wisconsin estimated that more than seven million birds are killed each year by rural cats in Wisconsin (Coleman and Temple 1993).

Free-roaming cats (owned cats allowed to go outside as well as stray and feral cats) are often hit by vehicles and subjected to diseases, starvation, poisons, attacks by other animals and mistreatment by humans. Free-roaming cats also can be a nuisance when they enter people's homes and eat their food provisions. The average lifespan of an outdoor cat is 2-5 years. Cats that live their entire lives indoors can live 17 or more years (American Bird Conservancy 2005). Spaying or neutering cats helps to prevent births of unwanted cats and overpopulation.

Staying indoors is best for your cat and will help to save birds.



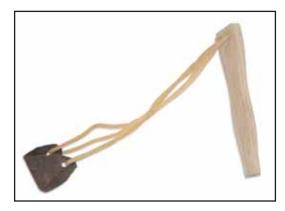
For more information and to learn how to make an outdoor cat an indoor cat, visit the following Web sites: American Bird Conservancy *Cats Indoors!* Program: http://www.abcbirds.org/cats/

The Humane Society of the United States statement on free-roaming cats: http://www.hsus.org/pets/pet care/cat care/keep your cat safe at home hsuss safe cats campaign/

OTHER THINGS THAT YOU CAN DO TO PROTECT BIRDS AND ENHANCE BIRD POPULATIONS

DON'T KILL OR HARM BIRDS WITH SLINGSHOTS OR PELLET GUNS

The use of slingshots for hunting dates back to biblical times. Slingshots have been used traditionally in Maya and Mestizo communities to kill birds for food and sport.



Misusing slingshots to kill birds for sport (not for food) decreases some bird populations.

Many birds feed on spiders and insects, both adult insects and larvae (caterpillars) (Gill 1994, Ehrlich et al. 1988). Many insects are pests that damage agricultural crops and harm forests by eating the leaves of trees and other plants. So that birds can continue to control insects, do not kill them for target practice with slingshots or pellet guns. Instead, use non-living objects like an old can, a dead tree, or plastic bottles for target practice. Make a drawing of an animal or bird on cardboard or use a decoy. Hang these and use them as targets instead of using living birds.

DO NOT TRAP OR CAGE WILD BIRDS FOR PETS. REPORT PEOPLE WHO HAVE WILD BIRDS AS PETS.

Trapping wild birds stresses the birds and can cause their death. Keeping wild birds as pets is illegal in Belize. Caged wild birds do not have happy lives because they are alone and will not share their lives with a mate or live freely with other birds.

If you know of people who are trapping birds illegally for sale as pets, or if someone you know has a wild bird as a pet, please report them to the Conservation Unit, Forestry Department, promptly! Your report will be kept confidential.

To report people trapping wild birds or keeping birds as pets please contact:

Wildlife Officer
Forest Department
Forest Drive
Belmopan, Belize
Telephone: 822-1524
Fax: 822-1523

0r:

Corozal District / Orange Walk District: 322-2208

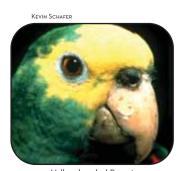
Belize District: 223-5714 Cayo District: 824-3280

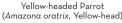
Stann Creek District: 522-2094 / 523-2341

Toledo District: 722-2765

If the above offices have moved or the telephone number has changed, please check your telephone directory for the current numbers.

PLEASE DO YOUR PART TO HELP PROTECT OUR BELIZEAN BIRDS.







Crested Guan (Penelope purpurascens, Quam)

Great Curassow (Crαx rubrα, Carasow) male



Great Curassow female

ANOTHER LINK BETWEEN BELIZE AND WISCONSIN: LANDOWNERS IN BOTH PLACES ARE INTERESTED IN HABITAT CONSERVATION

Many Wisconsin and Belize landowners showed their concern for both migratory and resident bird species by allowing Birds Without Borders – Aves Sin Fronteras® research and education to take place on their land. Many birds that spend northern winters in Belize use lands in Wisconsin as migration stopover sites and breeding homes. By working together, landowners in both Belize and Wisconsin protected large areas of habitat used by birds throughout the year, and helped to conserve birds.

Belize: The Tropical Education Center of the Belize Zoo, the Runaway Creek Nature Preserve and the Chaa Creek study sites

The landowners listed below allowed BWB-ASF to conduct research and education programs at the study sites described on pages 43-47:
Sharon Matola, Director of the Belize Zoo and

Tropical Education Center

The Foundation for Wildlife Conservation, Inc. Mick and Lucy Fleming of the Chaa Creek

Nature Reserve

Chial Farms

Louis Sylvester and Family

Salvador Espat and Family James and Debbie Scott

Tracy and Mark Langan

Wisconsin: Pewaukee, Land O' Lakes, and Rosendale study sites

The following private landowners (and one government agency) united to provide BWB-ASF access to more than 1,400 ha (3,460 acres) of land in three areas of the state. These study sites were used for BWB-ASF research and education programs.

Brian and Sylvia Bartling

Bud and Mary Beattie

Dan Beattie

Mr. and Mrs. Wayne Beattie

Dr. Richard and Doris Bibler

Dr. Gil and Lillian Boese

John and Judy Brennan

Dr. Charles and Sonja Durkee

Mr. and Mrs. William Emory

Brian and Dianne Henke

Brian and Debbie King

John and Raquel Koch

Dr. and Mrs. John Lindstrom

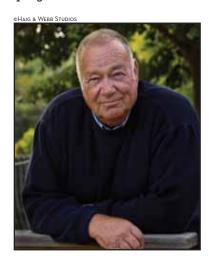
Dr. and Mrs. William Mateicka

Mr. and Mrs. Bob Meier

Dr. Anthony and Donna Meyer
Dr. and Mrs. Kenneth Rath
Russ and Betty Schallert
Mr. and Mrs. M. J. Schmid
Richard and Susie Steinman
Dr. and Mrs. Jim Steinmatz
James Tiefenthaler
Mrs. Robert Uihlein
Charles Shong and the Lake Pewaukee Sanitary
District

In 1998, Fred Ott donated 72 ha (179 acres) of land near Rosendale, Wisconsin, to the Foundation for Wildlife Conservation, Inc. BWB-ASF conducted research and education programs on this land.

Dick Steinman, of Mequon, Wisconsin, U.S.A., worked on restoring wildlife habitats for more than 40 years. Independently and with assistance from some of the U.S. government programs listed below, he restored grasslands and wetlands



on farmlands he purchased, and then sold them to other conservationists, who have preserved these wildlife habitats. Dick and his partners (Emory, King, Koch, Schallert and Tiefenthaler) allowed BWB-ASF staff to live rent-free in a house at the Rosendale, Wisconsin, site, which also was used to plan and carry out the research.

The following are some of the landownerassistance programs available in the U.S.A. that help private (non-governmental) landowners preserve, enhance, and restore wildlife habitat on their land. All are voluntary. Could programs like these be implemented in Belize?

U.S. FISH AND WILDLIFE SERVICE

(http://www.fws.gov/partners/):

Partners for Fish and Wildlife:

This program offers technical and financial assistance to private landowners to voluntarily restore wetlands and other fish and wildlife habitats on

U.S. GOVERNMENT LANDOWNER ASSISTANCE PROGRAMS (CONTINUED)

their land. The landowner is reimbursed based on a cost-sharing formula. The landowners agree to retain the restoration projects for the length of the agreement, but otherwise retain full control of their land.

USDA NATURAL RESOURCES CONSERVATION SERVICE

(http://www.nrcs.usda.gov/programs/):

Wetlands Reserve Program:

This program helps private landowners restore wetlands that were altered previously for agricultural use. Assistance is provided for restoration and wildlife habitat establishment on lands that can be restored to wetlands. Landowners may restore wetlands with permanent easements (are paid up to 100% of agricultural value of the land and 100% of restoration cost), 30-year easements (are paid up to 75% of the agricultural value of the land and 75% of restoration cost), or restoration contracts (are paid 75% of restoration cost). Easements do set limits on future use of restored land, but public access to the land is not required.

Wildlife Habitat Incentives Program:

This program is designed to develop and improve fish and wildlife habitat on privately owned land through prairie and savanna restoration and establishment, seeding of warm-season grasses, fencing, creation of in-stream fish structures, livestock exclusion, and related practices. Almost any type of land is eligible. Applications are funded based on compatibility with the statewide program. Landowners agree to maintain practices for 5-10 years, or at a higher level of cost-sharing for 15 years.

Conservation Reserve Program and Conservation Reserve Enhancement Program:

These programs assist landowners who plant vegetative cover on cropland (or pasture adjacent to surface water) by paying them annual rental payments throughout the contract period. For conservation practices, cost-sharing as well as other incentives are provided. Annual rental payments are provided based on the local land rental rates. Management practices include tree planting, grass cover, small wetland restoration, prairie and oak-savanna restoration and others. Land eligibility varies by soil type and crop history. Contracts last 10-15

years and can be transferred with a change in ownership.

Environmental Quality Incentives Program:

This program provides technical and financial help to agricultural producers for conservation practices that protect soil and water quality. Agricultural producers on agricultural lands are eligible. Many practices are available for cost-sharing and projects are selected based on their environmental value. Agricultural producers may be eligible for up to 75% cost-sharing, up to \$450,000 per producer for the life of the Federal Farm Bill.

Grassland Reserve Program:

This program helps restore and protect grassland while allowing its use as grazing land. Owners of at least 40 contiguous acres are eligible for several options: permanent easements (payment is fair market value of the property minus the grassland value), 30-year easements (payment is 30% of what would be paid for a permanent easement), rental agreements of 10-, 15-, 20- or 30-year duration (payment is based on nationally developed grazing rates by county). Restoration agreements are also available where 75%-90% of the costs are provided depending on whether or not the land has been previously cropped.

Conservation Security Program:

Farmers who meet the highest standards of conservation and environmental management on their farm operations are rewarded for their good land stewardship. They receive annual payments based on their level of stewardship, through a 5-10 year contract.

APPENDIX 1. LISTS OF BIRD NAMES

A single bird is often known by more than one name. All birds have a scientific name (Latin name), consisting of a genus and a species, that is usually printed in italics. All scientists worldwide use the same scientific name to refer to each bird species. There are also English common names and Spanish common names (Howell and Webb 1995) for many bird species. In Belize, birds also

can have a Creole name, a local Spanish name, a K'ekchi or Mopan Mayan name or an archaic or colloquial name (Jones 2003). Following are tables (in alphabetical order) listing the different names used to refer to the birds of Belize. In this manual, each time a bird is mentioned, we list its English common name, scientific name and Creole name.

APPENDIX 1A. CREOLE NAMES (IN ALPHABETICAL ORDER, FROM JONES 2003)

REOLE NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Bamboo Cracker	Yellow-billed Cacique (Amblycercus holosericeus)	17
Banana Bird	Baltimore Oriole (Icterus galbula), Black-cowled Oriole (Icterus prosthemelas),	
	Hooded Oriole (Icterus culcullatus), Orchard Oriole (Icterus spurius),	
	Yellow-backed Oriole (Icterus chrysater), Yellow-tailed Oriole (Icterus mesomelas)	13, 17
Barking Gaulin	Bare-throated Tiger-Heron (<i>Tigrisoma mexicanum</i>)	
Bawley	Little Tinamou (Crypturellus soui)	
Belizean Bill Bird	Keel-billed Toucan (Ramphastos sulfuratus)	5, 31
Big-bill Pillis	Keel-billed Toucan (Ramphastos sulfuratus)	5, 31
Billy Hawk	Osprey (Pandion haliaetus)	
Blackbird	Great-tailed Grackle (Quiscalus mexicanus), Melodious Blackbird (Dives dives)	30
Blue Dove	Blue Ground-Dove (Claravis pretiosa)	37
Blue Gaulin	Great Blue Heron (Ardea herodias), Little Blue Heron (Egretta caerulea)	32
Blue Jacket	Agami Heron (Agamia agami)	
Blue Piam-piam	Yucatan Jay (Cyanocorax yucatanicus)	
Blue Pigeon	Pale-vented Pigeon (Patagioenas cayennensis)	14
Bluebird	Blue-gray Tanager (<i>Th</i> rαupis episcopus)	13
Blue-foot Partridge	Great Tinamou (<i>Tinamus major</i>)	
Bob-white	Eastern Meadowlark (Sturnella magna)	
Brown Cusco	Clay-colored Robin (Turdus grayi)	14
Carasow	Great Curassow (Crax rubra)	70
Carasow/Curassow Hawk	Ornate Hawk-Eagle (Spizaetus ornatus)	
Carpenter	Golden-fronted Woodpecker (Melanerpes aurifrons),	
	Little Blue Heron (Egretta caerulea)	
Chestnut Hawk	Black-collared Hawk (Busarellus nigricollis)	
Chicken Hawk	Common Black-Hawk (Buteogallus anthracinus),	
	Great Black-Hawk (Buteogallus urubitinga), Roadside Hawk (Buteo magnirostris)	
Christmas Bird	Tree Swallow (Tachycineta bicolor)	
Cling-cling	Green Jay (Cyanocorax yncas)	
Clucking Hen	Limpkin (Aramus guarauna)	
Coco	White Ibis (Eudocimus albus)	
Cocoli	Gray-necked Wood-Rail (Arαmides cαjαneα)	
Cocrico	Plain Chachalaca (Ortalis vetula)	17
Cohune Popper	White-collared Manakin (Μαπαcus candei)	47
Congo Bird	Spotted Wood-Quail (Odontophorus guttatus)	
Cooper	Boat-billed Heron (Cochlearius cochlearius)	67
Corn Kiti	White-fronted Parrot (Amazona albifrons), Yellow-lored Parrot (Amazona xantholora)	
Corn-eater	White-fronted Parrot (Amazona albifrons), Yellow-lored Parrot (Amazona xantholora)	
Cowboy Blackbird	Groove-billed Ani (Crotophaga sulcirostris)	
Crab Hawk	Common Black-Hawk (Buteogallus anthracinus)	
Diving Dopper	Least Grebe (Tachybaptus dominicus)	
Doctor John Crow	Turkey Vulture (Cathartes aura)	4

REOLE NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	ON PAGE
Dodging Bull	Ruddy Crake (Laterallus ruber)	
Duck	Blue-winged Teal (Anαs discors)	
Father Red-cap	Lineated Woodpecker (Dryocopus lineatus),	
	Pale-billed Woodpecker (Campephilus guatemalensis)	65
Fillymingo	Jabiru (Jαbiru mycteriα)	63
Fishing Hawk	Black-collared Hawk (Busarellus nigricollis), Osprey (Pandion haliaetus)	
Georgie Bull	Northern Jacana (Jacana spinosa)	67
Good Cook	Blue-crowned Motmot (Momotus momota)	46
Grassy Bird	White-collared Seedeater (Sporophilia torqueola)	34
Ground Pigeon	Gray-chested Dove (Leptotilα cαssini),	
	Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)],	
	White-tipped Dove (Leptotila verreauxi)	46
Guaco	Laughing Falcon (Herpetotheres cachinnans)	65
Ноо-уоо	Common Pauraque (Nyctidromus albicollis)	
John Crow	Black Vulture (Coragyps atratus), Lesser Yellow-headed Vulture (Cathartes burrovianus)	4, 35
John Crow Culu/Curlew	Wood Stork (Mycteria americana)	67
John Smith Kill a Bird	Grayish Saltator (Saltator coerulescens)	
Katy-yu-baby-di-cry	Spot-breasted Wren (Thryothorus maculipectus)	44
King Carpenter	Yellow-crowned Night Heron (Nyctanassa violacea)	67
King John Crow	King Vulture (Sarcoramphus papa)	
Kiskadee	Boat-billed Flycatcher (Megarynchus pitangua),	
	Great Kiskadee (Pitangus sulphuratus), Social Flycatcher (Myiozetetes similis)	44
Lion Hawk	Bat Falcon (Falco rufigularis)	
Mangro Parrot	Red-lored Parrot (Amazona autumnalis)	13
Monkey Bird	Barn Owl (Tyto alba), Vermiculated Screech-Owl (Megascops guatemalae)	
Mountain Pigeon	Scaled Pigeon (Patagioenas speciosa)	
Nancy Swasey	Red-winged Blackbird (Agelaius phoeniceus)	
Nightingale	Tropical Mockingbird (Mimus gilvus)	13
Partridge	Thicket Tinamou (Crypturellus cinnamomeus)	
Pepper Bird	Hepatic Tanager (Piranga flava)	
Pe-quam	Squirrel Cuckoo (Piaya cayana)	
Piam-piam	Brown Jay (Cyαnocorαx morio)	12
Pilikin	Brown Pelican (Pelecanus occidentalis)	
Pillis	Collared Aracari (Pteroglossus torquatus)	12, 16
Pink Gaulin	Roseate Spoonbill (Platalea ajaja)	
Poor Joe	Green Heron (Butorides virescens)	
Quail	Black-throated Bobwhite (Colinus nigrogularis), Ruddy Quail-Dove (Geotrygon montana)	
Quam	Crested Guan (Penelope purpurascens)	12
Ramatatu	Black-headed Trogon (Trogon melanocephalus), Slaty-tailed Trogon (Trogon massena),	
	Violaceous Trogon (Trogon violαceus)	15, 38
Red Mangrove Pigeon	Pale-vented Pigeon (Patagioenas cayennensis)	14
Red-footed Partridge	Slaty-breasted Tinamou (Crypturellus boucαrdi)	
Rice Bird	Blue Bunting (Cyanocompsa parellina)	46
Rice Eater	Blue-black Grassquit (Volatinia jacarina)	
Ricey	White-collared Seedeater (Sporophilia torqueola)	34
Robin Redbreast	Vermilion Flycatcher (Pyrocephalus rubinus)	31
Scissors Tail	Magnificent Frigatebird (Fregata magnificens)	62
Scissors-tail	Fork-tailed Flycatcher (Tyrannus savana)	34
Scissors-tail Hawk	Swallow-tailed Kite (Elanoides forficatus)	
Screech Owl	Ferruginous Pygmy-Owl (Glaucidium brasilianum), Mottled Owl (Ciccaba virgata)	65
Shag	Neotropic Cormorant (Phalacrocorax brasilianus)	
Shaky Batty/Body	Spotted Sandpiper (Actitis macularius)	62
Sheg	Neotropic Cormorant (Phalacrocorax brasilianus)	
Six-month Bird	Northern Potoo (Nyctibius jamaicensis)	

