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Important Bird Areas AMERICAS

# GUATEMALA

Knut Eisermann & Claudia Avendaño





## Country facts at a glance

|                                    |                         |
|------------------------------------|-------------------------|
| Area:                              | 108,900 km <sup>2</sup> |
| Population (2006):                 | 13,000,000              |
| Capital:                           | Guatemala               |
| Altitude:                          | 0–4220 m                |
| <b>Number of IBAs:</b>             | <b>21</b>               |
| <b>Total IBA area:</b>             | <b>5,188,427 ha</b>     |
| <b>IBA coverage of land area:</b>  | <b>47%</b>              |
| Total number of birds:             | 725                     |
| Globally threatened birds:         | 10                      |
| Globally threatened birds in IBAs: | 8                       |
| Country endemics:                  | 1 (extinct)             |

## General introduction

Guatemala is located between latitudes 13.7 and 17.8 °N, with approximately 150 km of Atlantic coast (Gulf of Honduras) and 260 km of Pacific coast. It borders Mexico, Belize, El Salvador and Honduras.

It is a democratic republic with an elected president heading the executive branch of the government. The legislative system consists of a unicameral congress with popularly elected representatives. The country is divided into 22 provinces or departments, each headed by a governor. Department subdivisions or municipalities are administrated by mayors, and communities by Community Development Councils (COCODE, in Spanish).

Guatemala is a multicultural country with more than 20 Mayan ethnic groups, as well as Xinca, Garífuna and ladino (mixed descent) communities. The population increased by 35% between 1994 and 2002 (INE 2002), reaching a total of 11.2 million in 2002. The majority of the population, more than 8 million people, live in the highlands where the climate is favorable and soils are better for agriculture. The department of Guatemala is the most populated administrative division with 1195 people/km<sup>2</sup> and the department of Petén the least populated with just 11 people/km<sup>2</sup> (INE 2002).

Climax vegetation in Guatemala's most humid regions is evergreen or semi-deciduous broadleaf forest. Annual precipitation is between 1000 and 5000 mm and average temperatures range from 15 to 28 °C (MAGA 2002). Wetlands with forest cover account for 4290 km<sup>2</sup>, including mangroves. The total area of inland waters is 2800 km<sup>2</sup>. The southern highlands only receive 1000 to 1500 mm of rainfall annually and coniferous and mixed forests dominate these areas. Inland valleys are the most arid regions of Guatemala with an annual rainfall of 600 mm and average temperatures from 23 to 28 °C. Natural vegetation in these areas is thorn scrub and dry forest.

Forests currently cover 37% of the country, natural grasslands and scrub, 30%, and agricultural areas, 28% (MAGA 2006). In most of Guatemala, scrubland is part of the slash and burn agricultural system.

Guatemala can be divided into four zoogeographic regions for birds: the lowlands of the Atlantic slope have an area of 52,400 km<sup>2</sup> and correspond to the biome Gulf-Caribbean Slope (GCS). The highlands (37,500 km<sup>2</sup>) are part of the Madrean Highlands (MAH) biome and the Pacific lowlands (13,600 km<sup>2</sup>) and inland valleys (5400 km<sup>2</sup>) are part of the Pacific Arid Slope (PAS) biome (Stotz *et al.* 1996).



Fulvous Owl (*Strix fulvescens*) is restricted to the North Central American highlands (EBA 018), pictured in cloud forest in IBA Yalijux (GT010)  
Photo: Knut Eisermann

Conservation and protected area system



The Ministry of the Environment and Natural Resources (MARN, in Spanish) is the government authority responsible for the environment. Guatemala's protected area system currently covers 32% of the country (CONAP 2007), these areas were legalized through the Law on Protected Areas (Decree 4-89 and subsequent reforms). The National Council on Protected Areas (CONAP, in Spanish) is the government authority responsible for reserve management. Many reserves are jointly managed by other government agencies (for example, the National Institute of Forests, Institute of Archaeology and History), NGOs or private entities. Of 94 protected areas declared between 2001 and 2006, 79 are private reserves (CONAP 2007), showing a high level of interest in the private

sector for conservation. Several protected areas are critically threatened.

