

The Chimalapas Region, Oaxaca, Mexico: a high-priority region for bird conservation in Mesoamerica

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Summary

The Chimalapas region, in eastern Oaxaca, Mexico, holds lowland rainforests, tropical dry forests, and cloud forests typical of the Neotropics, as well as montane pine and pine-oak forests more typical of the Nearctic. Totalling more than 600,000 ha, much of the region is forested, and in a good state of preservation. The Chimalapas avifauna is by far the most diverse for any region of comparable size in the country, totalling at least 464 species in the region as a whole (with more than 300 species in the lowland rainforest) representing 44% of the bird species known from Mexico. Within the region, the humid Atlantic lowlands hold 317 species, the montane regions 113 species, and the southern dry forested lowlands 216 species. Important species present in the region include Harpy Eagle *Harpia harpyja* and several other large eagles, Black *Penelopina nigra* and probably Horned *Oreophasis derbianus* Guans, Scarlet Macaw *Ara macao*, Cinnamon-tailed Sparrow *Aimophila sumichrasti*, Rose-bellied Bunting *Passerina rositae*, and Resplendent Quetzal *Pharomachrus mocinno*. The area holds immense lowland rainforests and cloud forests that rank among the largest and best preserved in all of Mesoamerica, including a complete lowland-to-highland continuum, with entire watersheds preserved more or less intact.

Resumen

La región de Los Chimalapas, en el este del estado de Oaxaca, México, contiene selvas tropicales húmedas, selvas tropicales secas y bosques mesófilos de montaña típicos del Neotrópico, además de bosques montanos de pino y pino-encino más típicos del Neártico. Con un total de más de 600,000 ha, gran parte de la región está cubierta por bosque en buen estado de conservación. La avifauna de los Chimalapas, que está compuesta por más de 300 especies en la selva y al menos 458 especies en la región en su totalidad, es por mucho la más diversa de cualquier región de tamaño comparable en el país, representando el 44% de las especies conocidas para México. Dentro de la región, las tierras bajas del Atlántico contienen al menos 314 especies, las regiones montañas 110 especies y los bosques secos tropicales 211 especies. Especies importantes presentes en la región incluyen al águila arpía *Harpia harpyja* y otras águilas grandes, el pajuil *Penelopina nigra* y probablemente el pavón *Oreophasis derbianus*, la guacamaya roja *Ara macao*, el zacatonero itsmeño *Aimophila sumichrasti*, el colorín azulrosa *Passerina*

rositae y el quetzal *Pharomachrus mocinno*. El área mantiene inmensas extensiones de selva tropical y bosque mesófilo de montaña que están entre los más grandes y mejor preservados en Mesoamérica, incluyendo un continuo completo de tierras altas a bajas, con cuencas enteras conservadas de manera más o menos intactas.

Introduction

Mexico is famous as a “megadiverse country”, lying at the conjunction of two great biogeographical realms, the Nearctic and the Neotropics (Wilson 1988). Its biological richness stems in part from admixture of faunas from the two regions, and in part from the rich store of endemic forms in the country (Ramamoorthy *et al.* 1993). Hence, Mexican biodiversity is a perpetual contrast of elements that are uniquely Mexican with elements shared with countries to the north or south.

The conjunction of the Nearctic and Neotropics is nowhere more notable than in the state of Oaxaca, at the southern extreme of many Nearctic habitat distributions (Escalante-Pliego *et al.* 1993). Much more complex than a simple two-region meeting, Oaxaca holds montane and lowland habitats, elements from both the Pacific and Atlantic slopes of Mexico, as well as dry interior valleys, making for a geographical diversity unparalleled in the country. The biological diversity of Oaxaca is not approached even by other countries in Mesoamerica (Binford 1989, Ramamoorthy *et al.* 1993).

The Chimalapas region, made up of the *municipios* of Santa María Chimalapa and San Miguel Chimalapa, occupies the state’s eastern arm, bordering Veracruz and Chiapas (Figure 1). The region holds lowland rainforests, tropical dry forests and cloud forests typical of the Neotropics, as well as montane pine and pine-oak forests more typical of the Nearctic. The region contains much of the watershed of the Río Corte, as well as the upper reaches of the Uxpanapa, Ostuta, and Oaxaca rivers. Totalling more than 600,000 ha, much of the region is forested, and in a good state of preservation.