CREOLE NAME	LE NAME ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	
Soldier Bird	Red-winged Blackbird (Agelαius phoeniceus)	
Spoon-bill Carpenter	Boat-billed Heron (Cochlearius cochlearius)	67
Tick Bird	Giant Cowbird (Molothrus oryzivorus)	
Toby Full Pot	Great Blue Heron (Ardeα herodias)	32
Top-na-chick	Gray-necked Wood-Rail (Aramides cajanea)	
Turk	Jabiru (Jabiru mycteria)	63
Turtle Dove	Plain-breasted Ground-Dove (Columbina minuta),	
	Ruddy Ground-Dove (Columbina talpacoti)	34
Wari Tick Blackbird	Groove-billed Ani (Crotophaga sulcirostris)	
Watch-out Parrot	Mealy Parrot (Amazonα farinosα)	
Welk's Hawk	Snail Kite (Rostrhamus sociabilis)	
Whistling Duck	Black-bellied Whistling-Duck (Dendrocygna autumnalis)	
White Culu/Curlew	White Ibis (Eudocimus albus)	
White Gaulin	Cattle Egret (Bubulcus ibis), Great Egret (Ardea alba), Snowy Egret (Egretta thula)	32, 67
White Woodpecker	Masked Tityra (Tityra semifasciαta)	21
Wood-lice Kiti	Olive-throated Parakeet (Aratinga nana)	
Yellow-head	Yellow-headed Parrot (Amazonα oratrix)	35
Yellow-tail	Montezuma Oropendola (Psarocolius montezuma)	13

APPENDIX 1B. ENGLISH AND SCIENTIFIC NAMES (IN EVOLUTIONARY ORDER, FROM AOU 2005)

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
TINAMOUS - TINAMIDAE		
Great Tinamou	Tinamus major	
Little Tinamou	Crypturellus soui	
Thicket Tinamou	Crypturellus cinnamomeus	
Slaty-breasted Tinamou	Crypturellus boucardi	
SWANS, GEESE & DUCKS - ANATIDAE		
Black-bellied Whistling-Duck	Dendrocygna autumnalis	
Muscovy Duck	Cairina moschata	
Blue-winged Teal	Anas discors	
CURASSOWS & GUANS - CRACIDAE		
Plain Chachalaca	Ortalis vetula	17
Crested Guan	Penelope purpurascens	12
Great Curassow	Crax rubra	70
NEW WORLD QUAIL - ODONTOPHORIDAE		
Black-throated Bobwhite	Colinus nigrogularis	
Spotted Wood-Quail	Odontophorus guttatus	
Singing Quail	Dactylortyx thoracicus	
GREBES - PODICIPEDIDAE		
Least Grebe	Tachybaptus dominicus	
PELICANS - PELECANIDAE		
Brown Pelican	Pelecanus occidentalis	
CORMORANTS - PHALACROCORACIDAE		
Neotropic Cormorant	Phalacrocorax brasilianus	
ANHINGAS - ANHINGIDAE		
Anhinga	Anhinga anhinga	
FRIGATEBIRDS - FREGATIDAE		
Magnificent Frigatebird	Fregata magnificens	62
BITTERNS & HERONS - ARDEIDAE		
Bare-throated Tiger-Heron	Tigrisoma mexicanum	
Great Blue Heron	Ardea herodias	32
Great Egret	Ardea alba	32
Snowy Egret	Egretta thula	67

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
BITTERNS & HERONS - ARDEIDAE (CONTINUED)		
Little Blue Heron	Egretta caerulea	! !
Cattle Egret	Bubulcus ibis	
Green Heron	Butorides virescens	
Agami Heron	Agamia agami	
Black-crowned Night Heron	Nycticorax nycticorax	
Yellow-crowned Night Heron	Nyctanassa violacea	67
Boat-billed Heron	Cochlearius cochlearius	67
IBISES & SPOONBILLS - THRESKIORNITHIDAE		
White Ibis	Eudocimus albus	
Roseate Spoonbill	Platalea ajaja	
STORKS - CICONIIDAE		
Jabiru	Jabiru mycteria	63
Wood Stork	Mycteria americana	67
AMERICAN VULTURES - CATHARTIDAE		
Black Vulture	Coragyps atratus	4, 35
Turkey Vulture	Cathartes aura	4
Lesser Yellow-headed Vulture	Cathartes burrovianus	<u></u>
King Vulture	Sarcoramphus papa	
KITES, EAGLES, HAWKS & ALLIES - ACCIPITRIDAE		
Osprey	Pandion haliaetus	
Gray-headed Kite	Leptodon cayanensis	
Hook-billed Kite	Chondrohierax uncinatus	
Swallow-tailed Kite	Elanoides forficatus	
White-tailed Kite	Elanus leucurus	
Snail Kite	Rostrhamus sociabilis	
Double-toothed Kite	Harpagus bidentatus	
Plumbeous Kite	Ictinia plumbea	
Black-collared Hawk	Busarellus nigricollis	
White Hawk	Leucopternis albicollis	46
Gray Hawk	Asturina nitida (plagiata)	
Common Black-Hawk	Buteogallus anthracinus	
Great Black-Hawk	Buteogallus urubitinga	
Roadside Hawk	Buteo magnirostris	4
Short-tailed Hawk	Buteo brachyurus	4
White-tailed Hawk	Buteo brachgurus Buteo albicaudatus	
Zone-tailed Hawk	Buteo albonotatus	
Zone-tailed Hawk Black Hawk-Eagle		
Ornate Hawk-Eagle	Spizaetus tyrannus	
CARACARAS & FALCONS - FALCONIDAE	Spizaetus ornatus	
Barred Forest-Falcon	Ndiamakum mifia allia	
Collared Forest-Falcon	Microstur ruficollis	
	Micrastur semitorquatus	/ -
Laughing Falcon	Herpetotheres cachinnans	65
American Kestrel	Falco sparverius	
Aplomado Falcon	Falco femoralis	
Bat Falcon	Falco rufigularis	
RAILS, GALLINULES, & COOTS - RALLIDAE	1t	
Ruddy Crake	Laterallus ruber	
Gray-necked Wood-Rail	Aramides cajanea	
Purple Gallinule	Porphyrio martinica	67
American Coot	Fulica americana	
SUNGREBES - HELIORNITHIDAE		
Sungrebe	Heliornis fulica	
LIMPKINS - ARAMIDAE	Aramus guarauna	

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
PLOVERS - CHARADRIIDAE		
Killdeer	Charadrius vociferus	
JACANAS - JACANIDAE		
Northern Jacana	Jacana spinosa	67
SANDPIPERS & ALLIES - SCOLOPACIDAE		
Solitary Sandpiper	Tringa solitaria	
Spotted Sandpiper	Actitis macularius	62
Common Snipe	Gallinago gallinago	
PIGEONS & DOVES - COLUMBIDAE		
Pale-vented Pigeon	Patagioenas cayennensis	14
Scaled Pigeon	Patagioenas speciosa	
Red-billed Pigeon	Patagioenas flavirostris	
Short-billed Pigeon	Patagioenas nigrirostris	
Mourning Dove	Zenaida macroura	
Plain-breasted Ground-Dove	Columbina minuta	
Ruddy Ground-Dove	Columbina talpacoti	34
Blue Ground-Dove	Claravis pretiosa	37
White-tipped Dove	Leptotila verreauxi	
Gray-fronted Dove	Leptotila rufaxilla (plumbeiceps)	
Gray-chested Dove	Leptotila cassini	46
Ruddy Quail-Dove	Geotrygon montana	
PARROTS - PSITTACIDAE	99	
Olive-throated Parakeet	Aratinga nana	
Brown-hooded Parrot	Pionopsitta haematotis	
White-crowned Parrot	Pionus senilis	
White-fronted Parrot	Amazona albifrons	
Yellow-lored Parrot	Amazona xantholora	
Red-lored Parrot	Amazona autumnalis	13
Mealy Parrot	Amazona datammans Amazona farinosa	19
Yellow-headed Parrot	Amazona oratrix	35
CUCKOOS & ALLIES - CUCULIDAE	Amazona oramx	33
Mangrove Cuckoo	Coccyzus minor	
Squirrel Cuckoo		
	Piaya cayana	
Striped Cuckoo	Tapera naevia	
Pheasant Cuckoo	Dromococcyx phasianellus	
Groove-billed Ani BARN OWLS - TYTONIDAE	Crotophaga sulcirostris	
Barn Owl	Tyto alba	
TYPICAL OWLS - STRIGIDAE		
Vermiculated Screech-Owl	Megascops guatemalae	
Central American Pygmy-Owl	Glaucidium griseiceps	
Ferruginous Pygmy-Owl	Glaucidium brasilianum	65
Mottled Owl	Ciccaba virgata	
Striped Owl	Pseudoscops clamator	
GOATSUCKERS - CAPRIMULGIDAE		
Lesser Nighthawk	Chordeiles acutipennis	
Common Nighthawk	Chordeiles minor	
Common Pauraque	Nyctidromus albicollis	
Yucatan Nightjar	Caprimulgus badius	
POTOOS - NYCTIBIIDAE		
Northern Potoo	Nyctibius jamaicensis	
SWIFTS - APODIDAE		
White-collared Swift	Streptoprocne zonaris	
Chimney Swift	Chaetura pelagica	
Vaux's Swift	Chaetura vauxi	
Lesser Swallow-tailed Swift	Panyptila cayennensis	

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
HUMMINGBIRDS - TROCHILIDAE		
Long-billed (Long-tailed) Hermit	Phaethornis longirostris	16
Stripe-throated (Little) Hermit	Phaethornis striigularis	16
Scaly-breasted Hummingbird	Phaeochroa cuvieri	
Wedge-tailed Sabrewing	Campylopterus curvipennis	
White-necked Jacobin	Florisuga mellivora	
Green-breasted Mango	Anthracothorax prevostii	
Canivet's Emerald	Chlorostilbon canivetii	
White-bellied Emerald	Amazilia candida	16
Azure-crowned Hummingbird	Amazilia cyanocephala	
Rufous-tailed Hummingbird	Amazilia tzacatl	5, 16
Buff-bellied Hummingbird	Amazilia yucatanensis	
Cinnamon Hummingbird	Amazilia rutila	
Purple-crowned Fairy	Heliothryx barroti	
Long-billed Starthroat	Heliomaster longirostris	
Ruby-throated Hummingbird	Archilochus colubris	4
FROGONS - TROGONIDAE		
Black-headed Trogon	Trogon melanocephalus	15
Violaceous Trogon	Trogon violaceus	38
Slaty-tailed Trogon	Trogon massena	
MOTMOTS - MOMOTIDAE		
Tody Motmot	Hylomanes momotula	47
Blue-crowned Motmot	Momotus momota	46
(INGFISHERS - ALCEDINIDAE		
Ringed Kingfisher	Ceryle torquatus	
Belted Kingfisher	Ceryle alcyon	
Amazon Kingfisher	Chloroceryle amazona	
Green Kingfisher	Chloroceryle americana	
American Pygmy Kingfisher	Chloroceryle aenea	67
PUFFBIRDS - BUCCONIDAE		
White-necked Puffbird	Notharchus macrorhynchos	
JACAMARS - GALBULIDAE		
Rufous-tailed Jacamar	Galbula ruficauda	37
TOUCANS - RAMPHASTIDAE		
Emerald Toucanet	Aulacorhynchus prasinus	65
Collared Aracari	Pteroglossus torquatus	12, 16
Keel-billed Toucan	Ramphastos sulfuratus	5, 31
VOODPECKERS - PICIDAE		
Acorn Woodpecker	Melanerpes formicivorus	
Black-cheeked Woodpecker	Melanerpes pucherani	
Red-vented Woodpecker	Melanerpes pygmaeus	
Golden-fronted Woodpecker	Melanerpes aurifrons	18
Yellow-bellied Sapsucker	Sphyrapicus varius	
Ladder-backed Woodpecker	Picoides scalaris	
Smoky-brown Woodpecker	Veniliornis fumigatus	38
Golden-olive Woodpecker	Piculus rubiginosus	
Chestnut-colored Woodpecker	Celeus castaneus	
Lineated Woodpecker	Dryocopus lineatus	
Pale-billed Woodpecker	Campephilus guatemalensis	65
DVENBIRDS - FURNARIIDAE	Campephilias gualemalensis	
Rufous-breasted Spinetail	Synallaxis erythrothorax	37
Plain Xenops Scaly-throated Leaftosser	Xenops minutus Sclerurus guatemalensis	

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
WOODCREEPERS - DENDROCOLAPTIDAE		
Tawny-winged Woodcreeper	Dendrocincla anabatina	
Ruddy Woodcreeper	Dendrocincla homochroa	
Olivaceous Woodcreeper	Sittasomus griseicapillus	
Wedge-billed Woodcreeper	Glyphorynchus spirurus	47
Northern Barred-Woodcreeper	Dendrocolaptes sanctithomae	
lvory-billed Woodcreeper	Xiphorhynchus flavigaster	46
Streak-headed Woodcreeper	Lepidocolaptes souleyetii	
ANTBIRDS - THAMNOPHILIDAE		
Great Antshrike	Taraba major	37
Barred Antshrike	Thamnophilus doliatus	38
Dusky Antbird	Cercomacra tyrannina	38
ANTTHRUSHES - FORMICARIIDAE		
Black-faced Antthrush	Formicarius analis (moniliger)	65
YRANT FLYCATCHERS - TYRANNIDAE		
Tyrannulets and Elaenias - Elaeniinae		
Yellow-bellied Tyrannulet	Ornithion semiflavum	
Northern Beardless-Tyrannulet	Camptostoma imberbe	
Greenish Elaenia	Myiopagis viridicata	
Yellow-bellied Elaenia	Elaenia flavogaster	
Ochre-bellied Flycatcher	Mionectes oleagineus	16
Sepia-capped Flycatcher	Leptopogon amaurocephalus	38
ODY-TYRANTS & FLATBILLS - PLATYRINCHINAE		
Northern Bentbill	Oncostoma cinereigulare	
Slate-headed Tody-Flycatcher	Poecilotriccus sylvia	47
Common Tody-Flycatcher	Todirostrum cinereum	44
Eye-ringed Flatbill	Rhynchocyclus brevirostris	
Yellow-olive Flycatcher	Tolmomyias sulphurescens	
Stub-tailed Spadebill	Platyrinchus cancrominus	
LUVICOLINE FLYCATCHERS - FLUVICOLINAE	. tategrand dants continue	
Royal Flycatcher	Onychorhynchus coronatus	38
Sulphur-rumped Flycatcher	Myiobius sulphureipygius	
Eastern Wood-Pewee	Contopus virens	
Tropical Pewee	Contopus cinereus	
Yellow-bellied Flycatcher	Empidonax flaviventris	
White-throated Flycatcher	Empidonax albigularis	
Least Flycatcher	Empidonax dibiguiaris Empidonax minimus	
Black Phoebe		
	Sayornis nigricans	71
Vermilion Flycatcher	Pyrocephalus rubinus	31
TYRANNINE FLYCATCHERS - TYRANNINAE	Aud	01
Bright-rumped Attila	Attila spadiceus	21
Yucatan Flycatcher	Myiarchus yucatanensis	
Dusky-capped Flycatcher	Myiarchus tuberculifer	
Great Crested Flycatcher	Myiarchus crinitus	
Brown-crested Flycatcher	Myiarchus tyrannulus	65
Great Kiskadee	Pitangus sulphuratus	44
Boat-billed Flycatcher	Megarynchus pitangua	
Social Flycatcher	Myiozetetes similis	
Streaked Flycatcher	Myiodynastes maculatus	
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	
Piratic Flycatcher	Legatus leucophaius	
Tropical Kingbird	Tyrannus melancholicus	34
Couch's Kingbird	Tyrannus couchii	
Eastern Kingbird	Tyrannus tyrannus	
Fork-tailed Flycatcher	Tyrannus savana	34

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
FITYRAS AND BECARDS - GENERA INCERTAE SEDIS		
Thrush-like Schiffornis	Schiffornis turdina	
White-winged Becard	Pachyramphus polychopterus	
Gray-collared Becard	Pachyramphus major	
Rose-throated Becard	Pachyramphus aglaiae	
Masked Tityra	Tityra semifasciata	21
Black-crowned Tityra	Tityra inquisitor	
MANAKINS - PIPRIDAE		
White-collared Manakin	Manacus candei	47
Red-capped Manakin	Pipra mentalis	15
VIREOS - VIREONIDAE		
White-eyed Vireo	Vireo griseus	21
Mangrove Vireo	Vireo pallens (semiflavus)	34
Yellow-throated Vireo	Vireo flavifrons	
Red-eyed Vireo	Vireo olivaceus	
Yellow-green Vireo	Vireo flavoviridis	
Tawny-crowned Greenlet	Hylophilus ochraceiceps	
Lesser Greenlet	Hylophilus decurtatus	
Rufous-browed Peppershrike	Cyclarhis gujanensis	
JAYS - CORVIDAE		
Green Jay	Cyanocorax yncas	
Brown Jay	Cyanocorax morio	12
Yucatan Jay	Cyanocorax yucatanicus	
SWALLOWS - HIRUNDINIDAE		
Purple Martin	Progne subis	
Gray-breasted Martin	Progne chalybea	65
Tree Swallow	Tachycineta bicolor	35
Mangrove Swallow	Tachycineta albilinea	65
Northern Rough-winged Swallow	Stelgidopteryx serripennis	65
Ridgeway Rough-winged Swallow		
Barn Swallow	Hirundo rustica	
WRENS - TROGLODYTIDAE		
Band-backed Wren	Campylorhynchus zonatus	
Spot-breasted Wren	Thryothorus maculipectus	44
Carolina Wren	Thryothorus ludovicianus	
House Wren	Troglodytes aedon	65
White-bellied Wren	Uropsila leucogastra	
White-breasted Wood-Wren	Henicorhina leucosticta	
GNATCATCHERS - SYLVIIDAE		
Long-billed Gnatwren	Ramphocaenus melanurus	
Blue-gray Gnatcatcher	Polioptila caerulea	35
Tropical Gnatcatcher	Polioptila plumbea	
SOLITAIRES, THRUSHES & ALLIES - TURDIDAE		
Veery	Catharus fuscescens	
Gray-cheeked Thrush	Catharus minimus	
Swainson's Thrush	Catharus ustulatus	
Wood Thrush	Hylocichla mustelina	37
Clay-colored Robin	Turdus grayi	14
White-throated Robin	Turdus gragi Turdus assimilis	
MOCKINGBIRDS, THRASHERS, & ALLIES - MIMIDAE		
Gray Catbird	Dumetella carolinensis	13
Black Catbird	Melanoptila glabirostris	62
Disco. Cathird	, retarioptita gianii osti is	