The Guatemalan government has signed several international agreements related to biodiversity conservation, among them, 1) The Ramsar Convention on Wetlands, until April 2008, seven wetlands had been designated Ramsar sites, although none maintain 1% of a global or regional population of waterbird; 2) Convention on International Trade in Endangered Species of Wild Fauna and Flora; 3) Convention on Biological Diversity; 4) UN Framework Convention on Climate Change (and Kyoto Protocol); 5) Convention on Biodiversity Conservation and Protection of Priority Wilderness Areas in Central America.

Box 1

Challenges faced in the conservation of the largest Neotropical forest north of the Amazon

The IBA Maya-Lacandón makes up part of the largest Neotropical forest north of the Amazon. This IBA is legally protected almost entirely by the Maya Biosphere Reserve and other protected area categories. However, the site still faces threats to ecosystem functioning and survival of key species. The Maya Biosphere Reserve lacks adequate management, resulting in serious loss of undisturbed habitat through forest fires in some areas, illegal extraction of timber, unsustainable use of non-wood natural resources, conversion of forests to agricultural land and extraction of crude oil (ParksWatch 2002a-d, 2003a-c, 2005). Furthermore, several roads are planned within the area, which, if constructed, would mean the loss of 183,000 ha of forest (Ramos *et al.* 2007) or 10% of the IBA's total area.

BP: Protected Biotope, MC: Cultural Monument, PN: National Park.

Mayan ruins at Tikal amid the extensive forests of the IBA Maya-Lacandón (GT001). Photo: Knut Eisermann

Ornithological importance



A total of 725 species have been recorded in Guatemala, of which 487 reproduce in the country and 238 are non-breeding, including Nearctic or Neotropical migratory species and vagrants (Eisermann & Avendaño 2007). One species, Atitlan Grebe (*Podilymbus gigas*), was endemic to Lago Atitlán and is now considered extinct (Hunter 1988,

BirdLife International 2007). The country holds populations of 10 globally threatened species (Table 1).

The principal threat to species of conservation interest is habitat alteration, especially conversion of primary forest to agricultural land.

Table 1. Status and presence of globally threatened birds in IBAs in Guatemala

| Species                       | Threat category <sup>1</sup> | Status in Guatemala <sup>2</sup> | IBA(s) where species occurs regularly  |
|-------------------------------|------------------------------|----------------------------------|--|
| <i>Procellaria parkinsoni</i> | VU                           | vag                              | -  |
| <i>Puffinus creatopus</i>     | VU                           | vag                              | -  |
| <i>Penelopina nigra</i>       | VU                           | R                                | GT004, GT005, GT006, GT007, GT010, GT011, GT012, GT013, GT014, GT015, GT016, GT018 |
| <i>Oreophasis derbianus</i>   | EN                           | R                                | GT005, GT006, GT012, GT013, GT014, GT015, GT016                                    |
| <i>Amazona oratrix</i>        | EN                           | R                                | GT011  |
| <i>Electron carinatum</i>     | VU                           | R                                | GT004, GT012   |
| <i>Dendroica chrysoparia</i>  | EN                           | V                                | GT012  |
| <i>Dendroica cerulea</i>      | VU                           | P                                | GT001, GT011   |
| <i>Ergaticus versicolor</i>   | VU                           | R                                | GT004, GT005, GT010, GT012, GT014, GT015, GT016, GT017                             |
| <i>Tangara cabanisi</i>       | EN                           | R                                | GT013, GT014, GT015  |

<sup>1</sup>According to BirdLife International(2007): EN – Endangered, VU – Vulnerable <sup>2</sup>According to Eisermann & Avendaño (2007): R – Reproductive resident, P – Passage, V – Non-breeding visitor; vag – Vagrant

Other threats include mining, unsustainable forestry, infrastructure development (which causes increased risk of forest fires and habitat fragmentation), deficiencies in protected area management (Box 1) and environmental pollution (including inappropriate waste management; Spillmann *et al.* 2000). Some species also suffer from direct persecution, such as hunting of cracids (Cracidae) and illegal trafficking of parrot chicks (Psittacidae). Climate change will cause habitat alteration and destruction (Tejeda-Cruz & Sutherland 2005, IPCC 2007a,b). Furthermore, Thomas *et al.* (2004) calculate that 15-37% of species will become extinct through this cause. Infectious diseases could constitute serious threats to bird populations, for example bird flu. Although birds are the most well-known group of animals, information is still lacking on population dynamics and the reaction of populations to different natural and human-related impacts.