Although Oaxaca has been a mecca for naturalists and systematic biologists for more than 150 years, biological studies in the Chimalapas have been few (Binford 1989). Aside from occasional collecting by W. B. Richardson at the end of the nineteenth century (specimens principally at the British Museum), and intensive collecting in the mid-twentieth century near Sarabia and Matias Romero in the Atlantic lowlands of the Isthmus of Tehuantepec (W. J. Schaldach, A. R. Phillips), at the western fringe of the Chimalapas region, attention paid to the region’s extensive humid tropical lowlands has been nil. In the southern portion of the region, the dry tropical forests have seen but minimal scientific attention.

The only sector of the Chimalapas that has seen a reasonable amount of study is the montane area at the south-eastern extreme of the region (e.g. W. Rook, J. S. Rowley, L. C. Binford). Amphibians, reptiles, birds and mammals were studied on Cerro Baúl and nearby summits in 1940–1970 (Rowley 1984, Binford 1989). Recent herpetological studies there have produced numerous forms new to science, totalling at least eight reptile and amphibian species endemic to the south-eastern portion of the Chimalapas (A. Nieto Montes de Oca pers. comm.).

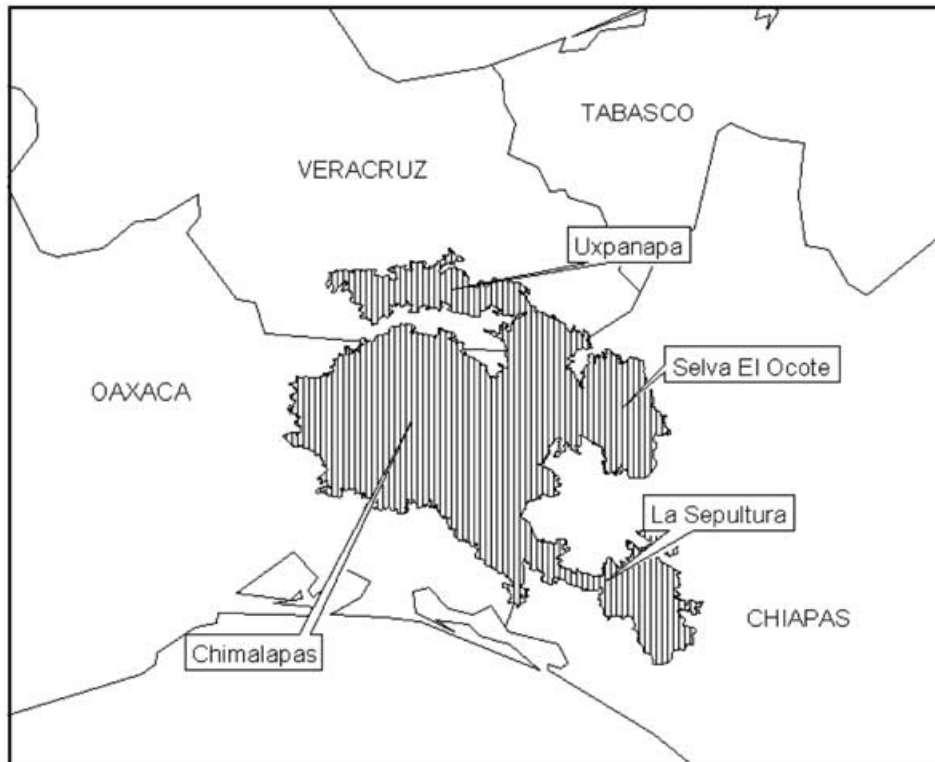


Figure 1. Geographical location of the Chimalapas region, Mexico, and related areas (modified from Maderas del Pueblo 1995, and Arizmendi and Márquez 2000). Shaded areas constitute a priority region called the *Selva Zoque*, including the Chimalapas and adjacent tropical areas in Chiapas (La Sepultura, El Ocote) and Veracruz (Uxpanapa) proposed in Arriaga-Cabrera *et al.* (2000).