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS) WOOD WARBLERS - PARULIDAE	SCIENTIFIC NAME	PHOTO ON PAGI
	Variation in the second	
Blue-winged Warbler Tennessee Warbler	Vermivora pinus	4
	Vermivora peregrina Vermivora celata	4
Orange-crowned Warbler Nashville Warbler		
	Vermivora ruficapilla	
Northern Parula	Parula americana	
Yellow Warbler	Dendroica petechia	
Chestnut-sided Warbler	Dendroica pensylvanica	
Magnolia Warbler	Dendroica magnolia	17
Yellow-rumped Warbler	Dendroica coronata	
Black-throated Green Warbler	Dendroica virens	47
Blackburnian Warbler	Dendroica fusca	
Yellow-throated Warbler	Dendroica dominica	
Grace's Warbler	Dendroica graciae	
Bay-breasted Warbler	Dendroica castanea	
Black-and-white Warbler	Mniotilta varia	44
American Redstart	Setophaga ruticilla	18
Prothonotary Warbler	Protonotaria citrea	
Worm-eating Warbler	Helmitheros vermivorum	37
Swainson's Warbler	Limnothlypis swainsonii	
Ovenbird	Seiurus aurocapilla	47
Northern Waterthrush	Seiurus noveboracensis	37
Louisiana Waterthrush	Seiurus motacilla	
Kentucky Warbler	Oporornis formosus	38
Common Yellowthroat	Geothlypis trichas	18
Gray-crowned Yellowthroat	Geothlypis poliocephala	
Hooded Warbler	Wilsonia citrina	46
Golden-crowned Warbler	Basileuterus culicivorus	
Yellow-breasted Chat	Icteria virens	13
Gray-throated Chat	Granatellus sallaei	47
BANANAQUITS - COEREBIDAE	Ordridtends sunder	4/
	Coorda flavoola	
Bananaquit ANAGERS - THRAUPIDAE	Coereba flaveola	
	F 1: : : !! !	4.4
Gray-headed Tanager	Eucometis penicillata	44
Black-throated Shrike-Tanager	Lanio aurantius	
Red-crowned Ant-Tanager	Habia rubica	
Red-throated Ant-Tanager	Habia fuscicauda	4
Rose-throated Tanager	Piranga roseogularis	
Hepatic Tanager	Piranga flava	
Summer Tanager	Piranga rubra	
Scarlet Tanager	Piranga olivacea	46
Crimson-collared Tanager	Ramphocelus sanguinolentus	22
Passerini's Tanager	Ramphocelus passerinii	
Blue-gray Tanager	Thraupis episcopus	13
Yellow-winged Tanager	Thraupis abbas	12
Red-legged Honeycreeper	Cyanerpes cyaneus	13
MBERIZINES - EMBERIZIDAE		
Blue-black Grassquit	Volatinia jacarina	
Variable Seedeater	Sporophila americana	
White-collared Seedeater	Sporophilia torqueola	34
Thick-billed Seed-Finch	Oryzoborus funereus	1
Blue Seedeater	Amaurospiza concolor	36
Yellow-faced Grassquit	Tiaris olivaceus	
Grassland Yellow-Finch	Sicalis luteola	·
Grassiand Yellow-Finch Orange-billed Sparrow	Arremon aurantiirostris	

ENGLISH COMMON NAME (BIRD FAMILIES IN CAPITAL LETTERS)	SCIENTIFIC NAME	PHOTO ON PAGE
EMBERIZINES - EMBERIZIDAE (CONTINUED)		
Olive Sparrow	Arremonops rufivirgatus	
Green-backed Sparrow	Arremonops chloronotus	34
Chipping Sparrow	Spizella passerina	
Savannah Sparrow	Passerculus sandwichensis	
Grasshopper Sparrow	Ammodramus savannarum	
CARDINALS & ALLIES - CARDINALIDAE		
Grayish Saltator	Saltator coerulescens	
Buff-throated Saltator	Saltator maximus	
Black-headed Saltator	Saltator atriceps	
Black-faced Grosbeak	Caryothraustes poliogaster	
Northern Cardinal	Cardinalis cardinalis	46
Rose-breasted Grosbeak	Pheucticus ludovicianus	
Blue-black Grosbeak	Cyanocompsa cyanoides	14
Blue Bunting	Cyanocompsa parellina	46
Blue Grosbeak	Passerina caerulea	
Indigo Bunting	Passerina cyanea	21
Painted Bunting	Passerina ciris	
Dickcissel	Spiza americana	35
BLACKBIRDS & ALLIES - ICTERIDAE		
Red-winged Blackbird	Agelaius phoeniceus	
Eastern Meadowlark	Sturnella magna	
Melodious Blackbird	Dives dives	
Great-tailed Grackle	Quiscalus mexicanus	30
Bronzed Cowbird	Molothrus aeneus	
Giant Cowbird	Molothrus oryzivorus	
Black-cowled Oriole	Icterus prosthemelas	13
Orchard Oriole	lcterus spurius	17
Hooded Oriole	Icterus culcullatus	
Yellow-backed Oriole	lcterus chrysater	
Yellow-tailed Oriole	lcterus mesomelas	
Baltimore Oriole	Icterus galbula	13
Yellow-billed Cacique	Amblycercus holosericeus	17
Montezuma Oropendola	Psarocolius montezuma	13
FINCHES & EUPHONIAS - FRINGILLIDAE		
Scrub Euphonia	Euphonia affinis	
Yellow-throated Euphonia	Euphonia hirundinacea	12
Olive-backed Euphonia	Euphonia gouldi	

APPENDIX 1C. SPANISH COMMON NAMES (IN ALPHABETICAL ORDER, FROM HOWELL AND WEBB 1995)

COMMON SPANISH NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	Рното on page
Agachona Común	Common Snipe (Gallinago gallinago)	
Aguila Elegante	Ornate Hawk-Eagle (Spizαetus ornαtus)	
Aguila Tirana	Black Hawk-Eagle (Spizaetus tyrannus)	
Aguililla Aura	Zone-tailed Hawk (Buteo albonotatus)	
Aguililla Blanca	White Hawk (Leucopternis albicollis)	46
Aguililla Caminera	Roadside Hawk (Buteo magnirostris)	4
Aguililla Canela	Black-collared Hawk (Busarellus nigricollis)	
Aguililla Coliblanca	White-tailed Hawk (Buteo αlbicαudαtus)	
Aguililla Colicorta	Short-tailed Hawk (Buteo brachyurus)	
Aguililla Gris	Gray Hawk [Asturina nitida (plagiata)]	
Aguililla Negra Mayor	Great Black-Hawk (Buteogαllus urubitingα)	
Aguililla Negra Menor	Common Black-Hawk (Buteogallus anthracinus)	

COMMON SPANISH NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Anhinga Americana	Anhinga (Anhinga anhinga)	
arrocero Americano	Dickcissel (Spiza americana)	35
tila Rabadilla-brillante	Bright-rumped Attila (<i>Attila spadiceus</i>)	21
ura Cabecirroja	Turkey Vulture (Cathartes aura)	4
ura Sabanera	Lesser Yellow-headed Vulture (Cathartes burrovianus)	
atará Barrada	Barred Antshrike (Thamnophilus doliatus)	38
atará Mayor	Great Antshrike (Taraba major)	37
iemparado Norteño	Northern Potoo (Nyctibius jamaicensis)	
olsero Capucha-negra	Black-cowled Oriole (Icterus prosthemelas)	13
olsero Castaño	Orchard Oriole (Icterus spurius)	17
olsero Coliamarillo	Yellow-tailed Oriole (Icterus mesomelas)	
olsero Culculado	Hooded Oriole (Icterus culcullatus)	
olsero de Baltimore	Baltimore Oriole (Icterus galbula)	13
olsero Dorsidorado	Yellow-backed Oriole (Icterus chrysater)	
uco Collarejo	White-necked Puffbird (Notharchus macrorhynchos)	
úho Café	Mottled Owl (Ciccaba virgata)	
úho-cornudo Cariblanco	Striped Owl (Pseudoscops clamator)	
abezón Aliblanco	White-winged Becard (Pachyramphus polychopterus)	
abezón Cuelligris	Gray-collared Becard (Pachyramphus major)	
abezón Degollado	Rose-throated Becard (Pachyramphus aglaiae)	
acique Piquiclaro	Yellow-billed Cacique (Amblycercus holosericeus)	17
arao	Limpkin (Aramus guarauna)	
ardenal Norteño	Northern Cardinal (Cardinalis cardinalis)	46
arpintero Alibronceado	Golden-olive Woodpecker (Piculus rubiginosus)	
arpintero Arlequín	Acorn Woodpecker (Melanerpes formicivorus)	
arpintero Cachetinegro	Black-cheeked Woodpecker (Melanerpes pucherani)	
arpintero Café	Smoky-brown Woodpecker (Veniliornis fumigatus)	38
arpintero Castaño	Chestnut-colored Woodpecker (Celeus castaneus)	
arpintero Frentidorado	Golden-fronted Woodpecker (Melanerpes aurifrons)	18
arpintero Lineado	Lineated Woodpecker (Dryocopus lineatus)	
arpintero Listado	Ladder-backed Woodpecker (Picoides scalaris)	
arpintero Piquiclaro	Pale-billed Woodpecker (Campephilus guatemalensis)	65
arpintero Yucateco	Red-vented Woodpecker (Melanerpes pygmaeus)	
enzontle Sureño	Tropical Mockingbird (Mimus gilvus)	13
erceta Aliazul	Blue-winged Teal (Anas discors)	
ernícalo Americano	American Kestrel (Falco sparverius)	
hachalaca Común	Plain Chachalaca (Ortαlis vetulα)	17
hara Papán	Brown Jay (Cyαnocorαx morio)	12
hara Verde	Green Jay (Cyanocorax yncas)	
hara Yucateca	Yucatan Jay (Cyαnocorαx yucαtαnicus)	
hipe Aliazul	Blue-winged Warbler (Vermivorα pinus)	
hipe Amarillo	Yellow Warbler (Dendroica petechia)	
hipe Corona-dorada	Golden-crowned Warbler (Basileuterus culicivorus)	
hipe Corono-naranja	Orange-crowned Warbler (Vermivora celata)	
hipe de Grace	Grace's Warbler (Dendroica graciae)	
hipe de Kentucky	Kentucky Warbler (Oporornis formosus)	38
hipe de Magnolia	Magnolia Warbler (Dendroicα mαgnoliα)	17
hipe de Nashville	Nashville Warbler (Vermivorα ruficapillα)	
hipe de Swainson	Swainson's Warbler (Limnothlypis swainsonii)	
hipe Dorsiverde	Black-throated Green Warbler (Dendroicα virens)	47
hipe Encapuchado	Hooded Warbler (Wilsoniα citrinα)	46
hipe Flanquicasaño	Chestnut-sided Warbler (Dendroica pensylvanica)	
hipe Gorjiamarillo	Yellow-throated Warbler (Dendroicα dominicα)	
hipe Gorjinaranja	Blackburnian Warbler (Dendroica fusca)	

COMMON SPANISH NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Chipe Gusanero	Worm-eating Warbler (Helmitheros vermivorum)	37
Chipe Pechicastaño	Bay-breasted Warbler (Dendroicα cαstαneα)	
Chipe Peregrino	Tennessee Warbler (Vermivorα peregrinα)	4
Chipe Protonotario	Prothonotary Warbler (Protonotaria citrea)	
Chipe Rabadilla-amarilla	Yellow-rumped Warbler (Dendroicα coronαtα)	
Chipe Trepador	Black-and-white Warbler (Μπιοtiltα ναriα)	44
Chipe-suelero Arroyero	Louisiana Waterthrush (Seiurus motαcillα)	
Chipe-suelero Charquero	Northern Waterthrush (Seiurus noveborαcensis)	37
Chipe-suelero Coronado	Ovenbird (Seiurus aurocapilla)	47
Chorlito Tildío	Killdeer (Charadrius vociferus)	
Chotacabras Mayor	Common Nighthawk (Chordeiles minor)	
Chotacabras Menor	Lesser Nighthawk (Chordeiles acutipennis)	
Chupasavia Vientre-amarillo	Yellow-bellied Sapsucker (Sphyrapicus varius)	
igueña Americana	Wood Stork (Mycteria americana)	67
odorniz Bolanchaco	Spotted Wood-Quail (Odontophorus guttatus)	
odorniz Silbadora	Singing Quail (Dactylortyx thoracicus)	
odorniz-cotui Yucateca	Black-throated Bobwhite (Colinus nigrogularis)	
Colibri Canelo	Cinnamon Hummingbird (Amazilia rutila)	
Colibri Colirrufo	Rufous-tailed Hummingbird (Amazilia tzacatl)	5, 16
Colibri Coroniazul	Azure-crowned Hummingbird (Amazilia cyanocephala)	
Colibri Gorjirrubi	Ruby-throated Hummingbird (Archilochus colubris)	4
Colibri Vientre-canelo	Buff-bellied Hummingbird (Amazilia yucatanensis)	
Colorín Azul	Indigo Bunting (Passerina cyanea)	21
Colorín Azulinegro	Blue Bunting (Cyanocompsa parellina)	46
Colorín Sietecolores	Painted Bunting (Passerina ciris)	
Copetón Tirano	Brown-crested Flycatcher (Myiarchus tyrannulus)	65
Copetón Trieste	Dusky-capped Flycatcher (Myiarchus tuberculifer)	
opetón Viajero	Great Crested Flycatcher (Myiɑrchus crinitus)	
opetón Yucateco	Yucatan Flycatcher (Myiarchus yucatanensis)	
Cormorán Neotropical	Neotropic Cormorant (Phalacrocorax brasilianus)	
uco Ardilla	Squirrel Cuckoo (Piaya cayana)	
Cuco Faisán	Pheasant Cuckoo (Dromococcyx phasianellus)	
Cuco Manglero	Mangrove Cuckoo (Coccyzus minor)	
Cuco Rayado	Striped Cuckoo (Tapera naevia)	
lenia Verdosa	Greenish Elaenia (Myiopagis viridicata)	
lenia Vientre-amarillo	Yellow-bellied Elaenia (Elaenia flavogaster)	
rmitaño Chico	Stripe-throated Hermit (Phaethornis striigularis)	16
rmitaño Colilargo	Long-billed Hermit (Phaethornis longirostris)	16
smerelda de Canivet	Canivet's Emerald (Chlorostilbon canivetii)	
smerelda Vientre-blanco	White-bellied Emerald (Amazilia candida)	16
spátula Rosada	Roseate Spoonbill (Platalea ajaja)	
spatulilla Cabecigris	Slate-headed Tody-Flycatcher (Poecilotriccus sylviα)	47
spatulilla Común	Common Tody-Flycatcher (Todirostrum cinereum)	44
ufonia Gorjiamarillo	Yellow-throated Euphonia (Euphonia hirundinacea)	12
ufonia Gorjinegro	Scrub Euphonia (Euphoniα affinis)	
ufonia Olivácea	Olive-backed Euphonia (Euphoniα gouldi)	
andangero Colicuña	Wedge-tailed Sabrewing (Campylopterus curvipennis)	
andangero Pechiescamoso	Scaly-breasted Hummingbird (Phaeochroa cuvieri)	
ragata Magnífica	Magnificent Frigatebird (Fregata magnificens)	62
Gallareta Americana	American Coot (Fulica americana)	
Gallineta Morada	Purple Gallinule (Porphyrio martinica)	67
Sarrapatero Pijuy	Groove-billed Ani (Crotophaga sulcirostris)	
arza Agami	Agami Heron (Agamiα agami)	
Sarza Azul	Little Blue Heron (Egretta caerulea)	

