Bird species at risk in the cloud forest of five IBASIBAs of the Sierra Madre Oriental, Mexico

Pablo Caballero-Cruz, Guillermo Vargas-Noguez, Raúl Ortiz-Pulido*

Laboratorio de Ecología de Poblaciones, Centro de Investigaciones Biológicas, Instituto de Ciencias Básicas e Ingeniería, Universidad Autónoma del Estado de Hidalgo. Km 4.5 carretera Pachuca-Tulancingo, C.P. 42184, Mineral de la Reforma, Hidalgo, Mexico. E-mail: raulortizpulido@yahoo.com

ABSTRACT

The presence of 125 species of birds at risk or endemic to Mexico’s montane mesophyll forest has been suggested. These birds need to be conserved. At a time of global defaunation and reduction of these forests, it is important to determine which bird species still inhabit this ecosystem. For the mesophyll forest located in the Sierra Madre Oriental of Mexico, no recent field data have been published to indicate their presence. In this analysis, we report the records of bird species at risk made in 2016 in five Important Bird Areas with mountain mesophyll forests (Sierra Gorda, Tlanchinol, Huayacocotla, Cuetzalan, and Metlac River) located in four states of Mexico (Querétaro, Hidalgo, Veracruz, and Puebla). In total we recorded 60 bird species (48%) of the 125, 29 are considered nationally threatened and 34 have some type of endangerment. Six of the species are globally protected (Dendrocygna eytoni, Ara militaris, Contopus cooperi, Rhipidura ruficauda, Setophaga chrysoparia and Passerina ciris). This information can serve as a basis for their preservation and establish monitoring, studies, and conservation actions aimed at species in mesophyll forest areas.

Keywords: Important Bird Areas; Cloud Forest; Temperate Forest; Bird Conservation; Endangered Species; Endemic Species; Bird Species List

1. Introduction

The mountain mesophyll forest (MMF) is perhaps the most threatened ecosystem in Mexico[1]. It originally occupied 1% of the national territory, but now 50% of its area has been replaced by cattle pastures and agricultural plots[2].

The MMF is one of the highest priority ecosystems for avifaunal conservation in Mexico[3]. The high degree of floristic complexity presented by this ecosystem[4-8] offers a high diversity of ecological niches used by birds[3]. Hence the importance of this forest type for the conservation of Mexican birds.

In the MMF of Mexico, 551 bird species have been reported (about 50% of the country’s bird species) and a high number of endangered or endemic bird species live there[3]. According to avifaunal lists[9,10] and complementary works (e.g. the literature[11]), in the MMF of the Sierra Madre Oriental (SMO) of central Mexico, it is possible to find 125 species at risk or endemic, which constitutes 22.7% of all the species that inhabit there (sensu[3]). Of these species 14 are under international protection[12], 72 are protected by Mexican regulations[13] and 55 present some type of endemism (sensu[14]). In addition, 13 of these species are ecologically restricted to the MMF[15-17]. Therefore, it is im
Important to have up-to-date information on the birds that live in the MMF in order to plan their conservation on a sound basis.

Important Bird Areas (IBAs)\textsuperscript{[9]} are sites where information can be obtained on bird species in the MMF. In the IBAs\textsuperscript{IBA}s, the aim is to maintain bird populations, especially those that are at risk or endemic, in addition to the conservation of their habitats\textsuperscript{[9]}. Likewise, the definition of each IBA\textsuperscript{IBA}s was based on standardized criteria, which considered the richness and diversity of bird species, the presence of species at risk and endemism, and the conservation status of local ecosystems\textsuperscript{[9,18]} and previous knowledge of the sites by specialists. Because of this, conservation actions carried out in IBA\textsuperscript{IBA}s could have a positive effect on species of interest, as they would be carried out in viable sites for conservation. In spite of this, IBA\textsuperscript{IBA}s are not legally recognized in Mexico, which makes it difficult to find resources to conserve them.