Guatemala holds populations of range-restricted birds within two Endemic Bird Areas (EBAs). Approximately 37,500 km<sup>2</sup> (35% of the country) is above 900 m in altitude, corresponding to about 25% of the North Central American highlands (EBA 018). A further 13,600 km<sup>2</sup> (12% of the country) belong to the North Central American Pacific slope (EBA 017), representing 45% of this EBA. Five species belonging to EBA 018 are restricted to the highlands of Guatemala and Chiapas, Mexico: Horned Guan (*Oreophasis derbianus*), Bearded Screech-owl (*Megascops barbarus*), Pink-headed Warbler (*Ergaticus versicolor*), Azure-rumped Tanager (*Tangara cabanisi*) and Black-capped Siskin (*Carduelis atriceps*). Two species restricted to EBA 019 (Central American Caribbean slope), Grey-headed Piprites (*Piprites griseiceps*) and Snowy Cotinga (*Carpodectes nitidus*) occur in Guatemala on an irregular basis (Eisermann & Avendaño 2007).

## Conservation status of Guatemalan birds

Box 2



In the Neotropics, 230 threatened species have been extirpated from large areas of their distributional range (BirdLife International 2004b). In Guatemala, the most symbolic case is that of Scarlet Macaw (*Ara macao*) which was common on the Pacific and Atlantic slopes in the 19th century. Today, the species is extirpated on the Pacific slope and is present in only a few areas on the Atlantic slope (Eisermann & Avendaño 2007). The most serious threat to bird populations is habitat alteration. Deforestation rates in Guatemala have been estimated at 1.3 to 1.7% annually for remnant forests (FAO 2003, 2006), equivalent to a loss of 343 to 485 km<sup>2</sup> per year. Loss of primary forest is yet higher, given that the FAO figure includes reforestation as forest. Given the high growth rate of the human population (estimated to double between 2010 and 2050 for a total population of 27.9 million; CEPAL 2007), pressure on natural habitats as well as threats to species will be

further increased. For this reason, 225 species (31% of Guatemala's avifauna) are considered to be nationally threatened (Eisermann & Avendaño 2006) from an application of IUCN criteria (IUCN 2003) at national level.

An analysis covering a 16-year period shows that in the next few decades, more species will become threatened and that their threat categories will be uplisted (BirdLife International 2004b). It is probable that species not currently regarded as trigger species in IBA identification will be considered so in the future. Guatemala has 22 Near Threatened birds at global level (BirdLife International 2007; Table 2), of these, nine require mature forest, such as Crested Eagle (*Morphnus guianensis*) and Harpy Eagle (*Harpia harpyja*) in the IBA Maya-Lacandón. Their survival depends on the protection and restoration of habitat in IBAs.