Common Spanish Name	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Garza Cucharón	Boat-billed Heron (Cochlearius cochlearius)	67
Garza Ganadera	Cattle Egret (Bubulcus ibis)	
arza Grande	Great Egret (Ardeα αlbα)	32
arza Nivea	Snowy Egret (<i>Egretta thula</i>)	67
Sarza Verde	Green Heron (Butorides virescens)	
Sarza-nocturna Coroniclara	Yellow-crowned Night Heron (Nyctanassa violacea)	67
Sarza-nocturna Coroninegra	Black-crowned Night Heron (Nycticorax nycticorax)	
Sarza-tigre Gorjinuda	Bare-throated Tiger-Heron (Tigrisoma mexicanum)	
Sarzón Cenizo	Great Blue Heron (Ardea herodias)	32
Savilán Pescador	Osprey (Pandion haliaetus)	
Solondrina Arbolera	Tree Swallow (Tachycineta bicolor)	35
olondrina Manglera	Mangrove Swallow (Ταchycinetα αlbilineα)	65
Solondrina Ranchera	Barn Swallow (Hirundo rusticα)	
olondrina-aliserraada Norteña	Northern Rough-winged Swallow (Stelgidopteryx serripennis)	65
olondrina-aliserraada Yucateca	Ridgeway Rough-winged Swallow	
Sorrión Cejiblanco	Chipping Sparrow (Spizella passerina)	
Borrión Chapulín	Grasshopper Sparrow (Ammodramus savannarum)	
Gorrión Dorsiverde	Green-backed Sparrow (Arremonops chloronotus)	34
orrión Oliváceo	Olive Sparrow (Arremonops rufivirgatus)	
orrión Sabanero	Savannah Sparrow (Passerculus sandwichensis)	
Granatelo Yucateco	Gray-throated Chat (Granatellus sallaei)	47
iritón Pechiamarillo	Yellow-breasted Chat (Icteriα virens)	13
Guitio Pechirrufo	Rufous-breasted Spinetail (Synallaxis erythrothorax)	37
ada Coronimorada	Purple-crowned Fairy (Heliothryx barroti)	
alcón Aplomado	Aplomado Falcon (Falco femoralis)	
lalcón Guaco	Laughing Falcon (Herpetotheres cachinnans)	65
lalcón Murcielaguero	Bat Falcon (Falco rufigularis)	
lalcón-selvático Barrado	Barred Forest-Falcon (Micrastur ruficollis)	
alcón-selvático Collarejo	Collared Forest-Falcon (Micrastur semitorquatus)	
locofaisán	Great Curassow (Crαx rubrα)	70
ojarasquero Oscuro	Scaly-throated Leaftosser (Sclerurus guatemalensis)	
ormiguero Negruzco	Dusky Antbird (Cercomacra tyrannina)	38
lormiguero-gallito Mexicano	Black-faced Antthrush [Formicarius analis (moniliger)]	65
ois Blanco	White Ibis (Eudocimus albus)	
abirú	Jabiru (Jabiru mycteria)	63
acamar Colirrufo	Rufous-tailed Jacamar (Galbula ruficauda)	37
acana Mesoamericana	Northern Jacana (Jacana spinosa)	67
acobino Nuquiblanco	White-necked Jacobin (Florisugα mellivorα)	
echuza de Campanario	Barn Owl (Tyto αlba)	
lorón Café	Thrush-like Schiffornis (Schiffornis turdina)	
oro Cabeciamarillo	Yellow-headed Parrot (Amαzonα oratrix)	35
oro Cachete-amarillo	Red-lored Parrot (Amazona autumnalis)	13
oro Coroniblanco	White-crowned Parrot (Pionus senilis)	
oro Frentiblanco	White-fronted Parrot (Amazona albifrons)	
oro Orejirrojo	Brown-hooded Parrot (Pionopsitta haematotis)	
oro Verde	Mealy Parrot (Amazona farinosa)	
oro Yucateco	Yellow-lored Parrot (Amazona xantholora)	
uis Grande	Great Kiskadee (Pitangus sulphuratus)	44
uis Gregario	Social Flycatcher (Myiozetetes similis)	44
uis Piquigrueso	Boat-billed Flycatcher (Megarynchus pitangua)	
1ango Pechiverde	Green-breasted Mango (Anthracothorax prevostii)	
1artín Azul	Purple Martin (Progne subis)	
1artín Pechigris	Gray-breasted Martin (Progne chalybea)	65
Martin-pescador Amazona	Amazon Kingfisher (Chloroceryle amazona)	

COMMON SPANISH NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Martin-pescador Collarejo	Ringed Kingfisher (Ceryle torquatus)	
Martin-pescador Enano	American Pygmy Kingfisher (Chloroceryle αeneα)	67
Martin-pescador Norteño	Belted Kingfisher (Ceryle alcyon)	
Martin-pescador Verde	Green Kingfisher (Chloroceryle americana)	
Aascarita Común	Common Yellowthroat (Geothlypis trichas)	18
Mascarita Piquigruesa	Gray-crowned Yellowthroat (Geothlypis poliocephala)	
Matraca-barrada Tropical	Band-backed Wren (Campylorhynchus zonatus)	
1ielero Patirrojo	Red-legged Honeycreeper (Cyanerpes cyaneus)	13
Milano Bidentado	Double-toothed Kite (Harpagus bidentatus)	
1ilano Cabecigris	Gray-headed Kite (Leptodon cayanensis)	
1ilano Caracolero	Snail Kite (Rostrhamus sociabilis)	
1ilano Coliblanco	White-tailed Kite (Elanus leucurus)	
1ilano Piquiganchudo	Hook-billed Kite (Chondrohierax uncinatus)	
1ilano Plomizo	Plumbeous Kite (Ictinia plumbea)	
1ilano Tijereta	Swallow-tailed Kite (Elanoides forficatus)	
1omoto Coroniazul	Blue-crowned Motmot (Momotus momota)	46
1omoto Enano	Tody Motmot (Hylomanes momotula)	47
1osquerito Lampino Norteño	Northern Beardless-Tyrannulet (Camptostoma imberbe)	
1osquerito Rabadilla-amarilla	Sulphur-rumped Flycatcher (Myiobius sulphureipygius)	
Aosquerito Vientre-amarillo	Yellow-bellied Tyrannulet (Ornithion semiflavum)	
1osquero Cardenal	Vermilion Flycatcher (Pyrocephalus rubinus)	31
1osquero Gorjiblanco	White-throated Flycatcher (Empidonax albigularis)	
Aosquero Gorripardo	Sepia-capped Flycatcher (Leptopogon amaurocephalus)	38
1osquero Mínimo	Least Flycatcher (Empidonax minimus)	
1osquero Negro	Black Phoebe (Sayornis nigricans)	
1osquero Real	Royal Flycatcher (Onychorhynchus coronatus)	38
1osquero Vientre-amarillo	Yellow-bellied Flycatcher (Empidonax flaviventris)	
1osquero Vientre-ocre	Ochre-bellied Flycatcher (Mionectes oleagineus)	16
Propéndola de Moctezuma	Montezuma Oropendola (Psarocolius montezuma)	13
ájaro-cantil	Sungrebe (Heliornis fulica)	
ájaro-gato Gris	Gray Catbird (Dumetella carolinensis)	13
ájaro-gato Negro	Black Catbird (Melanoptila glabirostris)	62
Paloma Arroyera	White-tipped Dove (Leptotila verreauxi)	
aloma Cabecigris	Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)]	
aloma Escamosa	Scaled Pigeon (Patagioenas speciosa)	
aloma Huilota	Mourning Dove (Zenaida macroura)	
Paloma Morada	Red-billed Pigeon (Patagioenas flavirostris)	
Paloma Pechigris	Gray-chested Dove (Leptotila cassini)	46
Paloma Piquinegra	Short-billed Pigeon (Patagioenas nigrirostris)	
Paloma Vientre-claro	Pale-vented Pigeon (Patagioenas cayennensis)	14
aloma-perdiz Rojiza	Ruddy Quail-Dove (Geotrygon montana)	
Papamoscas Pirata	Piratic Flycatcher (Legatus leucophaius)	
Papamoscas Rayado	Streaked Flycatcher (Myiodynastes maculatus)	
Papamoscas Vientre-amarillo	Sulphur-bellied Flycatcher (Myiodynastes luteiventris)	
Parula Norteño	Northern Parula (Parula americana)	
ato Real	Muscovy Duck (Cairina moschata)	
avito Migratorio	American Redstart (Setophaga ruticilla)	18
avo Cojolito	Crested Guan (Penelope purpurascens)	12
Pelícano Café	Brown Pelican (Pelecanus occidentalis)	
Perico Pechisucio	Olive-throated Parakeet (Arαtingα nαnα)	
Perlita Grisilla	Blue-gray Gnatcatcher (Polioptilα cαeruleα)	35
Perlita Tropical	Tropical Gnatcatcher (Polioptilα plumbeα)	
ibí Oriental	Eastern Wood-Pewee (Contopus virens)	
Pibí Tropical	Tropical Pewee (Contopus cinereus)	

Common Spanish Name	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Picochato Rabón	Stub-tailed Spadebill (Platyrinchus cancrominus)	
Picocurvo Norteño	Northern Bentbill (Oncostoma cinereigulare)	
icogrueso Azul	Blue Grosbeak (Passerina caerulea)	
icogrueso Carinegro	Black-faced Grosbeak (Caryothraustes poliogaster)	
icogrueso Negro	Blue-black Grosbeak (Cyanocompsa cyanoides)	14
icogrueso Pechirrosado	Rose-breasted Grosbeak (Pheucticus ludovicianus)	
icolargo Coroniazul	Long-billed Starthroat (Heliomaster longirostris)	
icolenza Sencillo	Plain Xenops (Xenops minutus)	
icoplano de Anteojos	Eye-ringed Flatbill (Rhynchocyclus brevirostris)	
icoplano Ojiblanco	Yellow-olive Flycatcher (Tolmomyias sulphurescens)	
ijiji Aliblanco	Black-bellied Whistling-Duck (Dendrocygna autumnalis)	
atanero	Bananaquit (Coerebα flαveolα)	
layero Alzacolita	Spotted Sandpiper (Actitis macularius)	62
ayero Solitario	Solitary Sandpiper (Tringα solitαriα)	
olluela Rojiza	Ruddy Crake (Laterallus ruber)	
radero Común	Eastern Meadowlark (Sturnellα mαgnα)	
ascador Piquinaranja	Orange-billed Sparrow (Arremon aurantiirostris)	
ascón Cuelligris	Gray-necked Wood-Rail (Aramides cajαneα)	
altador Cabecinegro	Black-headed Saltator (Sαltαtor αtriceps)	
altador Gorjileonado	Buff-throated Saltator (Saltator maximus)	
altador Grisáceo	Grayish Saltator (Saltator coerulescens)	
altapared de Carolina	Carolina Wren (Thryothorus ludovicianus)	
altapared Pechimanchado	Spot-breasted Wren (Thryothorus maculipectus)	44
altapared Vientre-blanco	White-bellied Wren (Uropsila leucogastra)	
altapared-continental Sureño	House Wren (Troglodytes aedon)	65
altapared-selvatico Pechiblanco	White-breasted Wood-Wren (Henicorhina leucosticta)	
altarín Cabecirrojo	Red-capped Manakin (<i>Piprα mentαlis</i>)	15
altarín Cuelliblanco	White-collared Manakin (Μαπαcus candei)	47
emillero Azul	Blue Seedeater (Amaurospiza concolor)	36
emillero Brincador	Blue-black Grassquit (Volαtiniα jαcαrinα)	
emillero Collarejo	White-collared Seedeater (Sporophilia torqueola)	34
emillero Oliváceo	Yellow-faced Grassquit (Tiaris olivaceus)	
emillero Piquigrueso	Thick-billed Seed-Finch (Oryzoborus funereus)	
emillero Variable	Variable Seedeater (Sporophila americana)	
oterillo Picudo	Long-billed Gnatwren (Ramphocaenus melanurus)	
ngara Aliamarilla	Yellow-winged Tanager (Thraupis abbas)	12
angara Azuligris	Blue-gray Tanager (Thrαupis episcopus)	13
ingara Cabecigris	Gray-headed Tanager (Eucometis penicillαtα)	44
ngara Cuellirroja	Crimson-collared Tanager (Ramphocelus sanguinolentus)	22
angara Encinera	Hepatic Tanager (<i>Pirαngα flανα</i>)	
ngara Escarlata	Scarlet Tanager (Piranga olivacea)	46
ingara Roja	Summer Tanager (Piranga rubra)	
angara Terciopelo	Passerini's Tanager (Ramphocelus passerinii)	
ingara Yucateca	Rose-throated Tanager (Piranga roseogularis)	
ngara-hormiguera Coronirroja	Red-crowned Ant-Tanager (Habia rubica)	
ngara-hormiguera Gorjirroja	Red-throated Ant-Tanager (Habia fuscicauda)	4
ngara-lanio Gorjiinegro	Black-throated Shrike-Tanager (Lanio aurantius)	
pacaminos Picuyo	Common Pauraque (Nyctidromus albicollis)	<u> </u>
pacaminos Yucateco	Yucatan Nightjar (Caprimulgus badius)	
ecolote Vermiculado	Vermiculated Screech-Owl (Megascops guatemalae)	
ecolotito Centroamericano	Central American Pygmy-Owl (Glaucidium griseiceps)	
ecolotito Común	Ferruginous Pygmy-Owl (Glaucidium brasilianum)	65
namú Canelo	Thicket Tinamou (Crypturellus cinnamomeus)	
Tinamú Jamuey	Slaty-breasted Tinamou (Crypturellus boucardi)	

COMMON SPANISH NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Tinamú Mayor	Great Tinamou (Tinamus major)	
Tinamú Menor	Little Tinamou (Crypturellus soui)	
Tirano de Couch	Couch's Kingbird (Tyrannus couchii)	
Tirano Tropical	Tropical Kingbird (Tyrannus melancholicus)	34
Firano Viajero	Eastern Kingbird (Tyrannus tyrannus)	
Tirano-tijereta Sabanero	Fork-tailed Flycatcher (Tyrannus savana)	34
Titira Enmascarada	Masked Tityra (Tityra semifasciata)	21
Titira Piquinegra	Black-crowned Tityra (Tityra inquisitor)	
Tordo Cantor	Melodious Blackbird (Dives dives)	
Tordo Sargento	Red-winged Blackbird (Agelαius phoeniceus)	
Tórtola Azul	Blue Ground-Dove (Claravis pretiosa)	37
Tórtola Pechilisa	Plain-breasted Ground-Dove (Columbina minuta)	
Tórtola Rojiza	Ruddy Ground-Dove (Columbina talpacoti)	34
Trepatroncos Alileonado	Tawny-winged Woodcreeper (Dendrocincla αnabatina)	
Trepatroncos Barrado	Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae)	
Trepatroncos Corona-rayada	Streak-headed Woodcreeper (Lepidocolaptes souleyetii)	
Trepatroncos Oliváceo	Olivaceous Woodcreeper (Sittasomus griseicapillus)	
repatroncos Piquiclaro	lvory-billed Woodcreeper (Xiphorhynchus flavigaster)	46
Trepatroncos Piquicuña	Wedge-billed Woodcreeper (Glyphorynchus spirurus)	47
Trepatroncos Rojizo	Ruddy Woodcreeper (Dendrocincla homochroa)	
Trogon Cabecinegro	Black-headed Trogon (Trogon melanocephalus)	15
Trogon Colioscuro	Slaty-tailed Trogon (Trogon massena)	
Trogon Violáceo	Violaceous Trogon (Trogon violaceus)	38
Tucán Pico-multicolor	Keel-billed Toucan (Ramphastos sulfuratus)	5, 31
ucancillo Collarejo	Collared Aracari (Pteroglossus torquatus)	12, 16
Tucaneta Verde	Emerald Toucanet (Aulacorhynchus prasinus)	65
/aquero Gigante	Giant Cowbird (Molothrus oryzivorus)	
/aquero Ojirrojo	Bronzed Cowbird (Molothrus aeneus)	
/encejo Cuelliblanco	White-collared Swift (Streptoprocne zonaris)	
/encejo de Chimenea	Chimney Swift (Chaetura pelagica)	
/encejo de Vaux	Vaux's Swift (Chaetura vauxi)	
Vencejo-tijereta Menor	Lesser Swallow-tailed Swift (Panyptila cayennensis)	
/erdillo Corono-leonada	Tawny-crowned Greenlet (Hylophilus ochraceiceps)	
/erdillo Menor	Lesser Greenlet (Hylophilus decurtatus)	
Vireo Amarillo-verdoso	Yellow-green Vireo (Vireo flavoviridis)	
/ireo Gorjiamarillo	Yellow-throated Vireo (Vireo flavifrons)	
Vireo Manglero	Mangrove Vireo [Vireo pallens (semiflavus)]	34
/ireo Ojiblanco	White-eyed Vireo (Vireo griseus)	21
√ireo Ojirrojo	Red-eyed Vireo (Vireo olivaceus)	
Vireón Cejirrufo	Rufous-browed Peppershrike (Cyclarhis gujanensis)	
Zacatero Amarillo	Grassland Yellow-Finch (Sicalis luteola)	
Zambullidor Menor	Least Grebe (Tachybaptus dominicus)	
Zanate Mayor	Great-tailed Grackle (Quiscalus mexicanus)	30
Zopilote Negro	Black Vulture (Coragyps atratus)	4, 35
Zopilote Rey	King Vulture (Sarcoramphus papa)	
Zorzal Gorjiblanco	White-throated Robin (Turdus assimilis)	
Zorzal Pardo	Clay-colored Robin (Turdus grayi)	14
Zorzalito Carigris	Gray-cheeked Thrush (Catharus minimus)	
Zorzalito de Swainson	Swainson's Thrush (Catharus ustulatus)	
Zorzalito Maculado	Wood Thrush (Hylocichla mustelina)	37
Zorzalito Rojizo	Veery (Catharus fuscescens)	

APPENDIX 1D. LOCAL SPANISH NAMES (IN ALPHABETICAL ORDER, FROM JONES 2003)

OCAL SPANISH NAMES	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Checo	Black-cheeked Woodpecker (Melanerpes pucherani),	
	Golden-fronted Woodpecker (Melanerpes aurifrons),	
	Golden-olive Woodpecker (Piculus rubiginosus),	
	Smoky-brown Woodpecker (Veniliornis fumigatus)	18, 38
Chicas	Tropical Mockingbird (Mimus gilvus)	13
Cocito	White Ibis (Eudocimus albus)	
Cojolito	Crested Guan (Penelope purpurascens)	12
Cuchara	Roseate Spoonbill (Platalea ajaja)	
Curujo	Barn Owl (Tyto αlbα)	
El Diablito	Vermilion Flycatcher (Pyrocephalus rubinus)	31
Faisan	Great Curassow (Crαx rubrα)	70
Galletan	Wood Stork (Mycteria americana)	67
Gallinola	Gray-necked Wood-Rail (Aramides cajanea)	1
Gavilan	Roadside Hawk (Buteo magnirostris)	4
Jincho	Osprey (Pandion haliaetus)	
Martin Pescado	Amazon Kingfisher (Chloroceryle amazona),	
	American Pygmy Kingfisher (Chloroceryle αeneα),	
	Belted Kingfisher (Ceryle alcyon), Green Kingfisher (Chloroceryle americana),	
	Ringed Kingfisher (Ceryle torquatus)	67
Medio Pito	Collared Aracari (Pteroglossus torquatus)	12, 16
Paloma	Pale-vented Pigeon (Patagioenas cayennensis), Scaled Pigeon (Patagioenas speciosa)	14
Peche Amarillo	Black-headed Trogon (Trogon melanocephalus), Violaceous Trogon (Trogon violaceus)	15, 38
Perdiz	Thicket Tinamou (Crypturellus cinnamomeus)	ļ
Pijiji	Black-bellied Whistling-Duck (Dendrocygna autumnalis)	
Pito Real	Keel-billed Toucan (Ramphastos sulfuratus)	5, 31
Sope	Black Vulture (Coragyps atratus), Lesser Yellow-headed Vulture (Cathartes burrovianus),	
	Turkey Vulture (Cathartes aura)	4, 35
Sope Real	King Vulture (Sarcoramphus papa)	
Tapacamino	Common Pauraque (Nyctidromus albicollis)	
Tortolita	Ruddy Ground-Dove (Columbina talpacoti)	34
Tres Pesos Son	Short-billed Pigeon (Patagioenas nigrirostris)	