Nevertheless, these studies were largely restricted to the isolated massif Cerro Baúl, much of which has since been burned or logged. Other major montane areas, including nearby Cerro Salomón, Cerro Guayabitos, Sierra Atravesada (especially Cerro Azul, reaching 2,250 m), Sierra de Tres Picos and Sierra Espinazo del Diablo remain all but unstudied by zoologists. The fauna of the heart of the Chimalapas, including its vast rainforests, have seen little or no study.

The unknown nature of the Chimalapas fauna can be best summarized via its treatment in a recent summary of the birds of Oaxaca (Binford 1989): the montane portions were termed the "Sierra Madre de Chiapas," a designation that would be worse than unacceptable to many of the region's inhabitants! Such early workers little appreciated the great nucleus of intact habitats that the region holds. As a result, in 1991–1997, a group of zoologists and botanists from the Universidad Nacional Autónoma de México, University of Kansas, Universidad de Puebla, and other institutions began a multidisciplinary effort to initiate a catalogue of the animal diversity of the region. Results presented herein, which focus on birds, are a first effort to analyse this new information.

Methods

The Chimalapas lie in the easternmost corner of Oaxaca (Figure 1), at the shared border of Oaxaca, Veracruz and Chiapas. With Chajul (Chiapas) and Calakmul (Campeche) they rank among the largest pristine tropical regions of Mexico, holding an impressive number of vegetation types, including cloud forest, tropical rainforest, semi-deciduous tropical forest, humid pine-oak forest, and deciduous tropical forest (Binford 1989, Wendt 1989, 1993; Figure 2). The region had its geological origins in the Upper Cretaceous and the Cenozoic, and holds elevations from 100 to 2,700 m. Mean annual temperatures range from 12 to 23°C, and mean annual precipitation is generally above 1,500 mm.

Data regarding animal distributions in the Chimalapas were drawn from two principal sources. First, data were obtained in intensive field studies at two sites in the northern portion of the region, both in lowland rainforest: San Isidro La Gringa and Chalchijapa during eight monthly visits of 15 days in 1995. Additional records were gathered in fieldwork by the authors in 1991–1995, and by Figueroa-Esquivel in 1997, including detailed inventories at several additional sites in the region: Sierra Espinazo del Diablo, Santa María Chimalapa, San Miguel Chimalapa and the mountains above Benito Juárez (Cerro Guayabitos and Cerro Salomón).

Second, additional information was available from the database in preparation as the *Atlas of the Distribution of the Birds of Mexico*, representing more than 300,000 specimen records from Mexico drawn from 43 scientific collections in North America and Europe (Peterson et al. 1998b). For Oaxaca east of Matias