**Table 2.** Near Threatened species in Guatemala

| Scientific name                         | English name            | Status in Guatemala <sup>1</sup> | IBA(s) where species occurs regularly                                       |
|---|-------------------------|----------------------------------|---|
| <i>Crax rubra</i>                       | Great Curassow          | R*                               | GT001, GT002, GT003, GT005, GT007, GT008, GT011, GT012, GT014, GT015        |
| <i>Colinus virginianus</i>              | Northern Bobwhite       | r                                | GT004   |
| <i>Cyrtonyx ocellatus</i>               | Ocellated Quail         | R*                               | GT010, GT013, GT015   |
| <i>Meleagris ocellata</i>               | Ocellated Turkey        | R*                               | GT001   |
| <i>Puffinus griseus</i>                 | Sooty Shearwater        | vagM                             | –   |
| <i>Harpyhaliaetus solitarius</i>        | Solitary Eagle          | r*                               | GT007, GT011, GT015   |
| <i>Harpia harpyja</i>                   | Harpy Eagle             | r*                               | GT001, GT003  |
| <i>Morphnus guianensis</i>              | Crested Eagle           | R*                               | GT001, GT011  |
| <i>Laterallus jamaicensis</i>           | Black Rail              | ex(r)                            | –   |
| <i>Numenius americanus</i> <sup>2</sup> | Long-billed Curlew      | V                                | GT020   |
| <i>Tryngites subruficollis</i>          | Buff-breasted Sandpiper | P                                | GT002, GT011  |
| <i>Larus heermanni</i>                  | Heermann's Gull         | vagM,H                           | GT020   |
| <i>Sterna elegans</i>                   | Elegant Tern            | P, H                             | GT020   |
| <i>Patagioenas leucocephala</i>         | White-crowned Pigeon    | V, H                             | GT011   |
| <i>Megascops barbarus</i>               | Bearded Screech-owl     | r*                               | GT004, GT010,   |
| <i>Pharomachrus mocinno</i>             | Resplendent Quetzal     | R*                               | GT005, GT006, GT007, GT009, GT010, GT012, GT013, GT014, GT015, GT016, GT018 |
| <i>Xenotriccus callizonus</i>           | Belted Flycatcher       | r                                | GT005, GT015  |
| <i>Contopus cooperi</i>                 | Olive-sided Flycatcher  | V                                | GT001, GT004, GT005, GT007, GT008, GT010, GT011, GT012, GT015, GT016, GT018 |
| <i>Vireo bellii</i>                     | Bell's Vireo            | V                                | GT011, GT014, GT021   |
| <i>Melanoptila glabrirostris</i>        | Black Catbird           | ?                                | GT001   |
| <i>Vermivora chrysoptera</i>            | Golden-winged Warbler   | V*                               | GT001, GT007, GT008, GT010, GT011, GT012, GT014, GT018                      |
| <i>Passerina ciris</i>                  | Painted Bunting         | V                                | GT001, GT007, GT008, GT011, GT012, GT014, GT015, GT018, GT021               |

<sup>1</sup>Status in Guatemala (Eisermann & Avendaño 2007): ex - locally extirpated, with indication of previous status in brackets; H - hypothetical record; R - breeding resident; r - presumed breeding resident; P - passage; V - non-breeding visitor; vagM - migratory vagrant, ? - status uncertain. Species dependent on mature forest are marked with an asterisk (\*).

<sup>2</sup>In the most recent evaluation by BirdLife International (2008), this species has been downlisted to Least Concern (LC).

The volcanoes of IBA Atitlán (GT015) provide habitat for four threatened and 22 restricted-range birds. Photo: Knut Eisermann

**IBA overview**



A total of 21 IBAs have been identified for Guatemala (Table 3, Figure 1). Of these, 16 hold populations of globally threatened birds (CR, EN or VU), nine hold restricted-range species and 18 hold biome-restricted species. Of 22 globally Near Threatened species, 20 occur regularly in IBAs (Table 2). Only two IBAs hold a population larger than 1% of any biogeographic population of waterbirds, these are Least Grebe (*Tachybaptus dominicus*), Bare-throated Tiger-heron (*Tigrisoma mexicanum*) and Wood Stork (*Mycateria americana*) in the IBA Maya-Lacandón and American White Pelican (*Pelecanus erythrorhynchos*) in the IBA Manchón-Guamuchal.

The IBA network covers 51,884 km<sup>2</sup> (48% of Guatemala) and areas of individual IBAs range from 43.6 to 20,950 km<sup>2</sup> (Table 3). Of the total IBA area, 61.2% (31,770 km<sup>2</sup>) is undisturbed habitat (mainly primary forest, natural scrub and wetlands). Habitat disturbed through human activity (mainly agricultural land and secondary scrub) covers 38.3% (19,885 km<sup>2</sup>) of IBAs, and urban areas make up 0.5% or 229 km<sup>2</sup>. Given that the total area of IBAs in Guatemala is very large, a priority setting exercise was performed between and within IBAs (Box 3). Of the total IBA area in Guatemala, 60% (31,000 km<sup>2</sup>) is located within protected areas and 40% (20,884 km<sup>2</sup>) lack legal protection. Coverage of protected areas in individual IBAs varies between 0 and 100% (Table 4). All IBAs in Guatemala contain human settlements. According to the most recent census (INE 2002) population density in IBAs varies between 3 and 295 people/km<sup>2</sup>, with highest densities in the highlands where the climate is favorable and soils are more fertile (Table 4).