APPENDIX 1E. K'EKCHI MAYAN NAMES (IN ALPHABETICAL ORDER, FROM JONES 2003)

('EKCHI MAYAN NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Belix	Bright-rumped Attila (Attila spadiceus)	21
B'it i cuc	Dusky-capped Flycatcher (Myiαrchus tuberculifer)	
Bolich	Spot-breasted Wren (Thryothorus maculipectus)	44
Cac i kok	Slaty-tailed Trogon (Trogon mαssenα)	
Cak i mukui	Ruddy Quail-Dove (Geotrygon montana)	
Cak i pulcha <u>jo</u> chai	Green Heron (Butorides virescens)	
Cak i t'otz bayal	Red-capped Manakin (Pipra mentalis)	15
Cak i tut	Ruddy Ground-Dove (Columbina talpacoti)	34
Cak i tz'ic	Summer Tanager (Piranga rubra)	
Chak mut	Great Curassow (Crαx rubrα)	70
Ch'ej chem	Amazon Kingfisher (Chloroceryle amazona), American Pygmy Kingfisher (Chloroceryle aenea), Belted Kingfisher (Ceryle alcyon), Green Kingfisher (Chloroceryle americana), Ringed Kingfisher (Ceryle torquatus)	67
Che'ko'	Golden-fronted Woodpecker (Melanerpes aurifrons)	
Chi chi sa'a	Gray Catbird (Dumetella carolinensis)	13
Ch'i quan	Groove-billed Ani (Crotophαgα sulcirostris), Melodious Blackbird (Dives dives)	
Ch'in i tz'ic	Hooded Oriole (Icterus culcullatus), Baltimore Oriole (Icterus galbula)	13
Cho cho'	Mealy Parrot (Amazona farinosa), Red-lored Parrot (Amazona autumnalis)	13

'EKCHI MAYAN NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Ch'uluk	Black-faced Antthrush [Formicarius analis (moniliger)]	65
Colol	Great Tinamou (<i>Tinamus major</i>)	
Hut hut	Blue-crowned Motmot (Momotus momotα)	46
Jeketso'	Plain Chachalaca (Ortalis vetula)	17
J <u>o</u> chai	Great Blue Heron (Ardea herodias), Limpkin (Aramus guarauna)	32
Jojo	Cattle Egret (Bubulcus ibis), Great Egret (Ardea alba), Snowy Egret (Egretta thula)	32, 67
K'an i corochech	Chestnut-colored Woodpecker (Celeus castaneus)	†
K'an i kok	Black-headed Trogon (Trogon melαnocephαlus), Violaceous Trogon (Trogon violαceus)	15, 38
K'an i tz'ic	Black-cowled Oriole (Icterus prosthemelas), Yellow-backed Oriole (Icterus chrysater),	
	Yellow-tailed Oriole (Icterus mesomelas)	13
K'an y jolom cho cho'	Yellow-headed Parrot (Amazona oratrix)	35
K'ek i c'och	Common Black-Hawk (Buteogallus anthracinus),	
	Great Black-Hawk (Buteogallus urubitinga)	
Kio kio kin	Red-crowned Ant-Tanager (Habia rubica), Red-throated Ant-Tanager (Habia fuscicauda)	4
Kix hrir	Black-faced Grosbeak (Caryothraustes poliogaster)	ļ
K'o k'ob	Clay-colored Robin (Turdus grayi)	14
Koej kampk	Laughing Falcon (Herpetotheres cachinnans)	65
Kok k'eke' tz'ic	White-collared Seedeater (Sporophilia torqueola)	34
Kok'rax i pats	Blue-winged Teal (Anas discors)	54
Konkolich	Gray-necked Wood-Rail (Aramides cajanea)	
		17
Kubul	Montezuma Oropendola (Psarocolius montezuma)	13
Letz letz	Ivory-billed Woodcreeper (Xiphorhynchus flavigaster),	
	Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae),	
	Olivaceous Woodcreeper (Sittasomus griseicapillus),	
	Ruddy Woodcreeper (Dendrocincla homochroa),	
	Streak-headed Woodcreeper (Lepidocolaptes souleyetii),	
	Tawny-winged Woodcreeper (Dendrocincla anabatina),	
	Wedge-billed Woodcreeper (Glyphorynchus spirurus)	46, 47
Lik lik	Bat Falcon (Falco rufigularis)	
Man sik kan sukuya'a	Spot-breasted Wren (Thryothorus maculipectus)	44
Mayor	Crimson-collared Tanager (Ramphocelus sanguinolentus)	22
Mukui	Gray-chested Dove (Leptotila cassini),	
	Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)],	
	White-tipped Dove (Leptotila verreauxi)	46
Otz otz	Yellow-billed Cacique (Amblycercus holosericeus)	17
Palom	Pale-vented Pigeon (Patagioenas cayennensis), Scaled Pigeon (Patagioenas speciosa)	14
Р <u>а</u> р	Brown Jay (Cyanocorax morio)	12
P <u>a</u> sakuk	Short-billed Pigeon (Patagioenas nigrirostris)	
Pats	Muscovy Duck (Cairina moschata)	
Pats i ha	Neotropic Cormorant (Phalacrocorax brasilianus)	! !
Pi chik	Collared Aracari (Pteroglossus torquatus)	12, 16
Pich'	Squirrel Cuckoo (Piaya cayana)	
Pijij	Black-bellied Whistling-Duck (Dendrocygna autumnalis)	
Pom	Slaty-breasted Tinamou (Crypturellus boucardi)	
Pu ju yuk	Common Pauraque (Nyctidromus αlbicollis)	
Pulcha <u>jo</u> chai	Little Blue Heron (Egretta caerulea)	
Pu'u	Crested Guan (Penelope purpurascens)	T
Puyuch'	White-crowned Parrot (Pionus senilis)	T
Quarom	Barn Owl (Tyto alba), Mottled Owl (Ciccaba virgata),	
	Striped Owl (Pseudoscops clamator),	
	Vermiculated Screech-Owl (Megascops guatemalae)	
Rakax i tzul	Barred Antshrike (Thamnophilus doliatus)	38
NUNUA I LE <u>U</u> I		30
Day i puvuch'	Brown-hooded Darrot (Diononsitta haematotis)	
Rax i puyuch' Rax i selepan	Brown-hooded Parrot (Pionopsitta haematotis) Emerald Toucanet (Aulacorhynchus prasinus)	65

EKCHI MAYAN NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Raxon tz <u>u</u> l	Blue-gray Tanager (Thraupis episcopus)	13
Sak i c'och	White Hawk (Leucopternis albicollis)	46
Sak i tuwiz ha'a	Spotted Sandpiper (Actitis macularius)	62
 Sakil	Louisiana Waterthrush (Seiurus motacilla),	
	Northern Waterthrush (Seiurus noveboracensis)	37
Selepan	Keel-billed Toucan (Ramphastos sulfuratus)	5, 31
So choj	Masked Tityra (Tityra semifasciata)	21
So'sol	Black Vulture (Coragyps atratus), Turkey Vulture (Cathartes aura)	4, 35
 Гіхегх	Swallow-tailed Kite (Elanoides forficatus)	
 Гоlocok	Wood Thrush (Hylocichla mustelina)	37
Γ'otz bayal	White-collared Manakin (Manacus candei)	47
гон Гs'ok	Giant Cowbird (Molothrus oryzivorus)	
Гs'uhum ok'	Ruddy Crake (Laterallus ruber)	
Tun tulin	White-breasted Wood-Wren (Henicorhina leucosticta)	
	Eastern Wood-Pewee (Contopus virens), Greenish Elaenia (Myiopαgis viridicαtα),	
	Ochre-bellied Flycatcher (Mionectes oleagineus),	
	Royal Flycatcher (Onychorhynchus coronatus),	
	Sulphur-rumped Flycatcher (Myiobius sulphureipygius),	
	Yellow-bellied Elaenia (Elaenia flavogaster),	
	Yellow-olive Flycatcher (Tolmomyias sulphurescens)	16, 38
 Гza eki tz'ic	Bronzed Cowbird (Molothrus aeneus)	10, 30
Tzen tse'rej	Black-cheeked Woodpecker (Melanerpes pucherani),	
izeri tserej	Golden-olive Woodpecker (Piculus rubiginosus),	
	Lineated Woodpecker (Procuras russymosus),	
	Pale-billed Woodpecker (Campephilus guatemalensis),	
	Smoky-brown Woodpecker (Veniliornis fumigatus)	65, 38
 Fzi tzob	Black-headed Saltator (Saltator atriceps), Buff-throated Saltator (Saltator maximus),	00, 00
121 (200	Grayish Saltator (Saltator coerulescens)	
 Tzib tzob	Passerini's Tanager (Ramphocelus passerinii)	
Izib tzob Fz'ic ha'sab	Northern Jacana (Jacana spinosa)	67
Iz'ic i par	Great-tailed Grackle (Quiscalus mexicanus)	30
Iz'ic ripar Iz'ic nik ha		62
Iz ic nik na Izilon	Spotted Sandpiper (Actitis macularius)	02
	Olive-throated Parakeet (Aratinga nana)	
Fzub hin pur	Orange-billed Sparrow (Arremon aurantiirostris)	
ſz'unun	Canivet's Emerald (Chlorostilbon canivetii),	
	Green-breasted Mango (Anthracothorax prevostii),	
	Long-billed Hermit (Phaethornis longirostris), Purple-crowned Fairy (Heliothryx barroti),	
	Rufous-tailed Hummingbird (Amazilia tzαcatl),	
	Scaly-breasted Hummingbird (Phaeochroa cuvieri),	
	Stripe-throated Hermit (Phaethornis striigularis),	
	Wedge-tailed Sabrewing (Cαmpylopterus curvipennis),	
	White-bellied Emerald (Amazilia candida), White-necked Jacobin (Florisuga mellivora)	5, 16
Va wa	Tawny-crowned Greenlet (Hylophilus ochrαceiceps)	
Wilix	Sulphur-bellied Flycatcher (Myiodynastes luteiventris)	
Nor'ik	Black-throated Bobwhite (Colinus nigrogularis)	
(ep <u>jo</u> chai	Bare-throated Tiger-Heron (Tigrisoma mexicanum)	
Kepi k'uch	Roadside Hawk (Buteo magnirostris)	4
Xpuhuy	Common Nighthawk (Chordeiles minor), Lesser Nighthawk (Chordeiles acutipennis),	
	Yucatan Nightjar (Caprimulgus badius)	
Kulul	Little Tinamou (Crypturellus soui)	
(uxb tz'ic	Thrush-like Schiffornis (Schiffornis turdina)	
Yab sik	Spotted Wood-Quail (Odontophorus guttatus)	

APPENDIX 1F. MOPAN MAYAN NAMES (IN ALPHABETICAL ORDER, FROM JONES 2003)

OPAN MAYAN NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Bac bac	Laughing Falcon (Herpetotheres cachinnans)	65
Balee	Slaty-breasted Tinamou (Crypturellus boucardi)	
Batch	Plain Chachalaca (Ortαlis vetulα)	17
Bosh ch'om	Black Vulture (Coragyps atratus), Turkey Vulture (Cathartes aura)	4, 35
Bouh	Barn Owl (Tyto αlbα), Mottled Owl (Ciccαbα virgαtα),	
	Striped Owl (Pseudoscops clamator),	
	Vermiculated Screech-Owl (Megascops guatemalae)	
Ch'ej chem	Amazon Kingfisher (Chloroceryle amazona),	
	American Pygmy Kingfisher (Chloroceryle aenea), Belted Kingfisher (Ceryle alcyon),	
	Green Kingfisher (Chloroceryle americana), Ringed Kingfisher (Ceryle torquatus)	67
Ch'i quan	Melodious Blackbird (Dives dives)	
Chi'ix peech	Squirrel Cuckoo (Piaya cayana)	
Ch'il kay	Boat-billed Flycatcher (Megarynchus pitangua), Great Kiskadee (Pitangus sulphuratus),	
	Social Flycatcher (Myiozetetes similis)	44
Chuc ya'ax kinnil chi'ich	Summer Tanager (Piranga rubra)	
Chuk ko'ko'	Slaty-tailed Trogon (Trogon massena)	
Chuk ni	Red-lored Parrot (Amazona autumnalis)	13
Chuk pol hur hur	Red-capped Manakin (Piprα mentαlis)	15
Chuk tzu tzui	Ruddy Quail-Dove (Geotrygon montana)	
Colol	Great Tinamou (<i>Tinamus major</i>)	
Comitz	Blue-black Grassquit (Volatinia jacarina), Thick-billed Seed-Finch (Oryzoborus funereus),	
	Variable Seedeater (Sporophila americana),	
	White-collared Seedeater (Sporophilia torqueola),	
	Yellow-faced Grassquit (Tiaris olivaceus)	34
Cosh	Crested Guan (Penelope purpurascens)	12
Has has	Red-crowned Ant-Tanager (Habia rubica), Red-throated Ant-Tanager (Habia fuscicauda)	4
Ho ho	Cattle Egret (Bubulcus ibis), Great Blue Heron (Ardea herodias),	
	Great Egret (Ardea alba), Green Heron (Butorides virescens),	1
	Snowy Egret (Egretta thula)	32, 67
Ho'chai	Bare-throated Tiger-Heron (<i>Tigrisoma mexicanum</i>)	
Hotz arroz	Bronzed Cowbird (Molothrus aeneus)	
Hur hur	White-collared Manakin (Μαπαcus candei)	47
Hut hut	Blue-crowned Motmot (Momotus momota)	46
J'abb	Limpkin (Aramus guarauna)	
Kan pol tut	Yellow-headed Parrot (Amazona oratrix)	35
K'il kej	Boat-billed Flycatcher (Megarynchus pitangua), Great Kiskadee (Pitangus sulphuratus),	
IV II Kej	Social Flycatcher (Myiozetetes similis)	44
Ko ko ta'	Clay-colored Robin (Turdus grayi)	14
Koban ch'a qua	Spotted Wood-Quail (Odontophorus guttatus)	
Kobali cira qua	Montezuma Oropendola (Psarocolius montezuma)	13
Ko'ko'	Black-headed Trogon (Trogon melanocephalus), Violaceous Trogon (Trogon violaceus)	15, 38
Kolon te'	Black-cheeked Woodpecker (Melanerpes pucherani),	13,30
Kololi te	Chestnut-colored Woodpecker (Celeus castaneus),	1
	Golden-fronted Woodpecker (<i>Melanerpes aurifrons</i>),	
	Golden-tronted Woodpecker (Melanerpes aurifrons), Golden-olive Woodpecker (Piculus rubiginosus),	
	Lineated Woodpecker (Dryocopus lineatus),	
	Pale-billed Woodpecker (Campephilus guatemalensis),	10 / 5 7
// l l: . l.	Smoky-brown Woodpecker (Veniliornis fumigatus)	18, 65, 3
Konkolich K'un bul	Gray-necked Wood-Rail (Arαmides cαjaneα) Great Curassow (Crαx rubrα)	70

OPAN MAYAN NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE
Kusal	Barn Swallow (Hirundo rusticα), Gray-breasted Martin (Progne chalybeα),	
	Mangrove Swallow (Tachycinetα albilineα),	
	Northern Rough-winged Swallow (Stelgidopteryx serripennis),	
	Purple Martin (Progne subis), Tree Swallow (Tachycineta bicolor),	
	Vaux's Swift (Chaetura vauxi), White-collared Swift (Streptoprocne zonaris)	65, 35
Kush kush tapi	Black Hawk-Eagle (Spizaetus tyrannus)	
Kwaren kosh	Tody Motmot (Hylomanes momotula)	47
Lik lik	Bat Falcon (Falco rufigularis)	
Muhan	Common Black-Hawk (Buteogallus anthracinus),	
	Great Black-Hawk (Buteogαllus urubitingα), Roadside Hawk (Buteo mαgnirostris)	4
Noshi ne' bosh chich	Great-tailed Grackle (Quiscalus mexicanus)	30
Oi oi	Ruddy Crake (Laterallus ruber)	
Oro ich	Great Antshrike (Taraba major)	37
Otz otz	Yellow-billed Cacique (Amblycercus holosericeus)	17
Pa'ap	Brown Jay (Cyαnocorαx morio)	12
Paloma	Pale-vented Pigeon (Patagioenas cayennensis), Scaled Pigeon (Patagioenas speciosa)	14
Pato	Black-bellied Whistling-Duck (Dendrocygna autumnalis), Blue-winged Teal (Anas discors),	
	Muscovy Duck (Cairina moschata)	
Pi chik	Collared Aracari (Pteroglossus torquαtus)	12, 16
Pi pish	Wood Thrush (Hylocichla mustelina)	37
Pili	Olive-throated Parakeet (Aratinga nana)	
Pilitit	Common Tody-Flycatcher (Todirostrum cinereum)	44
Police chi'ich	Crimson-collared Tanager (Ramphocelus sanguinolentus)	22
Pom	Slaty-breasted Tinamou (Crypturellus boucαrdi),	
	Thicket Tinamou (Crypturellus cinnamomeus)	
Pou hoi	Common Nighthawk (Chordeiles minor), Lesser Nighthawk (Chordeiles acutipennis)	
Puiyero	Common Pauraque (Nyctidromus albicollis)	
Pun	Keel-billed Toucan (Ramphastos sulfuratus)	5, 31
Puru wok	Ruddy Ground-Dove (Columbina talpacoti)	34
Re'ish	Gray Catbird (Dumetella carolinensis)	13
Sh'lul	Little Tinamou (Crypturellus soui)	
Silon	Brown-hooded Parrot (Pionopsitta haematotis)	
Suc muhan	White Hawk (Leucopternis albicollis)	46
Suc pol	White-crowned Parrot (Pionus senilis)	
Sur ko cho	Masked Tityra (Tityra semifasciata)	21
Ta'an ho ho	Little Blue Heron (Egretta caerulea)	
Ta'an tzin tzo'	Grayish Saltator (Saltator coerulescens)	
Tihera nej	Swallow-tailed Kite (Elanoides forficatus)	
To ko we	Barred Antshrike (Thamnophilus doliatus)	38
Ton ton	Central American Pygmy-Owl (Glaucidium griseiceps)	
Tuk tuk cheh	lvory-billed Woodcreeper (Xiphorhynchus flavigaster),	
	Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae),	
	Olivaceous Woodcreeper (Sittasomus griseicapillus),	
	Ruddy Woodcreeper (Dendrocincla homochroa),	
	Streak-headed Woodcreeper (Lepidocolaptes souleyetii),	
	Tawny-winged Woodcreeper (Dendrocincla anabatina),	
	Wedge-billed Woodcreeper (Glyphorynchus spirurus)	46, 47
Tulin	House Wren (Troglodytes aedon), Spot-breasted Wren (Thryothorus maculipectus),	
	White-breasted Wood-Wren (Henicorhina leucosticta)	65, 44
Tulin nuche'	Black-faced Antthrush [Formicarius analis (moniliger)]	65
Tut	Blue Ground-Dove (Claravis pretiosa), White-fronted Parrot (Amazona albifrons),	
	Yellow-lored Parrot (Amazona xantholora)	37
Tzala te'	Vermilion Flycatcher (Pyrocephalus rubinus)	31
Tzi tzui	Gray-chested Dove (Leptotila cassini), Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)],	
	White-tipped Dove (Leptotila verreauxi)	46