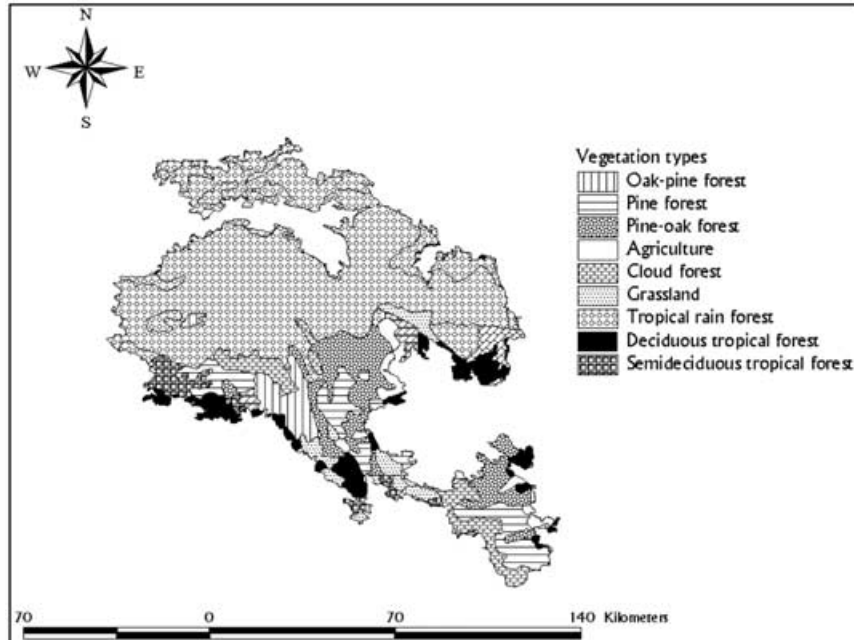


Figure 2. Vegetation types in the *Selva Zoque* priority region of the Chimalapas, Mexico. Data from <http://www.conabio.gob.mx>.

Romero, more than 11,000 specimen records from 599 localities were available, although some of these sites were from the Pacific lowlands south of the Chimalapas.

Results

Species accounts

Various species detected in our inventories or in the specimen record are either listed under some category of international conservation concern (BirdLife International 2000) or are species that are sufficiently rare or little known as to merit further comment regarding the evidence documenting their presence in the Chimalapas. Here, we summarize the documentation available to us either in the form of historical information or as new records that we have accumulated in the course of our studies in the region. In a few cases, documentation is less than satisfactory, which more than anything reflects the poor state of knowledge of the fauna of the Chimalapas and the dire need for further studies.

King Vulture *Sarcoramphus papa*

Nine specimens collected 1948–1962 (WFVZ 3897, 4351, 8781–3; LSUMZ 43124, 45563; UAZ 8700; MLZ 48902) document the presence of this species both at the north-western fringe (Río Sarabia) and along the southern fringe (Rancho Santa Efigenia, Rancho Sol y Luna, Tapanatepec, Rancho San Vicente) of the Chimalapas region. Our recent surveys documented this species at La Gringa in 1995.

Muscovy Duck *Cairina moschata*

Populations of this species were recorded at La Gringa and Chalchijapa in 1995, far from any human presence, suggesting that they are indeed wild populations.

Solitary Eagle *Harpyhaliaetus solitarius*

One specimen (BELL 12488) documents the presence of this species at three miles NNE of Tapanatepec. This species was observed 18 times at Benito Juárez, Chalchijapa and La Gringa in 1995 and 1997.

Harpy Eagle *Harpia harpyja*

Three specimens document this Near Threatened species in the region of the Chimalapas: WFVZ 10471 (Veracruz, 50 miles up the Río Coatzacoalcos from junction with Río Jaltepec), KU 24802 (Oaxaca, 38 km SE of Jesús Carranza), and IBUNAM P000463 (Oaxaca, Rincón Antonio). These specimens constitute the only known records of Harpy Eagle for the state (Escalante-Pliego and Peterson 1994). A nest in a large ceiba near Chalchijapa seen by AGNS was apparently inhabited by a pair of this species in 1994.

Black-and-white Hawk-Eagle *Spizastur melanoleucus*

Two specimens document the presence of this species at the south-western peri-

phery of the Chimalapas, at Cerro Baúl and at Rancho Sol y Luna in 1966–1967 (WFVZ 16584, 19250). No recent records.

Black Hawk-Eagle *Spizaetus tyrannus*

No specimens exist from the region. However, observations at close range by ATP in 1991 place this species both at Chalchijapa and along the Uxpanapa Road in southernmost Veracruz, and FRG and LCG at La Gringa in 1995.

Ornate Hawk-Eagle *Spizaetus ornatus*

Five specimens (WFVZ 12409–10, 19228, 12694; KU 103069) place this species both along the south-western (Rancho Vicente, Rancho Enrique) and the north-western fringe (13 miles up the Río Chalchijapa from its union with the Río Coatzacoalcos) of the regions. Recent sight records place this species at La Gringa and Chalchijapa in 1995.

Highland Guan *Penelopina nigra*

Series totalling 42 specimens (1948–1966) document the presence of this Near Threatened species at numerous localities in the south-western portion of the Chimalapas. More recently, numerous sight records and one specimen (MZFC 13444) place this species abundantly in the mountains near Benito Juárez (Cerro Salomón, Cerro Guayabitos).