Seven additional sites are considered as potential IBAs, including one in Guatemala's pelagic waters in the Pacific where two globally threatened species occur, Parkinson's Petrel (*Procellaria parkinsoni*) and Pink-footed Shearwater (*Puffinus creatopus*) (Jehl 1974, Velásquez & Dávila in Jones & Komar 2008). Further field work is needed to identify the most important areas of this part of the Pacific Ocean. More information is also needed to designate the following sites as terrestrial IBAs: Xutilhá (Petén), Sierra de Chamá (Alta Verapaz), Visis Cabá (Quiché), Volcán Tecumburro (Santa Rosa), Volcán Suchitán (Jutiapa) and Sipacate-Naranjo (Escuintla).



Monitoring at Sacranix IBA (GT007).  
Photo: Knut Eisermann

**Figure 1.** Location of Important Bird Areas in Guatemala



Table 3. Important Bird Areas in Guatemala

| IBA code | IBA name                    | Adm unit   | Area (ha) | A1 |    |    |    | A2 | A3 | A4  |      |       |      |
|----------|-----------------------------|--|-----------|----|----|----|----|----|----|-----|------|-------|------|
|          |                             |  |           | CR | EN | VU | NT |    |    | A4i | A4ii | A4iii | A4iv |
| GT001    | Maya-Lacandón               | Petén  | 2,095,087 |    |    | 1  | 8  |    | X  |     | X    |       |      |
| GT002    | Río La Pasión               | Petén  | 185,206   |    |    |    | 2  |    | X  |     |      |       |      |
| GT003    | Chiquibul                   | Petén  | 145,036   |    |    | 1  | 2  |    |    |     |      |       |      |
| GT004    | Cuilco                      | Huehuetenango  | 127,773   |    |    | 2  | 3  | X  | X  |     |      |       |      |
| GT005    | Cuchumatanes                | Huehuetenango, Quiché  | 303,813   |    |    | 1  | 2  | 4  | X  | X   |      |       |      |
| GT006    | Cerro El Amay               | Quiché   | 45,173    |    |    | 1  | 1  | 1  |    | X   |      |       |      |
| GT007    | Sacranix                    | Alta Verapaz   | 71,429    |    |    | 1  | 6  | X  | X  |     |      |       |      |
| GT008    | Lachuá-Ik'bolay             | Alta Verapaz   | 211,746   |    |    | 1  | 4  |    | X  |     |      |       |      |
| GT009    | Candelaria-Campur           | Alta Verapaz   | 186,987   |    |    |    | 1  |    | X  |     |      |       |      |
| GT010    | Yalijux                     | Alta Verapaz   | 163,393   |    |    | 2  | 5  | X  | X  |     |      |       |      |
| GT011    | Caribe de Guatemala         | Izabal   | 465,945   |    |    | 1  | 3  | 9  |    | X   |      |       |      |
| GT012    | Sierra de las Minas-Motagua | Alta Verapaz, Baja Verapaz, El Progreso, Izabal, Zacapa                            | 426,957   |    |    | 2  | 3  | 5  | X  | X   |      |       |      |
| GT013    | Tacaná-Tajumulco            | San Marcos   | 148,499   |    |    | 2  | 1  | 2  | X  |     |      |       |      |
| GT014    | Volcán Santiaguito          | Quetzaltenango, Retalhuleu, San Marcos, Sololá, Suchitepéquez                      | 121,461   |    |    | 2  | 2  | 5  | X  | X   |      |       |      |
| GT015    | Atitlán                     | Chimaltenango, Escuintla, Quetzaltenango, Quiché, Sololá, Suchitepéquez, Tonicapán | 276,869   |    |    | 2  | 2  | 7  | X  | X   |      |       |      |
| GT016    | Antigua Guatemala           | Chimaltenango, Escuintla, Guatemala, Sacatepéquez                                  | 137,862   |    |    | 1  | 2  | 2  | X  | X   |      |       |      |
| GT017    | Cerro Miramundo             | Jalapa   | 5,564     |    |    | 1  |    |    |    | X   |      |       |      |
| GT018    | Montecristo                 | Chiquimula   | 22,114    |    |    | 1  | 4  |    |    | X   |      |       |      |
| GT019    | Lago de Güija               | Jutiapa  | 4,360     |    |    |    |    |    |    | X   |      |       |      |
| GT020    | Manchón-Guamuchal           | Retalhuleu, San Marcos   | 20,659    |    |    |    | 3  |    |    |     | X    |       |      |
| GT021    | Monterrico-Río La Paz       | Jutiapa, Santa Rosa  | 22,494    |    |    |    | 2  |    |    | X   |      |       |      |