OPAN MAYAN NAME ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES		PHOTO ON PAGE
Tz'ic bul	Groove-billed Ani (Crotophaga sulcirostris)	
Tzi'ki puur	Orange-billed Sparrow (Arremon aurantiirostris)	
Tzin tzo'	Black-headed Saltator (Saltator atriceps), Buff-throated Saltator (Saltator maximus)	
T zunon	Canivet's Emerald (Chlorostilbon canivetii),	
	Green-breasted Mango (Anthracothorax prevostii),	
	Long-billed Hermit (Phaethornis longirostris), Purple-crowned Fairy (Heliothryx barroti),	
	Rufous-tailed Hummingbird (Amazilia tzacatl),	
	Scaly-breasted Hummingbird (Phαeochroα cuvieri),	
	Stripe-throated Hermit (Phaethornis striigularis),	
	Wedge-tailed Sabrewing (Campylopterus curvipennis),	
	White-bellied Emerald (Amazilia candida), White-necked Jacobin (Florisuga mellivora)	5, 16
Ukul chi'kan	Louisiana Waterthrush (Seiurus motacilla), Northern Waterthrush (Seiurus noveboracensis)	37
Ussi	King Vulture (Sarcoramphus papa)	
Wortis coh poo	Short-billed Pigeon (Patagioenas nigrirostris)	
Ya	Yellow-bellied Elaenia (Elɑeniɑ flɑvogɑster)	
Ya'ax pun	Emerald Toucanet (Aulacorhynchus prasinus)	65
Ya'ax tut	Mealy Parrot (Απαzοnα fαrinosα)	

APPENDIX 1G. ARCHAIC AND COLLOQUIAL NAMES (IN ALPHABETICAL ORDER, FROM JONES 2003)

ARCHAIC OR COLLOQUIAL NAME	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	
American Egret	Great Egret (Ardea alba)	32
American Finfoot	Sungrebe (Heliornis fulicα)	
Banded Cactus Wren	Band-backed Wren (Campylorhynchus zonatus)	
Bare-throated Tiger-Bittern	Bare-throated Tiger-Heron (Tigrisomα mexicanum)	
Barred Woodhewer	Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae)	
Barrot's Fairy	Purple-crowned Fairy (Heliothryx bαrroti)	
Beardless Flycatcher	Northern Beardless-Tyrannulet (Camptostoma imberbe)	
Bent-billed Flycatcher	Northern Bentbill (Oncostoma cinereigulare)	
Bishop Grosbeak	Black-faced Grosbeak (Caryothraustes poliogaster)	
Black Eagle-Hawk	Black Hawk-Eagle (Spizαetus tyrαnnus)	
Black Seedeater	Variable Seedeater (Sporophila americana)	
Black-and-blue Jay	Yucatan Jay (Cyanocorax yucatanicus)	
Black-bellied Tree-Duck	Black-bellied Whistling-Duck (Dendrocygnα autumnalis)	
Black-capped Tityra	Black-crowned Tityra (Tityra inquisitor)	
Black-chinned Jacamar	Rufous-tailed Jacamar (Gαlbulα ruficαudα)	37
Black-striped Sparrow	Green-backed Sparrow (Arremonops chloronotus)	34
Blue Honeycreeper	Red-legged Honeycreeper (Cyanerpes cyaneus)	13
Blue Tanager	Blue-gray Tanager (Thraupis episcopus)	13
Blue-crowned Parrot	Mealy Parrot (Amαzonα fαrinosα)	
Booming Nighthawk	Common Nighthawk (Chordeiles minor)	
Boucard's Hermit	Stripe-throated Hermit (Phaethornis striigularis)	16
Boucard's Tinamou	Slaty-breasted Tinamou (Crypturellus boucardi)	
Brown-capped Leptopogon	Sepia-capped Flycatcher (Leptopogon amaurocephalus)	38
Buzzard (colloquial)	Black Vulture (Coragyps atratus), Turkey Vulture (Cathartes aura)	4, 35
Cande's Manakin	White-collared Manakin (Manacus candei)	47
Cassin's Dove	Gray-chested Dove (Leptotila cassini)	46
Cayenne Kite	Gray-headed Kite (Leptodon cayanensis)	
Cayenne Swift	Lesser Swallow-tailed Swift (Panyptila cayennensis)	
Common Egret	Great Egret (Ardea alba)	32
Common Meadowlark	Eastern Meadowlark (Sturnella magna)	
Crested Eagle-Hawk	Ornate Hawk-Eagle (Spizαetus ornαtus)	
Crested Flycatcher	Great Crested Flycatcher (Myiαrchus crinitus)	
Cuvier's Hummingbird	Scaly-breasted Hummingbird (Phaeochroa cuvieri)	

RCHAIC OR COLLOQUIAL NAMES	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE	
Darter	Anhinga (Anhingα αnhingα)		
Derby Flycatcher	Great Kiskadee (Pitangus sulphuratus)	44	
Dusky-backed Swift	Vaux's Swift (Chaetura vauxi)		
Dusky-tailed Ant-Tanager	Red-throated Ant-Tanager (Hαbiα fuscicαudα)	4	
Eastern Chachalaca	Plain Chachalaca (Ortαlis vetulα)	17	
Everglade Kite	Snail Kite (Rostrhamus sociabilis)		
Fawn-breasted Hummingbird	Buff-bellied Hummingbird (Amazilia yucatanensis)		
Fishing Buzzard	Black-collared Hawk (Busarellus nigricollis)		
Flint-billed Woodpecker	Pale-billed Woodpecker (Campephilus guatemalensis)	65	
Gould's Euphonia	Olive-backed Euphonia (Euphoniα gouldi)		
Gray-headed Greenlet	Lesser Greenlet (Hylophilus decurtatus)		
Gray-headed Hylophilus	Lesser Greenlet (Hylophilus decurtatus)		
Gray's Robin	Clay-colored Robin (Turdus grayi)	14	
Gray's Thrush	Clay-colored Robin (Turdus grayi)	14	
Great Shrike-Tanager	Black-throated Shrike-Tanager (Lanio aurantius)		
Ground-Chat	Gray-crowned Yellowthroat (Geothlypis poliocephala)		
Guatemalan Amazon	Yellow-headed Parrot (Amazona oratrix)	35	
Guatemalan Ivory-bill	Pale-billed Woodpecker (Campephilus guatemalensis)	65	
Guatemalan Leafscraper	Scaly-throated Leaftosser (Sclerurus guatemalensis)		
Guatemalan Parrot	Yellow-headed Parrot (Amazona oratrix)	35	
House Bird (colloquial)	House Wren (Troglodytes aedon)	65	
Inca Jay	Green Jay (Cyanocorax yncas)		
Ivory-billed Woodhewer	lvory-billed Woodcreeper (Xiphorhynchus flavigaster)	46	
Kiskadee Flycatcher	Great Kiskadee (Pitangus sulphuratus)	44	
Lesser Black-Hawk	Common Black-Hawk (Buteogallus anthracinus)		
Lesser Rice Grosbeak	Thick-billed Seed-Finch (Oryzoborus funereus)		
Lesson Oriole	Black-cowled Oriole (Icterus prosthemelas)	13	
Little Green Heron	Green Heron (Butorides virescens)		
Little Xenops	Plain Xenops (Xenops minutus)		
Long-tailed Chat	Gray-crowned Yellowthroat (Geothlypis poliocephala)		
Lowland Wood-Wren	White-breasted Wood-Wren (Henicorhina leucosticta)		
Mangrove Amazon	Red-lored Parrot (Amazona autumnalis)	13	
Mangrove Parrot	Red-lored Parrot (Amazona autumnalis)	13	
Man-o'-War Bird	Magnificent Frigatebird (Fregαtα magnificens)	62	
Massena Trogon	Slaty-tailed Trogon (Trogon massena)		
Mexican Peppershrike	Rufous-browed Peppershrike (Cyclarhis gujanensis)		
Morrelet Seedeater	White-collared Seedeater (Sporophilia torqueola)	34	
Mottled Wood-Owl	Mottled Owl (Ciccaba virgata)		
Night Heron	Black-crowned Night Heron (Nycticorax nycticorax)		
Northern Catbird	Gray Catbird (Dumetella carolinensis)	13	
Northern Tody-Flycatcher	Common Tody-Flycatcher (Todirostrum cinereum)	44	
Oleaginous Pipromorpha	Ochre-bellied Flycatcher (Mionectes oleagineus)	16	
Olivaceous Cormorant	Neotropic Cormorant (Phalacrocorax brasilianus)		
Olivaceous Flycatcher	Dusky-capped Flycatcher (Myiarchus tuberculifer)		
Olivaceous Woodhewer	Olivaceous Woodcreeper (Sittasomus griseicapillus)		
Olive-backed Thrush	Swainson's Thrush (Catharus ustulatus)		
Ornate Eagle-Hawk	Ornate Hawk-Eagle (Spizaetus ornatus)		
Parula Warbler	Northern Parula (Parula americana)		
Pato Careto	Blue-winged Teal (Anas discors)		
Polymorphic Attila	Bright-rumped Attila (<i>Attila spadiceus</i>)	21	
Prevost's Cacique	Yellow-billed Cacique (Amblycercus holosericeus)	17	
Prevost's Mango	Green-breasted Mango (Anthracothorax prevostii)		
Pucheran's Woodpecker	Black-cheeked Woodpecker (Melanerpes pucherani)	 	
Red Cardinal	Northern Cardinal (Cardinalis cardinalis)	46	

RCHAIC OR COLLOQUIAL NAMES	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE	
Red Rail	Ruddy Crake (Laterallus ruber)		
Red-billed Azurecrown	Azure-crowned Hummingbird (Amazilia cyanocephala)		
Red-eared Parrot	Brown-hooded Parrot (Pionopsitta haematotis)		
Rieffer's Hummingbird	Rufous-tailed Hummingbird (Amazilia tzacatl)	5, 16	
Ruddy Woodhewer	Ruddy Woodcreeper (Dendrocincla homochroa)		
Rufescent Tinamou	Thicket Tinamou (Crypturellus cinnamomeus)		
Rufous Pigeon	Pale-vented Pigeon (Patagioenas cayennensis)	14	
Savanna Vulture	Lesser Yellow-headed Vulture (Cathartes burrovianus)		
Scaly-throated Leafscraper	Scaly-throated Leaftosser (Sclerurus guatemalensis)		
Sennett's White-tailed Hawk	White-tailed Hawk (Buteo albicaudatus)		
Sharpe's Seedeater	White-collared Seedeater (Sporophilia torqueola)	34	
Singing Blackbird	Melodious Blackbird (Dives dives)		
Sparrow Hawk	American Kestrel (Falco sparverius)		
Sulphury Flatbill	Yellow-olive Flycatcher (Tolmomyias sulphurescens)		
Tawny-crowned Hylophilus	Tawny-crowned Greenlet (Hylophilus ochraceiceps)		
Tawny-winged Woodhewer	Tawny-winged Woodcreeper (Dendrocincla anabatina)		
Texas Nighthawk	Lesser Nighthawk (Chordeiles acutipennis)		
Thin-billed Woodhewer	Streak-headed Woodcreeper (Lepidocolaptes souleyetii)		
Trilling Nighthawk	Lesser Nighthawk (Chordeiles acutipennis)		
Tropical House-Wren	House Wren (Troglodytes aedon)	65	
Tuxtla Sabrewing	Wedge-tailed Sabrewing (Cαmpylopterus curvipennis)		
Tyrannine Antbird	Dusky Antbird (Cercomacra tyrannina)	38	
Tyrant Hawk-Eagle	Black Hawk-Eagle (Spizaetus tyrannus)		
Vermilion-crowned Flycatcher	Social Flycatcher (Myiozetetes similis)	44	
Water Turkey	Anhinga (Anhinga anhinga)		
Wedge-bill	Wedge-billed Woodcreeper (Glyphorynchus spirurus)	47	
Wedge-billed Woodhewer	Wedge-billed Woodcreeper (Glyphorynchus spirurus)	47	
White-capped Parrot	White-crowned Parrot (Pionus senilis)		
White-eyed Flycatcher	Yellow-olive Flycatcher (Tolmomyias sulphurescens)		
White-fronted Dove	White-tipped Dove (Leptotila verreauxi)		
Wied's Crested Flycatcher	Brown-crested Flycatcher (Myiarchus tyrannulus)	65	
Wing-barred Seedeater	Variable Seedeater (Sporophila αmericana)		
Wood Ibis	Wood Stork (Mycteria americana)	67	
Yellow-thighed Manakin	Red-capped Manakin (Pipra mentalis)		
Yucatán Hummingbird	Buff-bellied Hummingbird (Amazilia yucatanensis)		

APPENDIX 1H. ALTERNATIVE AND COMBINED FORM NAMES (IN ALPHABETICAL ORDER, FROM JONES 2003)

LITERNATIVE AND COMBINED FORM NAMES	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE	
American Jacana	Northern Jacana (Jacana spinosa)	67	
American Mourning Dove	Mourning Dove (Zenaida macroura)		
American Purple-Gallinule	Purple Gallinule (Porphyrio martinica)	67	
American White Ibis	White Ibis (Eudocimus albus)		
Aztec Parakeet	Olive-throated Parakeet (Arαtingα nαnα)		
Barred Woodcreeper	Northern Barred-Woodcreeper (Dendrocolaptes sanctithomae)		
Black-hooded Grosbeak	Rose-breasted Grosbeak (Pheucticus ludovicianus)		
Black-shouldered Kite	White-tailed Kite (Elanus leucurus)		
Blue-tailed Emerald	Canivet's Emerald (Chlorostilbon canivetii)		
Boat-tailed Grackle	Great-tailed Grackle (Quiscalus mexicanus)		
Buff-backed Heron	Cattle Egret (Bubulcus ibis)		
Chestnut-bellied Heron	Agami Heron (Agamia agami)		
Citreoline Trogon	Black-headed Trogon (Trogon melanocephalus)	15	
Clay-colored Thrush	Clay-colored Robin (Turdus grayi)	14	
Common Bobwhite	Black-throated Bobwhite (Colinus nigrogularis)		

LTERNATIVE AND COMBINED FORM NAMES	ENGLISH NAME AND SCIENTIFIC NAME OF SPECIES	PHOTO ON PAGE	
Common Potoo	Northern Potoo (Nyctibius jamaicensis)		
Cozumel Bananaquit	Bananaquit (Coerebα flαveolα)		
Eastern Pewee	Eastern Wood-Pewee (Contopus virens)		
Fork-tailed Emerald	Canivet's Emerald (Chlorostilbon cαnivetii)		
Golden-fronted Woodpecker	Red-vented Woodpecker (Melanerpes pygmaeus)		
Gray-headed Dove	Gray-fronted Dove [Leptotila rufaxilla (plumbeiceps)]		
Great White Egret	Great Egret (Ardeα αlbα)	32	
Green-backed Heron	Green Heron (Butorides virescens)		
Guatemalan Screech-Owl	Vermiculated Screech-Owl (Megascops guatemalae)		
Jamaican Potoo	Northern Potoo (Nyctibius jamaicensis)		
Least Pygmy-Owl	Central American Pygmy-Owl (Glaucidium griseiceps)		
Lesser Seed-Finch	Thick-billed Seed-Finch (Oryzoborus funereus)		
Little Hermit	Stripe-throated Hermit (Phaethornis striigularis)	16	
Long-tailed Hermit	Long-billed Hermit (Phaethornis longirostris)	16	
Mealy Amazon	Mealy Parrot (Amazona farinosa)		
Mexican Antthrush	Black-faced Antthrush [Formicarius analis (moniliger)]	65	
Mexican Bananaquit	Bananaquit (Coereba flaveola)		
Middle-American Screech-Owl	Vermiculated Screech-Owl (Megascops guatemalae)		
Myrtle Warbler	Yellow-rumped Warbler (Dendroica coronata)		
Northern Oriole	Baltimore Oriole (Icterus galbula)	13	
Northern Rough-winged Swallow	Ridgeway Rough-winged Swallow	65	
Northern Royal-Flycatcher	Royal Flycatcher (Onychorhynchus coronatus)	38	
Olive-throated Conure	Olive-throated Parakeet (Aratinga nana)	36	
Pauraque	1		
	Common Pauraque (Nyctidromus albicollis)	7.4	
Petén Vireo	Mangrove Vireo [Vireo pallens (semiflavus)]	34	
Pygmy Kingfisher	American Pygmy Kingfisher (Chloroceryle αeneα)	67	
Red-crowned Woodpecker	Red-vented Woodpecker (Melanerpes pygmaeus)		
Red-eyed Cowbird	Bronzed Cowbird (Molothrus aeneus)		
Red-eyed Vireo	Yellow-green Vireo (Vireo flavoviridis)	17	
Red-lored Amazon	Red-lored Parrot (Amazona autumnalis)	13	
Ridgway's Pygmy-Owl	Ferruginous Pygmy-Owl (Glaucidium brasilianum)	65	
Rough-winged Swallow	Northern Rough-winged Swallow (Stelgidopteryx serripennis)	65	
Salvin's Nightjar	Yucatan Nightjar (Caprimulgus badius)		
Scarlet-rumped Tanager	Passerini's Tanager (Ramphocelus passerinii)		
Southern House-Wren	House Wren (Troglodytes αedon)	65	
Swallow	Barn Swallow (Hirundo rusticα)		
Tawny-collared Nightjar	Yucatan Nightjar (Caprimulgus badius)		
Thrush-like Manakin	Thrush-like Schiffornis (Schiffornis turdina)		
Thrush-like Mourner	Thrush-like Schiffornis (Schiffornis turdina)		
Tropical Kingbird	Couch's Kingbird (Tyrannus couchii)		
Variable Screech-Owl	Vermiculated Screech-Owl (Megascops guatemalae)		
Western Long-tailed Hermit	Long-billed Hermit (Phaethornis longirostris)	16	
White-browed Wren	Carolina Wren (Thryothorus ludovicianus)		
White-fronted Amazon	White-fronted Parrot (Amazonα albifrons)		
White-throated Spadebill	Stub-tailed Spadebill (Platyrinchus cancrominus)		
White-throated Thrush	White-throated Robin (Turdus assimilis)		
Yellow-cheeked Amazon	Red-lored Parrot (Amazona autumnalis)	13	
Yellow-cheeked Parrot	Red-lored Parrot (Amazona autumnalis)	13	
Yellow-crowned Amazon	Yellow-headed Parrot (Amazona oratrix)	35	
Yellow-headed Amazon	Yellow-headed Parrot (Amazona oratrix)	35	
Yellow-lored Amazon	Yellow-lored Parrot (Amazona xantholora)		
Yucatán Amazon	Yellow-lored Parrot (Amazona xantholora)		
Yucatán Bobwhite	Black-throated Bobwhite (Colinus nigrogularis)		
Yucatán Parrot	Yellow-lored Parrot (Amazona xantholora)		

APPENDIX 2. BIRDS WITHOUT BORDERS – AVES SIN FRONTERAS® BELIZE PARTNERS AND COLLABORATORS

BWB-ASF thanks the many partners and collaborators listed below. (Note: Some of these organizations accept volunteers. If you would like to volunteer to help one of these organizations conserve birds and other wildlife, please contact the organization directly.)