Horned Guan *Oreophasis derbrianus*

No specimen records or recent sightings of this Endangered species. However, Dr Jesús Estudillo (pers. comm.) indicated the existence of populations in the region, but without details of localities.

Great Curassow *Crax rubra*

Numerous specimens (WFVZ, KU, LACM) and sightings place this species throughout the region, at sites including Rancho Vicente, Palomares, La Gringa, Chalchijapa. Recent specimens (MZFC 14116, 14118–9) are from Chalchijapa.

Scarlet Macaw *Ara macao*

Two specimens place this species in the Chimalapas region: WFVZ 5056 from 16 miles S of Matias Romero, and MLZ 47606 from Rancho Santa Efigenia. Although our survey teams made no sightings, local residents near La Gringa described without prompting this unmistakable species as occurring at least seasonally.

Yellow-headed Parrot *Amazona oratrix*

Two records (BMUK 893.1.30.332 from Río Grande, Binford 1989 mentions a record from Petapa) are the only documentation of this Endangered species in the Chimalapas

Yellow-naped Parrot *Amazona auropalliata*

One specimen (MLZ 45517) places this species at five miles W of Zanatepec.

Black-and-white Owl *Ciccaba nigrolineata*

Nine specimens (MLZ 47384; AMNH 776282; WFVZ 4708–9, 4679, 10893, 12019–20, 16651) place this species at Rancho Sol y Luna, and 18–24 miles N of Matias Romero in 1948–1965. One recent sight record places this species at Chalchijapa in 1991.

Long-tailed Saberwing *Campylopterus excellens*

Numerous recent specimens (MZFC uncat.) document the presence of this Near Threatened species along the northern fringe of the Chimalapas region, particularly at La Gringa. These series are particularly important because they document sympatry with *C. curvipennis* (MZFC uncat.), confirming the biological species status of these two forms (Rebón Gallardo unpubl. data), and extending the known range of *C. excellens* somewhat southward.

Resplendent Quetzal *Pharomachrus mocinno*

Seven specimens (WFVZ 12442–8) place this Near Threatened species in the Sierra Reten in 1964. This species was observed once in the Sierra Espinazo del Diablo in 1991, and was found to be abundant in the mountains above Benito Juárez (Cerro Salomón, Cerro Guayabitos) in 1991 and 1997.

Keel-billed Motmot *Electron carinatum*

Three specimens (KU 29174, AMNH and MNHNP, neither with catalogue number) place this Vulnerable species at 30 km SSE of Jesús Carranza, Tolosa, and Santa María Chimalapa, Oaxaca; the MNHNP specimen dates from 1952. The only recent record of this species in all of Mexico was from La Gringa in 1991 (Miller and Miller 1996).

Lovely Cotinga *Cotinga amabilis*

Two specimens (WFVZ 27064, 27 km ENE Piedra Blanca, 1962; BMUK 99.5.1.544, Chimalapa, Tehuantepec, 1890) place this species in the Chimalapas.

Nava's Wren *Hylorchilus navai*

This Vulnerable species is not documented from the Chimalapas region, and indeed is not likely to occur in the heart of the region, for lack of the karstic soils and geology that are so important to it. However, it is known in the Uxpanapa region that touches the northern fringe of the Chimalapas (Atkinson *et al.* 1993).

Rose-bellied Bunting *Passerina rositae*

Twenty-eight specimens (WFVZ, MCZ, DMNH, BMUK) document the presence of this Near Threatened species at two localities along the southern fringe of the Chimalapas region (11 mi N Tapanatepec, Rancho Sol y Luna, Rancho Cacoprieto) (1899–1966). Although no new records supplement these, little field time was spent in appropriate habitats.

Cinnamon-tailed Sparrow *Aimophila sumichrasti*

This Near Threatened species is endemic to the Isthmus of Tehuantepec, includ-

ing areas along the southern fringe of the Chimalapas (e.g. Santa Efigenia, Santo Domingo Petapa, La Ventosa, 12 miles NE of Juchitán) (Binford 1989).