Forty-three IBA\textsuperscript{IBA}s in Mexico have MMF and all the bird species at risk in this vegetation type are distributed in them\textsuperscript{[19]}. Most of these IBA\textsuperscript{IBA}s are not protected (62.8%), some are partially protected (23.3%), because they are located in a Natural Protected Area (NPA), and few are completely protected (13.9%)\textsuperscript{[9,10]}. Despite this, there are no systematic monitoring of protection efforts, monitoring and conservation actions for birds in Mexican IBA\textsuperscript{IBA}s\textsuperscript{[20]}, so the current status of the MMF avifauna in these sites is unknown.

The objective of this study was to report the bird species at risk recorded in the MMF of five IBA\textsuperscript{IBA}s of the Sierra Madre Oriental during systematic monitoring conducted in 2016. In this study, we define species at risk as those listed in international\textsuperscript{[12]} and national\textsuperscript{[13]} regulations, in addition to those that present some type of endemism\textsuperscript{[14]}. This contribution provides recent information on bird species at risk present in IBA\textsuperscript{IBA}s with MMF in the eastern part of Mexico. This analysis will help identify areas of opportunity for studies and actions to conserve this ecosystem and the bird species that inhabit it.

2. Methods

In this analysis, we include five IBA\textsuperscript{IBA}s found in the central and southern avifaunal zones of the Sierra Madre Oriental, Mexico\textsuperscript{[9,21]}: Metlac River, Cuetzalan, Huayacocotla, Tlanchinol, and Sierra Gorda. These IBA\textsuperscript{IBA}s are located in the states of Queréteraro, Hidalgo, Puebla and Veracruz (Figure 1). In each of the IBA\textsuperscript{IBA}s, we selected four sites, separated by at least 1 km, and 10 km maximum; the sites had an altitude that varied between 1,000 and 1,750 MASL, in MMF fragments that were more than one kilometer wide.

![Figure 1](image.png)

**Figure 1.** Location of the IBA\textsuperscript{IBA}s analyzed. The darker polygons in the center of the image show the location of each of the IBA\textsuperscript{IBA}s, the white polygon represents the mountain mesophyll forest cover and the gray polygon represents other types of forest cover. The black dots indicate the sampling sites in each IBA\textsuperscript{IBA}s (paths and count points).
To study the composition of bird species at risk, we carried out sampling in linear paths at each site\(^{[22,23]}\) and point counts\(^{[23,24]}\). Each linear path was 1 km long by 40 m wide (i.e., 4 sites × 5 IBAs = 20 km total). In addition, we placed each IBAs 20 count point (i.e., 20 points × 5 IBAs = 100 count points) within 20 m observation radius, with a minimum distance of 200 m between points; the geographic position of paths and points was different. Linear paths were walked by two people and took an average of two hours per trajectory. The counting points were carried out with 10-minute observations at each point. In each IBAs, we sampled every two months, from January to December 2016, with an effort that varied between 56 and 70 hours per IBAs. We conducted all visual records of birds using 8 × 32 mm binoculars and included auditory records. Determination of the taxonomic identity of the birds we recorded we conducted using ornithological field guides\(^{[16,25-27]}\).

We elaborated a list where we included: risk levels according to the International Union for Conservation of Nature Red List\(^{[12]}\), the category in category; the literature\(^{[14]}\). Likewise, we synthesized complementary data to prioritize these species in management and conservation plans\(^{[28]}\). Complementary data were: species in the Neotropical Migratory Bird Conservation Act\(^{[29]}\), ecological guild\(^{[32]}\), type of residence\(^{[10,33]}\), type of presence in the MMF (typical, non-typical, exceptional; the literature\(^{[3]}\)), ecological restriction to the MMF\(^{[15,16,17]}\), IBAs in which we recorded the species, and type of record (visual or auditory).