- The Government of Belize Ministry of Natural Resources, the Environment and Industry, the Forestry Department and Conservation Division
- The Government of Belize Ministry of Agriculture and Belize Agricultural Health Authority
- The Belize Zoo and Tropical Education Center (Sharon Matola, Director)
- The Chaa Creek Nature Reserve (Mick & Lucy Fleming)
- Chial Farms
- The other Belize landowners (Louis Sylvester and family, Salvador Espat and family, James and Debbie Scott and Tracy and Mark Langan)
- The United States Fish and Wildlife Service Division of Bird Habitat Conservation
- The Belize Association of Private Protected Areas (BAPPA)
- Toledo Institute for Development and Environment (TIDE)
- The Belize Institute of Archeology
- The Belize Botanical Gardens
- The Belize Audubon Society
- Programme for Belize
- Bruce and Carolyn Miller, Wildlife Conservation Society, Administrators of Belize Biodiversity Information System
- Carol Farneti-Foster and Richard Foster, Wildlife Photographers
- Sibun Watershed Association
- Belize Friends for Conservation and Development
- Society for the Promotion of Eco-cultural Tourism and the Environment
- The Mesoamerican Society for Biology and Conservation
- Monkey Bay Wildlife Sanctuary
- United Nations Development Program/Global Environmental Facility Small Grants Programme, Philip Balderamos, National Coordinator
- Jan Meerman, Tineke Boemsa and the Green Hills Farm
- Cheers Restaurant (Anita and Christie Tupper)
- Mesoamerican Biological Corridor
- Protected Areas Conservation Trust

APPENDIX 3. SPECIAL ACKNOWLEDGMENTS

Birds Without Borders – *Aves Sin Fronteras*® would not have been possible without the support and assistance of the following individuals and organizations. We would like to express our sincere thanks to:

- Gil Boese, Ph.D., president emeritus of the Zoological Society of Milwaukee and president of the Foundation for Wildlife Conservation, Inc., for his vision, for founding the Birds Without Borders – Aves Sin Fronteras* project and for his continuous support of the project.
- The Foundation for Wildlife Conservation, Inc., and the Zoological Society of Milwaukee for funding and support of the BWB-ASF project.
- The 16 Belizean BWB-ASF staff members whose names do not appear as authors of this manual. These dedicated men and women worked very hard to improve their bird-identification skills, to learn to conduct the field research, and to use computers to enter and summarize the data. They willingly worked many long hours under often challenging conditions. After the fieldwork was completed, they worked additional hours to compile and organize the data collected. Their hard work and perseverance helped to make possible this manual and the Publications and Presentations listed on pages 102-103.
- The private landowners who generously allowed us to use their land for this research.
- Our families, whose patience, support and understanding of our long working hours helped us make the project the success it is today.
- Sharon Matola, director of the Belize Zoo and Tropical Education Center, and Tony Garel, former manager of the Tropical Education Center, for their support throughout the project.
- Mick and Lucy Fleming of Chaa Creek for their support at the Chaa Creek study site.
- The many BWB-ASF Wisconsin staff members who helped train the Belize staff, especially Gene Albanese, Trung Tieu, Michelle Jacobi, Kerry Scanlan and Brian Francois.
- The U.S. Fish and Wildlife Service for funding through the Neotropical Migratory Bird Conservation Act that supported the data analysis and preparation of portions of this document.
- Marsha Mather of Laacke & Joys (sporting-goods store in Milwaukee, Wisconsin) for providing highquality field equipment to carry out our research.
- The Antonia Foundation and Krispy Kreme for providing funding for the research and data analysis.
- Aurora Sambolin for preparing the Spanish translation.
- Anna Rahn and Jessica Mac Gregor for their assistance with data entry and photo preparation.
- Marcia Sinner of the Zoological Society of Milwaukee Creative Department, for her design of this publication, and the Zoological Society's publications coordinator, Paula Brookmire, for her editing.
- Elizabeth Mallory of Manomet Center for Conservation Sciences for providing us with her protocols and for many helpful discussions at the start of our research in Belize.
- Chandler Robbins of the USGS Patuxent Wildlife Research Center for helpful discussions on our point counts at the start of our research in Belize.
- Photographers who generously allowed us to use their beautiful bird photographs in this publication:

Nick Stephens John McQuillan David Winkler Carol Farneti-Foster Larry Hopwood Kevin Bronson Gordon Macdonald Richard Brodzeller Lynn Miller Jack Bartholmai Gene Albanese Timothy Fenske Jan Meerman Carolyn Miller Kelley Hopwood James and Dorothy Beveridge Kevin Schafer VIRE0

APPENDIX 4. RESEARCH TECHNIQUES USED TO STUDY BIRDS AND THEIR HABITATS

Since the start of BWB-ASF we established collaborations so that our research findings could become part of larger databases. BWB-ASF research protocols are based on standardized scientific protocols. At the start of the project, we contacted many scientists who worked in Belize so that we could use their protocols and be able to compare our research results to theirs. Following are the research techniques we used to study Belize's birds and their habitats.

BIRD BANDING

RICHARD BRODZELLER



BWB-ASF international coordinator Vicki Piaskowski bands a bird while Andrew Bacon records data. The band is made of lightweight aluminum and fits loosely on the bird's leg.

Bird banding involves capturing birds in special nets called mist nets, carefully removing them, placing a numbered aluminum band on their lower leg, examining and taking measurements, and then releasing the birds. Bird banding requires specialized training and a permit from the U.S. and Belize governments. Banding does not harm

the birds in any way. Banding provides valuable information on the condition, age and sex of the birds captured. It also allows researchers to determine the species and numbers of birds present in a given location as well as whether the bird is breeding in the area. The information on migratory birds banded is submitted to the Bird Banding Laboratory of the U.S. Geological Survey, where it is computerized. Banding provides valuable information on migration routes and timing, species that are increasing or decreasing over time, breeding and non-breeding populations, site fidelity to breeding and wintering (non-breeding) areas, and longevity of individuals.

If you find a banded bird, contact the BWB-ASF office (822-0236 or bwbasf@btl.net) or the Bird Banding Laboratory (http://www.pwrc.usgs.gov/bbl or 1-800-327-2263). You also may write to: Bird Banding Laboratory, USGS Patuxent Wildlife Research Center, 2100 Beech Forest Rd., Laurel, MD 20708-4037, U.S.A. You will need to report the band number, location and date the bird was found, how you got the band and your name and address. After

reporting the band, you will receive a Certificate of Appreciation that has information about when and where the bird was originally banded.

BWB-ASF bird banding was conducted according to the methods of Weise (1988 and pers. comm.) and McCracken et al. (1994 and 1999). Breeding condition of banded birds was determined through the methods of Burton and DeSante (1998). Aging and sexing of North American migrants was based on Pyle (1997). Aging and sexing of residents was based on Stiles and Skutch (1989), Howell and Webb (1995) and Pyle (1997).



A bird is captured in a mist net.



A bird being banded.



A researcher holds up a bird's leg to show the band.



A bird that has been banded is ready for release.

COUNTING BIRDS

To count the bird species and numbers present in a given area, we used point counts (Lynch 1995, Mallory 1997, Robbins et al. 1997 and Howe et al. 1997) and censusing (McCracken et al. 1993). Point counts involve standing at a series of points for 3-10 minutes and counting all of the birds seen or heard. Censusing involves walking slowly on an established route and counting all of the birds seen or heard. We also conducted bird surveys by canoe along the Sibun and Macal Rivers.

RESEARCH TECHNIQUES (CONTINUED)

NEST SEARCHING AND MONITORING

The most accurate way of determining if a bird's nesting attempt is successful is to locate the nest and monitor it until the young are old enough to leave the nest (fledge). Nests are monitored (the number of eggs or young present are counted) when found, then every 3-4 days until the young fledge or the nest fails due to predation or other causes (Martin et al. 1997). To minimize disturbance to the birds and not increase the risk of predation, nests are monitored from a distance when possible, and as quickly



Mario Teul, BWB-ASF Belize national coordinator, uses a pole with a mirror attached to observe the contents of a nest.

as possible. Prior to approaching the nest, researchers search the area for any sign of possible predators, particularly avian predators such as Brown Jays (*Cyanocorax morio*, Piam-piam) or hawks. Care is taken not to leave a dead-end trail to the nest that mammalian predators could follow. If vegetation obscures the nest contents, a stick is used to move aside the vegetation so that no human scent is left at the nest site. If the nest is beyond reach, a pole with a mirror attached is used to view the nest contents.

VEGETATION MEASUREMENTS

To describe the habitats important to birds, we did detailed measurements of the vegetation present in the areas where we banded birds, conducted nest searching and monitoring, and conducted point counts. We made these vegetation measurements based on the methods of Mueller-Dombois and Ellenberg (1974), Ralph et al. (1993), Howe et al. (1997), Mallory (1997) and Martin et al. (1997).

VICKI PIASKOWSI



Mario Teul, BWB-ASF Belize national coordinator, measures a tree diameter during vegetation measurements.

VICKI PIASKOWS



Reynold Cal, BWB-ASF Runaway Creek Nature Preserve manager, uses a pole to measure vegetation density in the tree canopy.

APPENDIX 5. BIRDS WITHOUT BORDERS - AVES SIN FRONTERAS® STAFF PRESENTATIONS AND PUBLICATIONS

(ABSTRACTS OR FULL TEXT AVAILABLE AS PDFS AT: HTTP://www.zoosociety.org/Conservation/BWB-ASF/List.php or contact the BWB-ASF office at 822-0236 or bwbasf@btl.net for a copy.)

STAFF MEMBER(S)	TITLE	PUBLICATION/CONFERENCE	
Piaskowski, V. and O. A. Figueroa	Modification of point counts to enhance species detectability during the non-breeding season in Belize, Central America	1998 N. American. Ornithological Conference, St. Louis, MO, U.S.A.	
Albanese, G. and V. Piaskowski	An inexpensive elevated mist net apparatus	1999 N. Amer. Bird Bander 24: 129-134	
Figueroa, O. A., W. Martinez, M. Teul and V. Piaskowski	Birds of the Sibun riverine forest, Runaway Creek Nature Preserve, Belize	2001 Mesoamerican Society for Biology and Conservation Congress, San Salvador, El Salvador (Spanish)	
Piaskowski, V. and G. Albanese	Resource sampling of arthropods in all vegetation strata and correlation with arthropods identified in fecal samples of insectivorous warblers at a spring migration stopover site	2001 American Ornithologists' Union Meeting, Seattle, WA, U.S.A.	
Piaskowski, V. and O. A. Figueroa	Cooperative work among scientists of two worlds (Roundtable discussion)	2002 Smithsonian Institution Birds of Two Worlds Symposium, Shepardstown, WV, U.S.A.	
Piaskowski, V.	Conservation contributions of the Birds Without Borders - Aves Sin Fronteras® project	2002 Wisconsin Society for Ornithology Meeting, Ripon, WI, U.S.A.	
Figueroa, O. A., V. D. Piaskowski, W. E. Martinez and M. Teul	Demographics of resident and migratory bird species in central Belize	2002 Belize and the Wider Caribbean Conference, San Ignacio, Belize	
Piaskowski, V., O. A. Figueroa, M. Teul and W. Martinez	Breeding season bird banding in pine savanna habitats in Belize	2002 Mesoamerican Society for Biology and Conservation Congress, San Jose, Costa Rica (Spanish)	
Figueroa, O. A., V. Piaskowski and R. Cal	Conservation of the jabiru stork (Jabiru mycteria) in Belize	2002 Mesoamerican Society for Biology and Conservation Congress, San Jose, Costa Rica (Spanish)	
Teul, M., V. Piaskowski, O. A. Figueroa and W. Martinez	The breeding biology of the Fork-tailed flycatcher (<i>Tyrαnnus sαναnα</i>) in lowland pine savanna habitats in Belize	2002 Mesoamerican Society for Biology and Conservation Congress, San Jose, Costa Rica (Spanish)	
Martinez, W., V. Piaskowski, O. A. Figueroa and M. Teul	The breeding biology of the Gray-crowned yellowthroat (Geothlypis poliocephala palpebralis) in lowland pine savanna habitats in Belize	2002 Mesoamerican Society for Biology and Conservation Congress, San Jose, Costa Rica (Spanish)	
Figueroa, O. A. and G. Albanese	Nest and eggs of the Mangrove (Maya) Vireo (Vireo pallens semiflavus)	2003 Ornitol. Neotrop. 13: 437-439	
Figueroa, O. A., W. Martinez, M. Teul, G. Albanese and V. D. Piaskowski	Additional notes on eight bird species from Belize	2004 Cotinga. 21: 31-33.	
Piaskowski, V. D., M. Teul, R. N. Cal, K. M. Williams and W. E. Martinez	The birds of central Belize	2003 Caribbean Geography 13: 69-87	
Piaskowski, V., O. A. Figueroa, W. Martinez and M. Teul	Breeding season bird banding in pine savanna habitats in Belize	2003 American Ornithologists' Union Meeting, Champaign-Urbana, IL, U.S.A.	
Martinez, W., V. Piaskowski and M. Teul	Reproductive biology of the Gray-crowned yellowthroat (Geothlypis poliocephala palpebralis) in central Belize	2004 Ornitol. Neotrop. 15: 155-162.	
Teul, M., V. D. Piaskowski, W. E. Martinez and K. M. Williams	The biodiversity of central Belize's Runaway Creek Nature Preserve	2003 Mesoamerican Society for Biology and Conservation Congress, Tuxtla, Chiapas, Mexico (Spanish)	
Piaskowski, V. D., M. Teul, K. M. Williams and R. N. Cal	Habitat associations of Neotropical migrants in Belize during the non-breeding season.	Wisconsin Society for Ornithology/Wisconsin Bird Conservation Initiative Symposium 2005, Neotropical Migrants: Insuring their return, Wisconsin Rapids, WI., U.S.A.	
Piaskowski, V. D., M. Teul, R. N. Cal and K. M. Williams	The Zoological Society of Milwaukee's conservation efforts in Belize.	Wisconsin Society for Ornithology/Wisconsin Bird Conservation Initiative Symposium 2005, Neotropical Migrants: Insuring their return, Wisconsin Rapids, WI., U.S.A.	

STAFF PRESENTATIONS AND PUBLICATIONS (CONTINUED)

STAFF MEMBER(S)	TITLE	PUBLICATION/CONFERENCE
Piaskowski, V. D., M. Teul, K. M. Williams, and R. N. Cal.	Habitat associations of Neotropical migrants in Belize, Central America during the non-breeding season.	2005 Passenger Pigeon 67(1): 61-76.
Piaskowski, V. D., M. Teul, K. M. Williams, and R. N. Cal.	The birds of the Sibun riverine forest, Belize.	2006 Ornitol. Neotrop. 17: 333-352.
Teul, M., V. D. Piaskowski, and K. M. Williams	The breeding biology of the Fork-Tailed Flycatcher (Τyrαnnus sαναnα) in lowland pine savanna habitats in Belize.	In press. Ornitol. Neotrop.