Species lists

The avifauna of the Chimalapas is better documented than for any other animal group. The only other biological inventory that approaches completeness is that for forest trees (Wendt 1989). In all, at least 464 bird species are known from the region as a whole (Appendix), representing 44% of the species known to occur in Mexico (Escalante-Pliego *et al.* 1993, A.O.U. 1998). Dividing the region into three sectors, the humid Atlantic lowlands are known to hold 317 species, the montane portion 113 species (Hernández-Baños *et al.* 1995), and the southern dry forested lowlands 216 species.

During the present fieldwork, a total of 299 species were recorded in the region, and a voucher collection of 570 specimens of 163 species were obtained and deposited in the Museo de Zoología (MZFC) and the University of Kansas (KU). In addition, we amassed many hundreds of visual records and observations. Highlights of the bird list include the only known records of Harpy Eagle for the state (Escalante-Pliego and Peterson 1994), records of three other large eagles (Solitary Eagle, Ornate Hawk-Eagle, and Black Hawk-Eagle), the only recent record of Keel-billed Motmot from Mexico (record by ATP) (Miller and Miller 1996) and populations of Scarlet Macaw.

In montane areas, ample populations of the Near Threatened Resplendent Quetzal and Highland Guan were present, and undocumented reports (J. Estudillo pers. comm.) place the Near Threatened Horned Guan there as well; these species all make the region a priority for conservation action, as viable populations of these species may not exist in more than a handful of localities in the world (BirdLife International 2000). The Pacific slope portion of the Chimalapas is likely to hold the only long-term viable populations of the range-restricted and Near-threatened Cinnamon-tailed Sparrow and Rose-bellied Bunting, both of which are narrowly endemic to the dry lowlands of the Pacific side of the Isthmus of Tehuantepec.

Comparisons

Compared with other sites in southern Mexico and northern Central America, the Chimalapas presents a rich avifauna across an entire lowland-to-highland spectrum. A first countrywide exploration (Escalante-Pliego *et al.* 1993, Peterson *et al.* 1993, Hernández-Baños *et al.* 1995, Peterson *et al.* 1998a, Peterson and Navarro-Sigüenza 1999, 2000) indicated that species of conservation concern are distributed unevenly among habitats and landforms. Whereas lowland habitats in southern Mexico are rich in species, they are poor in endemic forms, and endemic, rare and range-restricted species (Peterson and Watson 1998) are concentrated in middle-to-high elevation habitats (Peterson *et al.* 1993).

Habitats richest in restricted-range species are generally the montane habitats of pine, pine-oak, and cloud forests, although the dry lowlands of the southern

fringe of the Chimalapas hold a surprising number of narrowly endemic species. Because the Chimalapas contains complete lowland-to-montane gradients, it is likely to hold both habitats with high species richness (lowlands) and rich in endemic and restricted-range species (mountains). We compared three broad areas within the Chimalapas (Atlantic lowlands with humid rainforest, mountains and Pacific lowlands with dry tropical forest); here again, the massive richness of species in the Atlantic lowlands is clear. Comparing richness of species endemic to Mexico, the Atlantic lowlands are endemism-poor (less than 2% endemic), and montane areas richer (3.7% endemic). However, the Pacific lowlands are much richer, with 7.5% of species endemic to Mexico, *contra* our previous results (Peterson *et al.* 1993).

Having considered broad patterns across the Chimalapas, an important consideration is the degree to which the three areas are homogeneous faunistically. Unfortunately, data relevant to this issue are insufficient. The two montane sites that have been surveyed carefully (Cerro Baúl, Cerro Salomón) have similar avifaunas. These two sites, however, lie in close proximity, so montane comparisons will remain incomplete until more disparate montane areas are surveyed (e.g. Cerro Azul, Sierra de Tres Picos).

In the Atlantic lowlands, Chalchijapa and San Isidro La Gringa appear similar avifaunistically at first glance. However, differences exist: for example, the vocal and easily identified Rufous Piha *Lipaugus unirufus* was detected frequently at Chalchijapa, yet the same investigators in the same season failed to encounter the species a single time at La Gringa. Similarly, several species were detected at La Gringa that were not detected at Chalchijapa: Speckled Mourner *Laniocera rufescens* and Keel-billed Motmot were particularly interesting examples.