### 3. Results

We obtained 3,176 records of 264 species, of which 953 records belonged to 60 bird species considered at risk (Annex 1). The richness of bird species at risk in the five IBAs was similar, although slightly higher in Metlac River (29 species), followed by Cuetzalan, Tlanchinol, Sierra Gorda (28 in each) and Huayacocotla (27). The taxonomic orders with the highest richness were the same in the five IBAs, Passeriformes with 17–21 species and Apodiformes with 3–4 species. Among the Passeriformes, the families Turdidae (3–5 species), Passerellidae (2–4) and Icteridae (1–3) stand out (Annex 1). Among the Apodiformes, the Trochilidae family stands out (3–4 species).

We recorded six species in some category of risk in the IUCN (Annex 1). The IBAs with the most species listed in some category of risk at the global level were Metlac River, Cuetzalan and Huayacocotla (with three species each), followed by Tlanchinol and Sierra Gorda (with two each) (Table 1). Of the six species, two are endangered (Amazona oratrix and Setophaga chrysoparia), two are near threatened (Contopus cooperi and Passerina ciris) and two are vulnerable (Dendropteryx barbatus and Ara militaris) (Annex 1).

We recorded 29 species that are listed in some category of conservation by Mexican regulations (Annex 1). Cuetzalan presented 15 species, followed by Metlac River (14), Tlanchinol (13), Huayacocotla (12) and Sierra Gorda (10) (Table 1). Of the 29, four species are endangered (D. barbatus, Glaucidium sanchezi and A. militaris and A. oratrix), 11 threatened (Penelope purpurascens, Lampropelma rhami, Psittacara holochlorus, Pionus senilis, Grallaria guatimalensis, Cyanolyca cucullata, Aphelocoma unicolor, Myadestes unicolor, Turdus infuscatus, Geothlypis tolomiei and S. chrysoparia) and 14 under special protection (Phaethornis striigularis, Accipiter cooperii, Trogon collaris, Aulacorhynchus prasinus, Pteroglossus torquatus, Micrastur semitorquatus, Eupsittula nana, Sclerus mexicanus, Tunchiornis ochraceiceps, Myadestes occidentalis, Catharus mexicanus, Ridgwayia piniola, Psarocolius wagleri and P. montezuma).

We recorded 34 species with some type of endemism (Annex 1). Sierra Gorda presented 20 species, followed by Tlanchinol (17), Metlac River (15), Huayacocotla (15) and Cuetzalan (13). Of the 34, 15 species were endemic (D. barbatus, Anstroymus salvinii, Athis heliosa, G. sanchezi, Momotus coeruliceps, P. holochlorus, Campylochromis megalopterus, Catharus occidentalis, ...
R. pinicola, Melanotis caerulescens, Atlapetes albinaucha, A. pileatus, Pipilo ocai, Geothlypis nelsoni and Rhodothraupis celaeno), 10 quasi-endemics (Amazilia yucatanensis, A. oratrix, Empidonax affinis, Toxostoma longirostre, Ptihogony cinerexus, Coccothraustes abeillei, Arrenonops rufivirgatus, junco phaeonotus, Icterus graduacauda and Basil-euterus rufifrons) and nine sub-endemics (Lampornis clemencence, Selasphorus platycercus, Cyan-thus latirostris, Tyrannus vociferans, Vireo cassinnii, Icterus cucullatus, I. bullockii, Setophaga nigrescens and Pheucticus melanecephalus) (Annex I).

4. Conclusions

Species that are at risk constitute valuable functional elements for the ecosystems they inhabit[34], so their disappearance can bring negative consequences for ecosystems[35]. In this study, we recorded 60 bird species at risk in the MMF of the five IBAs sampled. These species correspond to 48% of the 125 bird species at risk that can potentially be found in the mesophyll forests of the Sierra Madre Occidental[3,9-11].

Analysis of other studies suggests that most of the species at risk that we recorded could disappear. For example, more than 91% of the species reported here present medium to high vulnerability[10,28,30,31] and most of these species have presented a continuous decline in their population size[34]. Therefore, it is believed that these species may disappear in the next 100 years[36]. Likewise, estimates of the effect of climate change and land use change made for the Mexican MMF indicate that much of this forest type will be lost in the next 70 years[37], which increases the probability that bird species that are restricted to this ecosystem will become extinct in less time. If conservation actions were carried out in the study area; for example, if its forests were legally protected, it is possible that the probability of extinction of the bird species that live there would be reduced; or establish long-term monitoring to determine the population trends of the species at risk, which would allow planning and carrying out preservation actions supported by field data.