For information on trigger species at each IBA, see individual site accounts at BirdLife's Data Zone: [www.birdlife.org/datazone/sites/](http://www.birdlife.org/datazone/sites/)

## Opportunities

IBAs in Guatemala cover almost half the country's area, an indication of the country's conservation importance in Mesoamerica. Focusing conservation efforts on undisturbed habitats (61% of the total IBA area and 29% of the country) is presumably insufficient to ensure the survival of populations of 91 species confirmed under criteria A1, A2 and A3 in IBAs. Habitat for several forest specialists has been considerably reduced by human activities. Until population viability studies indicate the opposite, it must be assumed that habitat restoration is necessary for the survival of these species (Box 2, Box 3). However, this represents a serious challenge to an agricultural country with a rapidly growing human population.

It is believed that the designation of large IBAs, which include altered habitat, represents an advantage to conservation in Guatemala. This conservation initiative is aimed at all facets of Guatemalan society, given that land ownership in IBAs spans state, community and private properties. The designation of IBAs by BirdLife International is a certification of the most important sites for conservation at global level. It is hoped that this will further motivate the private sector to protect natural habitat, given that this certification can facilitate the promotion of sustainable use of landscape, for example in low-impact tourism (such as bird watching) or research.

The principal conservation goals in IBAs in Guatemala are: (1) reduce the rate of undisturbed habitat loss and (2) increase coverage of restored habitat. Tools for IBA monitoring could include vegetation coverage maps, such as that produced by the Ministry of Agriculture and Stockbreeding (MAGA 2006) and future updates. Some areas are currently located within target funding areas for conservation, for example, the volcanic chain, Sierra de los Cuchumatanes, Sierra de las Minas and the Maya Biosphere Reserve, supported by the Critical Ecosystem Partnership Fund and the US Tropical Forest Conservation Act. Other areas of conservation importance have been largely ignored to date, such as the highlands in the departments of Quiché and Alta Verapaz including the following IBAs: Cerro El Amay (GT006),

Lachuá-Ik'bolay (GT008), Candelaria-Campur (GT009), Sacranix (GT007) and Yalijux (GT010; Box 3).

Local conditions vary between IBAs in terms of human population density, cultural traditions, land ownership, local economy and distribution of habitat. This makes it necessary to find common denominators among local interests which include participation of local government bodies, community councils, NGOs, companies and academia. A basic requirement for conservation within IBAs is to increase levels of education among Guatemalan society. Twenty-eight percent of the population over 15 are illiterate, this is the highest illiteracy rate in the region after Haiti (CEPAL 2007). A higher level of education would help to slow down population growth, increase environmental awareness and consequently diminish pressure on natural areas.

Diversification of agriculture through crops which are highly valued on world markets could make land use more efficient, as well as reduce pressure on natural areas. While many private companies have turned to these crops, rural communities continue to produce somewhat unprofitable, traditional crops, essentially due to lack of guidance. Apparently, many organizations responsible for providing this advice, either governmental or NGOs, do not have the capacity to do so. This guidance requires training in conjunction with the private sector. It is also necessary to regulate crop distribution for biofuel production, given that such crops could convert large areas of forest into plantations.

Tourism can contribute to conservation if it is carried out in a responsible manner. Currently, birdwatching tourism is becoming increasingly popular in Guatemala, and guidance must be provided on how to avoid negative impacts (Sekercioglu 2002, van der Duim & Henkens 2007), especially for threatened species.