LITERATURE CITED

- American Bird Conservancy. 2005. WEB: http://www.abcbirds.org/cats/brochure/brochure.htm and http://www.abcbirds.org/birdconservationalliance/members/window paper.PDF
- AOU (American Ornithologists' Union). 2005. Check-list of North American birds. WEB: http://www.aou.org/checklist/index.php3
- Avery, M. L., D. E. Daneke, D. G. Decker, P. W. Lefebvre, R. E. Matteson, and C. O. Nelms. 1988. Flight
 pen evaluation of eyespot balloons to protect citrus from bird depredations. Pp 277-280 in Crabb, A. C.
 and R. E. Marsh, (eds.). Proceedings of the 13th Vertebrate Pest Conference. University of California-Davis,
 California.
- Balick, M. J., M. H. Nee, and D. E. Atha. 2000. *Checklist of the Vascular Plants of Belize*. New York Botanical Garden Press, New York, New York.
- Bird Conservation Network. 2005. WEB: http://www.bcnbirds.org/window.html
- Booth, T. W. 1994. Bird dispersal techniques. Pp E19-E23 in Hygnstrom, S. E., R. M. Timm and G. E. Larson (eds.). *Protection and Control of Wildlife Damage*. USDA, University of Nebraska-Lincoln, Nebraska.
- Burton, K. M. and D. F. DeSante. 1998. *Instructions for the establishment and operation of stations as part of the Monitoring Avian Productivity and Survivorship (MAPS) Program*. Institute for Bird Populations, Point Reyes Station, California.
- Christ, S., S. Matus, and V. Palacio. 2001. *National Tour Guide Training Program. Trainers Manual.* Genesis Arts, Belize City, Belize.
- Coleman, J. S. and S. A. Temple. 1993. Rural residents' free-ranging domestic cats: a survey. Wildlife Society Bulletin 21: 381-390.
- Coleman, J. S. and S. A. Temple. 1996. On the prowl. Wisconsin Natural Resources 20(6): 4-8.
- CONABIO. 2005. Comision Nacional Para el Conocimiento y uso de la Biodiversidad. WEB. www.conabio.gob.mx.
- CONAP. 2000. Consejo Nacional de Áreas Protegidas: Listado de Especies de Fauna Silvestre Amenazadas de Extinción (Lista Roja de Fauna). Guatemala City, Guatemala.
- CREI and NARMAP. 1996. Bird Damage to Citrus: Identification and Monitoring. Citrus Research and Education Institute, Natural Resources Management and Protection Project, Dangriga, Belize.
- del Hoyo, J., A. Elliott, and J. Sargatal (eds.). 1992. *Handbook of the Birds of the World*, Vol. 1. Lynx Edicions, Barcelona, Spain.

- Dorr, B. and J. D. Taylor II. 2003. Wading bird management and research on North American Aquaculture Facilities. Pp. 52-61 in Fagerstone, K. A. and G. W. Witmer (eds.). *Proceedings of the 10th Wildlife Damage Management Conference*. Fort Collins, Colorado.
- Ehrlich, P. R., D. S. Dobkin, and D. Wheye. 1988. *The Birder's Handbook. A Field Guide to the Natural History of North American Birds.* Simon & Schuster, Inc., New York, New York.
- Fatal Light Awareness Program. 2005. WEB: http://www.flap.org
- Figueroa, O. A. and G. Albanese. 2003. Nest and eggs of the Mangrove (Maya) Vireo (Vireo pallens semiflavus). Ornitologia Neotropical 13: 437-439.
- Gill, F. B. 1994. Ornithology, 2nd ed. W. H. Freeman and Company, New York, New York.
- Glahn, J. F., B. Dorr, J. B. Harrel, and L. Khoo. 2002. Foraging ecology and depredation management of Great Blue Herons at Mississippi catfish farms. *Journal of Wildlife Management* 66: 194-201.
- Gorenzel, W. P., F. S. Conte, and T. P. Salmon. 1994. Bird damage at aquaculture facilities. Pp E5-E18 in Hygnstrom, S. E., R. M. Timm, and G. E. Larson (eds.). *Protection and Control of Wildlife Damage*. USDA, University of Nebraska-Lincoln, Nebraska.
- Howe, R. W., G. J. Niemi, S. J. Lewis, and D. A. Welsh. 1997. A standard method for monitoring songbird populations in the Great Lakes region. *Passenger Pigeon* 59: 183-194.
- Howell, S. N. G. and S. Webb. 1995. *A Guide to the Birds of Mexico and Northern Central America*. Oxford University Press, New York, New York.
- Humane Society of the United States. 2005.

 WEB: http://www.hsus.org/pets/pet_care/cat_care/keep_your_cat_safe_at_home_hsuss_safe_cats_campaign/
- Jones, H. L. 2003. Birds of Belize. University of Texas Press, Austin, Texas.
- Jones, H. L. and A. C. Vallely. 2001. *Annotated Checklist of the Birds of Belize*. Lynx Edicions, Barcelona, Spain.
- Kushlan, J. A., M. J. Steinkamp, K. C. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J. E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: the North American Waterbird Conservation Plan, version 1. Waterbird Conservation for the Americas, Washington, D.C.
- Kricher, J. C. 1997. A Neotropical Companion: an introduction to the animals, plants, and ecosystems of the New World Tropics, 2nd ed. Princeton University Press, Princeton, New Jersey.
- Littauer, G. 1990. Avian Predators: Frightening techniques for reducing bird damage at aquaculture facilities. Southern Regional Aquatic Center Publication No. 401, Uvalde, Texas.
- Lynch, J. F. 1995. Effects of point count duration, time-of-day, and aural stimuli on detectability of migratory and resident bird species in Quintana Roo, Mexico. Pp. 1-6 in Ralph, C. J., J. R. Sauer, and S. Droege (eds.). *Monitoring Bird Populations by Point Counts*. USDA Forest Service, Pacific Southwest Research Station, Albany, California. Gen. Tech. Rep. PSW-GTR-149.
- Mallory, E. P. 1997. *Rio Bravo Conservation Area monitoring*. Unpublished protocol provided by the author.

- Martin, T. E., C. Paine, J. C. Conway, W. M. Hochachka, P. Allen, and W. Jenkins. 1997. *The Breeding Biology Research and Monitoring Database (BBIRD) Field Protocol*. Montana Cooperative Wildlife Unit, Missoula, Montana.
- McCracken, J. D., D. J. T. Hussell, and E. H. Dunn. 1993. *A Manual for Monitoring Bird Migration*. Long Point Bird Observatory, Port Rowan, Ontario.
- McCracken, J., L. Enright, D. Shepherd, J. Cappleman, and E. Dunn. 1994. *The Canadian Bander's Study Guide*. Long Point Bird Observatory, Port Rowan, Ontario, Canada.
- McCracken, J., L. Enright, D. Shepherd, J. Cappelman, and E. Dunn. 1999. *The Canadian Bird Bander's Training Manual*. Canadian Wildlife Service. Technical report 275. Quebec, Canada.
- Meerman, J. C. and W. Sabido. 2001. *Central American Ecosystems Map: Belize*. Volumes I and II. Programme for Belize, Belize City, Belize.
- Miller, B. W. and C. M. Miller. 1997. An Avian Risk Assessment: Bird Species of Conservation Concern in Belize. Report prepared for the Programme for Belize and the Nature Conservancy. Gallon Jug, Belize.
- Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and Methods of Vegetation Ecology. John Wiley and Sons, Inc., New York, New York.
- National Audubon Society. 2004. WEB: http://www.lightsout.audubon.org
- Pyle, P. 1997. Identification Guide to North American Birds. Slate Creek Press, Bolinas, California.
- Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. *Handbook of Field Methods for Monitoring Landbirds*. USDA Forest Service, Pacific Southwest Research Station, Albany, California. Gen. Tech. Rep. PSW-GTR-144.
- Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C, M, Rustay, J. S. Wendt, and T. C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology, Ithaca, New York.
- Robbins, C. S., B. A. Dowell, J. Bucklin, and I. Arias. 1997. *Modified BBS and off-road counts for landscape planning in Guatemala*. Abstract, 115th Stated Meeting of the American Ornithologists' Union, Minneapolis, Minnesota.
- Robbins, C. S., J. R. Sauer, R. S. Greenberg, and S. Droege. 1989. Population declines in North American birds that migrate to the Neotropics. *Proceedings of the National Academy of Sciences* 86: 7658-7662.
- Speicher, J. and R. Greenberg. 1991. *Checklist of the Neotropical Migrants*. Smithsonian Migratory Bird Program, Washington, D.C.
- Stiles, F. G. and A. F. Skutch. 1989. *A Guide to the Birds of Costa Rica*. Cornell University Press, Ithaca, New York.
- Taylor II, J. D. and B. S. Dorr. 2003. Double-Crested Cormorant impacts to commercial and natural resources. Pp. 43-51 in Fagerstone, K. A. and G. W. Witmer (eds). *Proceedings of the 10th Wildlife Damage Management Conference*. Fort Collins, Colorado.

- Thomas, B. T. 1985. Coexistence and behavior differences among the three western hemisphere storks. Pp. 921-931 in Buckley, P. A., M. S. Foster, E. S. Morton, R. S. Ridgely, and F. G. Buckley (eds). Ornithological Monographs No. 36, Neotropical Ornithology. Allen Press, Lawrence, Kansas.
- Tipton, A. R., J. H. Rappole, A. H. Kane, R. H. Flores, D. B. Johnson, J. Hobbs, P. Schulz, S. L. Beasom, and J. Palacios. 1989. Use of monofilament line, reflective tape, beach-balls, and pyrotechnics for controlling grackle damage to citrus. Pp. 126-128 in Bjugstad, A. J., D. W. Uresk, and R. H. Hamre (eds.). Proceedings of the 9th Great Plains Wildlife Damage Control Workshop. Fort Collins, Colorado.
- Tobin, M. E. 1998. Research and management of bird depredations at catfish farms. Pp. 67-70 in Baker, R. O. and A. C. Crabb (eds). *Proceedings of the 18th Vertebrate Pest Conference*. University of California-Davis, California.
- U.S. Fish and Wildlife Service and Partners in Flight. 2005. WEB: http://www.fws.gov/birds/documents/Collisions.pdf
- Vreugdenhil, D., J. Meerman, A. Meyrat, L. Diego Gómez, and D. J. Graham. 2002. *Map of the Ecosystems of Central America: Final Report*. World Bank, Washington, D.C.
- Weise, C. M. 1988. Long-term population trends in songbirds: evidence from a general netting program. University of Wisconsin-Milwaukee Field Station Bulletin 21: 1-9.
- Werner, S. J., M. E. Tobin, and P. B. Fioranelli. 2001. Great Egret preference for catfish size classes. *Waterbirds* 24: 381-385.

Questionnaire to be completed by **Farmers** receiving the Birds Without Borders - Aves Sin Fronteras® Recommendations for Landowners: How to Manage Your Land to Help Birds

Please help Birds Without Borders - Aves Sin Fronteras® improve our future outreach by completing this brief two-page survey about the manual you received. To thank you for your time, you will receive a free Birds Without Borders - Aves Sin Fronteras® cap.

Please check the most appropriate answer. You may check more than one answer.

1. How did you receive the manual?				
☐ Workshop given by Birds Without Borders - Aves Sin Fronterαs® staff				
☐ District Agricultural Coordinator				
☐ Extension officers				
☐ Mail				
☐ Other - please describe:				
2. What is your method of farming?				
☐ Slash-and-burn system				
☐ Mechanized farming				
☐ Both slash-and-burn and mechanized farming				
☐ Organic farming				
3. What category is the land you work on?				
☐ Personal lease land				
☐ Personal property with land titles				
☐ Government land				
☐ Other - please describe:				
4. What kind of farming do you do?				
☐ Subsistence (for own use only)				
☐ Vegetable				
☐ Livestock				
☐ Aquaculture				
☐ Fruit				
i. Citrus				
ii. Papaya				
iii. Mango				
iv. Other - please describe:				
5. Was this manual useful for your method of farming?				
☐ Very useful				
☐ Slightly useful				
☐ Not useful				
6. Birds play an important role in the environment. Do you agree or disagree?				
☐ Agree				
☐ Disagree				
7. Do you think that "birds and birding" bring tourism and financial benefits both to your community and to Belize?				
☐ Birds and birding bring many benefits				
☐ Birds and birding bring few benefits				
☐ Birds and birding bring no benefits				

Questionnaire to be completed by **Farmers** receiving the Birds Without Borders - Aves Sin Fronteras® Recommendations for Landowners: How to Manage Your Land to Help Birds (continued)

8. Please check the sections of the manual	that were the most helpful to you.
☐ Why are birds important?	
☐ A summary: What you can do to help	o birds
☐ Plants that provide food for birds	
•	as food by birds and other Belize native/agricultural plants
 Preventing birds from damaging crop 	
☐ Birds and aquaculture	
Pine savannas are important to birds	
☐ Forests found along Belize's rivers ar	
_	rders - Aves Sin Fronteras® Belize study sites
☐ Belize habitats that are preferred by	•
	,500 miles to return to Belize each year
☐ Other Belize habitats that are impor	·
☐ Helping Jabirus	tuit to birds
 Helping birds that nest in holes or ca 	avitios
☐ Naturally occurring water can benefi	
☐ Collisions with glass windows can ca	
☐ Your outdoor cat kills many birds	use bild deaths
,	east himle and anhance him manufations
☐ Another link between Belize and Wis	ect birds and enhance bird populations
Lists of bird names in different langu	lages
9. After reading this manual do you:	
Support bird conservation	
Have no opinion on bird conservatio	n
Don't believe in bird conservation	
	you changed your farming practices? Are you planning to make changes to your e changes below. (If you need more room, please write on the back of this page.)
	ecommendations on how to work in harmony with birds and ed more room, please write on the back of this page.)

Questionnaire to be completed by **Residents or Landowners** receiving the Birds Without Borders – Aves Sin Fronteras® Recommendations for Landowners: How to Manage Your Land to Help Birds

Please help Birds Without Borders - Aves Sin Fronteras® improve our future outreach by completing this brief two-page survey about the manual you received. To thank you for your time, you will receive a free Birds Without Borders - Aves Sin Fronteras® cap.

Please check the most appropriate answer. You may check more than one answer.

ı. I am	completing this survey as a:
	I Landowner
	I Resident who does not own land
	Business (for profit)
	Business (non-profit)
	I Tourism-related business (tour guide, resort)
	I Non-governmental organization (NGO)
	I Environmental group
	I Government department/agency
2. If yo	ou are completing the survey as a landowner or a resident, regarding the land on which you live:
	I I own the land
	I I rent the land
3. The	land I own or rent is located:
	I In a town or city
	I In a rural area
a. If v	ou also own land that you do not live on, is this land located:
-	I In a town or city
	I In a rural area
-	ou are completing the survey as a business, NGO, environmental group, government department/agency that man s land, is the land located:
_	I In a town or city
	I In a rural or other area
_	
6. Was	s this manual useful for managing your land?
	I Very useful
	I Slightly useful
	l Not useful
7. Plea	ase check the sections of the manual that were the most helpful to you.
	I Why are birds important?
	I A summary: What you can do to help birds
	I Plants that provide food for birds
	Places in Belize that sell plants used as food by birds and other Belize native/agricultural plants
	Preventing birds from damaging crops
	I Birds and aquaculture
	Pine savannas are important to birds
	Forests found along Belize's rivers are important to many birds
	Birds found at the Birds Without Borders - Aves Sin Fronteras® Belize study sites
	Belize habitats that are preferred by resident and migratory birds
	Neotropical migrants fly more than 1,500 miles to return to Belize each year
	Belize habitats that are important to birds
	I Helping Jabirus
	I Helping birds that nest in holes or cavities
	Naturally occurring water can benefit birds
	Collisions with glass windows can cause bird deaths
	Your outdoor cat kills many birds
	Other things that you can do to protect birds and enhance bird populations
	Another link between Belize and Wisconsin
	Lists of bird names in different languages
	RESIDENTS OF LANDOWNELS SULVEY D. I

Questionnaire to be completed by **Residents or Landowners** receiving the Birds Without Borders - Aves Sin Fronteras® Recommendations for Landowners: How to Manage Your Land to Help Birds (continued)

8. Birds play an important role in the environment. Do you agree or disagree?AgreeDisagree
 9. Do you think that "birds and birding" bring tourism and financial benefits both to your community and to Belize? □ Birds and birding bring many benefits □ Birds and birding bring few benefits □ Birds and birding bring no benefits
 10. After reading this manual do you: □ Support bird conservation □ Have no opinion on bird conservation □ Don't believe in bird conservation
11. As a result of reading this manual, have you changed the way that you manage your land? Are you planning to make changes in the way you manage your land in the future? Please describe these changes below. (If you need more room please write on the back of this page.)

Questionnaire to be completed by **Schools** receiving the Birds Without Borders - Aves Sin Fronteras® Recommendations for Landowners: How to Manage Your Land to Help Birds

Please help Birds Without Borders - Aves Sin Fronteras® improve our future outreach by completing this brief survey about the manual you received. To thank you for your time, your school will receive an incentive gift from Birds Without Borders - Aves Sin Fronteras®.

Please check the most appropriate answer. You may check more than one answer.

I. Type of school: Primary High school Junior college College/University Technical Other (please describe)					
2. Are you a: Teacher Principal Other (please describe)					
3. What subject(s) do you teach?					
4. Was this manual useful for your teaching? Very useful Slightly useful Not useful					
5. Birds play an important role in the environment. Do you agree or disagree? □ Agree □ Disagree					
 5. Do you think that "birds and birding" bring tourism and finance Birds and birding bring many benefits Birds and birding bring few benefits Birds and birding bring no benefits 	cial benefits both to your community and to Belize?				
 7. After reading this manual do you: Support bird conservation Have no opinion on bird conservation Don't believe in bird conservation 					
8. Please check the sections of the manual that were the most h Why are birds important? A summary: What you can do to help birds Plants that provide food for birds Places in Belize that sell plants used as food by birds and other Belize native/agricultural plants Preventing birds from damaging crops Birds and aquaculture Pine savannas are important to birds Forests found along Belize's rivers are important to many birds Birds found at the Birds Without Borders - Aves Sin Fronteras® Belize study sites Belize habitats that are preferred by resident and migratory birds	 □ Neotropical migrants fly more than 1,500 miles to return to Belize each year □ Other Belize habitats that are important to birds □ Helping Jabirus □ Helping birds that nest in holes or cavities □ Naturally occurring water can benefit birds □ Collisions with glass windows can cause bird deaths □ Your outdoor cat kills many birds □ Other things that you can do to protect birds and enhance bird populations □ Another link between Belize and Wisconsin □ Lists of bird names in different languages 				
9. How will you use this manual in your teaching?					