Table 1. Species of birds at risk recorded and expected in montane mesophyll forest in each IBAs evaluated. Expected species were defined based on published avifaunal lists for each IBAs[3,9-11,13,14], IUCN[12], NOM[13] and Endemic[14]. R recorded, E expected.

| IBASIBAs     | Risk criteria | IUCN | NOM | Endemic | Total |
|--------------|---------------|------|-----|---------|-------|
| Metlac River | R*            | 3    | 5   | 141     | 29    |
| Cuetzalan    | 3             | 6    | 15  | 42      | 28    |
| Huayacocotla | 3             | 5    | 12  | 35      | 27    |
| Tlanchinol   | 2             | 111  | 13  | 47      | 28    |
| Sierra Gorda | 2             | 10   | 10  | 53      | 28    |

In particular, we consider that the six species that we recorded need more attention because they are at risk globally. Among them is D. barbatus, which although it has a relatively wide distribution in the country[38], is assumed to be restricted to the MMF[16,39] and its local populations are declining[40]. The latter is due to habitat loss from land-use change and other human activities[41]. The other five species are also declining in population, and although they are not restricted to the MMF, they do use it at some point in their life cycle. For example, Setophaga crasopharia, C. cooperi and P. ciris are migratory birds that depend on the persistence of the forests they visit seasonally to find food and shelter[32,42]. For their part, the two parrot species (A. militaris and A. oratrix) show declining populations mainly due to habitat loss and commercial use[43-45]. Eight other species (G. sanchezi, A. prasinus, S. mexicanus, C. cucullata, M. unicolor, C. mexicanus, T. infuscatus, and A. albimucha), although not listed as globally endangered[12], should be a priority for conservation because they are resident species ecologically restricted to the MMF[14-17], especially considering the vulnerability of the MMF[6,46-48].
Last century, before 1976, the MMF represented less than 1% of the territorial surface in Mexico, but now it has lost about 50% of that surface\[^5,46\], which conditions that the bird species at risk that inhabit it are in greater danger\[^3\].

Through this study, it has been shown that the IBAs analyzed to present a great diversity of species at risk or endemic. Unfortunately, IBAs have not been officially defined as a conservation strategy, and there is no legal instrument to protect them in Mexico\[^19\]. One strategy to follow is for IBAs close to the NPA to be incorporated into protected areas. A concrete example would be to reactivate the proposal for the Biosphere Reserve Biological Corridor of the Mesophilic Mountain Forest in Hidalgo, Puebla and Veracruz\[^49\], and include all IBAs in this area. In this way, these IBAs would have legal protection and the economic and human resources to be preserved. Otherwise, if the areas covered by these IBAs are not protected, the avifauna that inhabits them run the risk of disappearing.

Promoting the conservation of endangered bird species that inhabit MMF in the IBAs could help preserve others that may become threatened in the future. Until a few years ago, less than a third of the bird species inhabiting the country were considered to be at risk\[^13\]. However, recent analyses\[^28,50\] suggest that more than half of the country’s bird species would be in that category. This study can be used as a basis for monitoring the IBAs with MMF of the Sierra Madre Oriental, and could also be the starting point for studies that analyze the presence and relative abundance of the reported species, thus helping to determine temporal fluctuations and permanence in the area.

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**Conflict of interest**

The authors declared no conflict of interest.