Research focused on population dynamics could provide more information on the needs of trigger species with a view to ensuring their long-term survival. Scientists carry this responsibility to provide and

Box 3

Conservation priority within and between IBAs in Guatemala

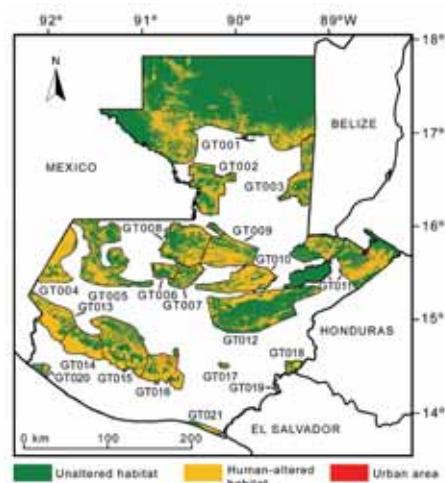
In order to classify the urgency of conservation actions required within and between IBAs, four indicators were employed: (1) presence of globally threatened species, (2) coverage of protected areas, (3) coverage of undisturbed habitat, (4) projections of undisturbed habitat loss in the near future. Conservation priority is classified under three levels:

**Urgent:** The IBA holds at least one Critically Endangered or Endangered species and has less than 50% of undisturbed habitat and less than 10% coverage of protected areas.

**High:** The IBA holds at least one globally threatened species (EN or VU), has less than 50% undisturbed habitat or less than 10% coverage of protected areas, or it is thought that loss of undisturbed habitat will decrease considerably in the near future.

**Medium:** The IBA has greater than 10% coverage of protected areas but less than 50% of undisturbed habitat, independently of the presence of threatened species, or the IBA has less than 10% of protected areas.

According to these criteria, the IBA Cuchumatanes requires urgent conservation actions and the IBAs Maya-Lacandón, Cerro El Amay, Yalijux and Cerro Miramundo are of high priority (Table 4). Although the IBA Maya-Lacandón is legally protected as a Biosphere Reserve and National Park, it has a high priority for action because considerable loss of undisturbed habitat is expected (Box 2).



A recent map of vegetation coverage (MAGA 2006) was used to classify conservation actions within each IBA, dividing the area covered into three priorities: (1) Priority for protection - natural habitat which should be protected in pristine state; (2) Priority for habitat restoration - disturbed habitat in areas with a potential climax vegetation vital for the long-term survival of trigger species; (3) Priority for education - urban areas (Figure 3).

Just over 60% of total IBA area was classified as having a priority for protection, representing 29.1% of Guatemala's area. Priority for restoration corresponds to 38.3% of IBA area or 18.2% of the country area. Priority for environmental education covers 0.5% of IBA area or 0.2% of the country's area. Urban areas account for 0% to 4.6% of each IBA (Table 4), for example the IBA Antigua Guatemala includes the city of Antigua, which is situated amid important areas of forest. Cities and rural villages within IBAs have priority for environmental education and development of alternative income strategies in order to decrease pressure on natural habitats.