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### Annex 1. Bird species at risk recorded in 2016 in montane mesophyll forests of five Important Bird Areas (IBAs) of the Sierra Madre Oriental, Mexico. The listing followed the taxonomic classification of the American Ornithologists’ Union (1998) and supplements.

| Id  | Species                         | IUCN | NOM | T-E | NMBCA | I-V | G-E | T-R | T-P | D-R | IBAS | RV | RA |
|-----|---------------------------------|------|-----|-----|-------|-----|-----|-----|-----|-----|------|----|----|
| 1   | *Penelope purpurascens*         | LC   | A   | NE  | NO    | 16  | F/DS| R   | T   | NO  | CZ, HC, TL, SG | 1  | 0  |
| 2   | *Dendrocygna barbata*          | VU   | P   | E   | NO    | 20  | G/Sue-Mal | R | T | YES  | RM, CZ, HC, TL, SG | 1  | 1  |
| 3   | *Caprimulgiformes*              | LC   | SC  | E   | NO    | 14  | I/Noc | R | T | NO  | SG | 1  | 0  |
| 4   | *Phaethornis striigularis*      | LC   | PR  | NE  | NO    | 14  | Nec  | R | NT | NO  | RM | 1  | 0  |
| 5   | *Lampornis clemenciae*          | LC   | SC  | SE  | YES   | 12  | Nec  | R | T | NO  | RM | 1  | 0  |
| 6   | *Caprimulgidae*                 | LC   | A   | NE  | NO    | 17  | Nec  | R | T | NO  | HC | 1  | 0  |
| 7   | *Atthis heloisa*                | LC   | SC  | E   | NO    | 14  | Nec  | R | T | NO  | CZ, HC, TL | 1  | 0  |
| 8   | *Selasphorus platycercus*       | LC   | SC  | SE  | YES   | 10  | Nec  | R | MI, NT | NO | SG | 1  | 0  |
| 9   | *Cynanthus latirostris*         | LC   | SC  | SE  | YES   | 10  | Nec  | R | NT | NO  | RM, CZ, TL, SG | 1  | 0  |
| 10  | *Amazilia yucatanensis*         | LC   | SC  | CE  | YES   | 11  | Nec  | R | E  | NO  | RM | 1  | 0  |
| 11  | *Accipiter cooperii*            | LC   | PR  | NE  | YES   | 8   | C/Air | MI | R | NT | NO | CZ, TL | 1  | 0  |
| 12  | *Glaucidium sanchiz*            | LC   | P   | E   | NO    | 18  | C/Noc | R | T | YES | TL | 1  | 0  |
| 13  | *Trogaeidae*                   | LC   | PR  | NE  | NO    | 10  | F/DS | R | T | NO  | CZ, TL | 1  | 0  |
| 14  | *Momotus coeruliceps*           | LC   | SC  | E   | NO    | 8   | I/AirBD | R | NT | NO | RM | 1  | 0  |
| 15  | *Aulacorhynchus prasinus*       | LC   | PR  | NE  | NO    | 14  | F/DS | R | T | YES | RM, CZ, TL, SG | 1  | 0  |
| 16  | *Pteroglossus torquatus*        | LC   | PR  | NE  | NO    | 11  | F/DS | R | NT | NO  | RM | 1  | 0  |
| 17  | *Micrastur semitorquatus*       | LC   | PR  | NE  | NO    | 11  | C/Arb | R | NT | NO | RM, HC | 1  | 0  |
| 18  | *Eupsittula nana*               | LC   | PR  | NE  | NO    | 13  | F/DS | R | NT | NO  | CZ | 1  | 0  |
| 19  | *Ara militaris*                | VU   | P   | NE  | NO    | 18  | F/DS | R | NT | NO  | SG | 1  | 1  |
| 20  | *Psittacara holochlorus*        | LC   | A   | E   | NO    | 16  | F/DS | R | NT | NO  | TL | 1  | 0  |
| 21  | *Pionus senilis*               | LC   | A   | NE  | NO    | 14  | F/DS | R | T | NO  | RM, HC, SG | 1  | 0  |
| 22  | *Amazona oratrix*              | EN   | P   | CE  | NO    | 20  | G/DI-D | R | NT | NO | CZ | 1  | 0  |
| Id | Species                        | IUCN¹ | NOM² | T-E³ | NMBCA¹ | I-V⁵ | G-E⁶ | T-R⁷ | T-P⁸ | D-R⁹ | IBAS¹⁰ | RV¹¹ | RA¹² |
|----|--------------------------------|-------|------|------|--------|------|------|------|------|------|--------|------|------|
| 23 | Grallaria guatimalensis        | LC    | A    | NE   | NO     | 15   | I/Sue| R    | T    | NO   | CZ     | 1    | 0    |
| 24 | Sclerurus mexicanus            | LC    | PR   | NE   | NO     | 12   | I/Sue| R    | T    | YES  | CZ     | 1    | 0    |
| 25 | Tyrannus vociferans            | NT    | SC   | NE   | YES    | 13   | I/AirBD| T, MI, MV | T    | NO   | TL     | 0    | 1    |
| 26 | Empidonax affinis              | LC    | SC   | CE   | NO     | 13   | I/AirBD| R    | NT   | NO   | RM, CZ, TL, SG | 1    | 0    |
| 27 | Atlapetes albinucha            | LC    | SC   | SE   | YES    | 9    | I/AirBD| R, MI| NT   | NO   | HC     | 1    | 0    |
| 28 | Psarocolius wagleri            | LC    | PR   | NE   | NO     | 12   | I/FolDI| R    | NT   | NO   | RM     | 1    | 0    |
| 29 | Icteridae                      | LC    | SC   | SE   | YES    | 11   | I/FolDI| MI, MV, R | T    | NO   | RM     | 1    | 0    |
| 30 | Cyanolyca cucullata            | LC    | A    | NE   | NO     | 18   | O/Arb| R    | T    | YES  | CZ, HC, SG | 1    | 0    |
| 31 | Apherocoma unicolor            | LC    | A    | NE   | NO     | 16   | O/Sue| R    | T    | NO   | HC, TL | 1    | 1    |
| 32 | Campylorhynchus megaplecterus   | LC    | SC   | E    | NO     | 16   | I/Sue| R    | NT   | NO   | RM     | 1    | 0    |
| 33 | Myadestes occidentalis         | LC    | PR   | NE   | NO     | 13   | I/AirBD| R    | T    | NO   | RM, CZ, HC, TL, SG | 1    | 1    |
| 34 | Myadestes unicolor             | LC    | A    | NE   | NO     | 17   | I/AirBD| R    | T    | YES  | RM, CZ, HC, TL, SG | 1    | 1    |
| 35 | Catharus occultalis            | LC    | SC   | E    | NO     | 14   | I/Sue| R    | T    | NO   | RM, CZ, SG | 1    | 0    |
| 36 | Catharus mexicanus             | LC    | PR   | NE   | NO     | 17   | I/Sue| R    | T    | YES  | CZ, HC, TL, SG | 1    | 0    |
| 37 | Turdus infuscatus              | LC    | A    | NE   | NO     | 17   | I/FolDI| R    | T    | YES  | RM, CZ, TL | 1    | 0    |
| 38 | Ridgwayia pinicola             | NE    | PR   | E    | NO     | 15   | I/FolDI| R    | T    | NO   | SG     | 1    | 0    |
| 39 | Melanotis caerulescens         | LC    | SC   | E    | NO     | 12   | I/Sue| R    | T    | NO   | RM, CZ, HC, TL, SG | 1    | 1    |
| 40 | Toxostoma longirostre          | LC    | SC   | CE   | NO     | 12   | I/Sue| R    | NT   | NO   | HC, SG | 1    | 0    |
| 41 | Ptiliogonys cinereus           | LC    | SC   | CE   | NO     | 12   | I/AirSD| R    | T    | NO   | HC, TL, SG | 1    | 0    |
| 42 | Coccothraustes aequileae       | LC    | SC   | CE   | NO     | 17   | G/Sue-Mal| R    | T    | NO   | HC, TL, SG | 1    | 0    |
| 43 | Passerellidae                  | LC    | SC   | CE   | NO     | 12   | G/Sue-Mal| R    | NT   | NO   | RM, CZ, SG | 1    | 0    |
| 44 | Arremonops rufivirgatus        | LC    | SC   | E    | NO     | 14   | G/Sue-Mal| R    | T    | YES  | RM, CZ, HC, TL, SG | 1    | 0    |
| 45 | Atlapetes albinucha            | LC    | SC   | E    | NO     | 13   | G/Sue-Mal| R    | NT   | NO   | CZ, SG | 1    | 0    |
| 46 | Pipilo ocai                    | LC    | SC   | E    | NO     | 14   | G/Sue-Mal| R    | NT   | NO   | RM, HC, TL, SG | 1    | 0    |
| 47 | Junco phaeonotus               | LC    | SC   | CE   | NO     | 9    | G/Sue-Mal| R    | NT   | NO   | CZ     | 1    | 0    |