Table 4. Conservation priority of IBAs in Guatemala

| Code  | Name                        | Legal protection (% of area) <sup>1</sup> | Coverage of undisturbed habitat (%) <sup>2</sup> | Coverage of urban areas (%) <sup>2</sup> | Human population density (people/km <sup>2</sup> ) <sup>3</sup> | Priority for action |
|-------|-----------------------------|---|--|--|---|---------------------|
| GT001 | Maya-Lacandón               | 99  | 83.2   | 0.1                                      | 3   | high                |
| GT002 | Río La Pasión               | 100                                       | 47.9   | 0.4                                      | 16  | medium              |
| GT003 | Chiquibul                   | 100                                       | 51.6   | 0.8                                      | 20  | medium              |
| GT004 | Cuilco                      | 0   | 15.8   | 0.1                                      | 105   | medium              |
| GT005 | Cuchumatanes                | 2.4                                       | 48.7   | 0.1                                      | 77  | urgent              |
| GT006 | Cerro El Amay               | 10  | 57.7   | 0.1                                      | 39  | high                |
| GT007 | Sacranix                    | 0.3                                       | 45.4   | 0.1                                      | 75  | medium              |
| GT008 | Lachua-Ik bolay             | 7.3                                       | 46.0   | 0.1                                      | 31  | medium              |
| GT009 | Candelaria-Campur           | 0   | 33.7   | 0.2                                      | 53  | medium              |
| GT010 | Yalijux                     | 1.9                                       | 20.6   | 0.2                                      | 92  | high                |
| GT011 | Caribe de Guatemala         | 35  | 61.4   | 0.8                                      | 35  | medium              |
| GT012 | Sierra de las Minas-Motagua | 57  | 69.5   | 0.7                                      | 51  | medium              |
| GT013 | Tacaná-Tajumulco            | 12  | 23.7   | 0.7                                      | 240   | medium              |
| GT014 | Volcán Santiaguito          | 21  | 28.7   | 1.1                                      | 258   | medium              |
| GT015 | Atitlán                     | 51  | 45.2   | 0.6                                      | 265   | medium              |
| GT016 | Antigua Guatemala           | 30  | 25.5   | 4.6                                      | 295   | medium              |
| GT017 | Cerro Miramundo             | 0   | 57.0   | 0.3                                      | 40  | high                |
| GT018 | Montecristo                 | 98  | 38.8   | 1.3                                      | 60  | medium              |
| GT019 | Lago de Güija               | 0   | 40.8   | 0.0                                      | 12  | medium              |
| GT020 | Manchón-Guamuchal           | 6.1                                       | 57.7   | 0.2                                      | 28  | medium              |
| GT021 | Monterrico-Río La Paz       | 11  | 48.5   | 0.5                                      | 62  | medium              |

<sup>1</sup> Based on the national register of protected areas (CONAP 2007). <sup>2</sup> Based on a vegetation map of scale 1:50,000 (MAGA 2006). <sup>3</sup> Based on most recent population census (INE 2002).

Coniferous forest in the province of Totonicapán. Photo: Knut Eisermann

promote knowledge of key species. Transmitting this knowledge to government level and the general public requires more than just internal research reports among NGOs or publications in scientific circles. However, publicity in mass media is often disregarded by scientific and conservation institutions. In order to channel increased funding for conservation, it is necessary to promote the value of biodiversity at political level, both nationally and internationally.

It is hoped that IBAs will prove a useful tool with which to focus conservation efforts in Guatemala, either at national level, for example, by focusing forest conservation incentives offered by the National Forests Institute (INAB, in Spanish), or internationally, by bringing in funds for conservation.

Further information



**Data sources** for IBA identification were mainly publications and unpublished reports on Guatemalan birds, compiled by the PROEVAL RAXMU Bird Monitoring Program in a recent bibliography (Eisermann & Avendaño 2006), as well as information compiled over the course of five national IBA workshops in 2006.

The species lists according to IBA criteria are based on current knowledge of bird distributions and use the following sources: globally threatened species (BirdLife International 2007), species restricted to EBAs or biomes according to the Central American IBA Technical Committee, based on Howell & Webb (1995), Stattersfield *et al.* (1998) and Stotz *et al.* (1996). For the A4 criteria, continental estimates were used (Rich *et al.* 2004, Wetlands International 2006, Morrison *et al.* 2006; for



seabirds, del Hoyo *et al.* 1992 and BirdLife International 2004a), recent estimates for sites in Guatemala were taken from Eisermann (2006) and Sigüenza (2007).

Notable records of birds in Guatemala are published regularly in the Central American section of the North American Birds journal (edition in preparation: Jones & Komar 2008).

Through a citizen science program, simple monitoring of bird populations in IBAs has been in progress since 2006 using the Christmas Bird Counts in IBAs Maya-Lacandón and Atilán (see <http://audubon.org/bird/abc/> and <http://guatemalabirding.com/birdcount.htm>). Birdwatchers can upload information on casual observations at Guatemala's eBird portal (<http://ebird.org/content/guatemala/>). Finally, the Guatemalan Ornithological Society's website provides information on IBAs in Guatemala: <http://avesdeguatemala.org>.

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