IUCN: International Union for Conservation of Nature; NOM: Northern Range; T-E: Taxonomic Estimation; NMBCA: North American Bird Conservation Area; I-V: IUCN Vulnerability Category; G-E: Global Endangeredness; T-R: Threat Reduction; T-P: Threat Probability; D-R: Distributional Risk; IBAS: IUCN Basis of Assessment; RV: Recovery Vulnerability; RA: Recovery Action.

Annex 1. (Continued)
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| Id  | Species               | IUCN | NOM | T-E | NMBCA | I-V | G-E | T-R | T-P | D-R | IBAS | RV | RA |
|-----|-----------------------|------|-----|-----|-------|-----|-----|-----|-----|-----|------|----|----|
| 49  | Psarocolius montezuma | LC   | PR  | NE  | NO    | 13  | F/DS| R   | NT  | NO  | RM, CZ, HC, TL | 1  | 0  |
| 50  | Icterus cucullatus    | LC   | SC  | SE  | YES   | 10  | I/FolDI | MI, MV, R | NT  | NO  | SG       | 1  | 0  |
| 51  | Icterus bullockii     | LC   | SC  | SE  | YES   | 11  | I/FolDI | MI, MV | T   | NO  | HC       | 1  | 0  |
| 52  | Icterus graduacauda   | LC   | SC  | CE  | YES   | 14  | I/FolDS | R   | T   | NO  | RM, CZ, HC, TL, SG | 1  | 0  |
|     | **Parulidae**         |      |     |     |       |     |     |     |     |     |       |    |    |
| 53  | Geothlypis tolmiei    | LC   | A   | NE  | YES   | 11  | I/FolDI | MY  | NT  | NO  | RM       | 1  | 0  |
| 54  | Geothlypis nelson     | LC   | SC  | E   | NO    | 15  | I/FolDI | R   | NT  | NO  | HC       | 1  | 0  |
| 55  | Setophaga nigriceps   | LC   | SC  | SE  | YES   | 11  | I/FolDI | MY  | NT  | NO  | TL       | 1  | 0  |
| 56  | Setophaga chrysoparia | EN   | A   | NE  | YES   | 20  | I/FolDI | T, MI | T   | NO  | RM, HC   | 1  | 0  |
| 57  | Basileuterus rufifrons| LC   | SC  | CE  | NO    | 12  | I/FolDI | R   | NT  | NO  | RM, CZ, HC, TL, SG | 1  | 0  |
|     | **Cardinalidae**      |      |     |     |       |     |     |     |     |     |       |    |    |
| 58  | Rhodothraupis celseno | LC   | SC  | E   | NO    | 16  | G/DI-DS | R   | NT  | NO  | TL       | 1  | 0  |
| 59  | Pheucticus melanocphal-| LC   | SC  | SE  | YES   | 9   | I/FolDI | R, MI, MV | T   | NO  | HC, TL, SG | 1  | 1  |
| 60  | Passerina ciris       | NT   | SC  | NE  | YES   | 12  | G/Sue-Mal | MI, MV | NT  | NO  | RM, CZ, HC | 1  | 1  |