Discussion

The importance of the Chimalapas as a protected natural area is indubitable. The area holds a rich store of biological diversity, including numerous endemic species of small vertebrates and plants, as well as healthy populations of many species otherwise in grave danger of extinction. More generally, the Chimalapas greatly outrank other potential conservation areas in Oaxaca when compared using indices of vulnerability to extinction (Peterson *et al.* unpubl. data). The area holds immense lowland rainforests and cloud forests that certainly rank among the largest and best preserved in all of Mesoamerica. Moreover, these habitats are arranged in a lowland-to-highland continuum, with entire watersheds preserved more or less intact.

The fauna of the Chimalapas remains poorly known, in spite of the new information presented herein. Surveys by our colleagues in 1995 recorded 188 butterfly species, 20 amphibians, 48 reptiles and 40 mammals, but this information remains to be integrated with the broader spectrum of existing information from natural history collections. Knowledge of a broader spectrum of biodiversity in the region is close to nil. Moreover, for all taxa, including birds, inventories at several remote sites are critical to a complete understanding of the region: Cerro Azul; the rainforest north and east of Santa María Chimalapa, including

the southern slopes of the Sierra de Tres Picos; the higher parts of the Sierra de Tres Picos; dry forest in the municipio de San Miguel Chimalapa; and the Sierra Espinazo del Diablo.

The Chimalapas presents a unique opportunity for conservation in Mexico, holding some of the very best opportunities for truly effective protection of biodiversity. However, it also presents several very serious challenges. The *Reserva Ecológica Campesina de Los Chimalapas* was declared by the local people in the early 1990s, and has seen some support and recognition officially and by the conservation community. However, much of the future success of the *Reserva* will depend on effective solutions to problems of land tenancy and the integrity of the borders of the state of Oaxaca. This challenge holds the key, either to an exciting future of a viable reserve, or an extremely pessimistic forecast that would spell the end of the Chimalapas region as a natural area.

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Appendix 1. Summary of 458 bird species known to occur in the municipios of Santa María Chimalapa and San Miguel Chimalapa. Species listed are noted as occurring in Atlantic lowlands (AT), mountains (MT), or Pacific lowlands (PA), and are accompanied by the type of documentation available (old specimens, new specimens collected by us, sightings by us), a rough estimate of abundance in the region (R, rare; U, uncommon; C, common); probable status in the region (B, breeding; M, migrant or transient; W, winter resident); endemism in Mexico (L, local endemic in the Chimalapas region; E, endemic; Q, quasiendemic); and designations from the Norma Oficial Mexicana (DOF 1994) (NOM: R, rare; T, threatened; E, endangered; P, under special protection).

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Tinamus major</i>	Great Tinamou	1	0	0	X	X	X	C	B	.	.
<i>Crypturellus soui</i>	Little Tinamou	1	0	0	X	X		R	B	.	.
<i>Crypturellus cinnamomeus</i>	Thicket Tinamou	0	0	1	X			R	B	R	R
<i>Crypturellus boucardi</i>	Slaty-breasted Tinamou	1	0	0	X	X		U	B	.	.
<i>Tachybaptus dominicus</i>	Least Grebe	1	0	1	X		X	U	B	.	.
<i>Pelecanus erythrorhynchos</i>	American White Pelican	1	0	0			X	R	M	.	.
<i>Phalacrocorax brasilianus</i>	Neotropic Cormorant	1	0	1	X		X	C	B	.	.
<i>Tigrisoma mexicanum</i>	Bare-throated Tiger-Heron	1	0	1		X	X	U	B	.	.
<i>Ardea herodias</i>	Great Blue Heron	1	0	1		X	X	R	B?	.	.
<i>Ardea alba</i>	Great Egret	1	0	1		X	X	C	B?	.	.
<i>Egretta thula</i>	Snowy Egret	1	0	1		X	X	C	B?	.	.
<i>Egretta caerulea</i>	Little Blue Heron	1	0	1		X	X	C	B?	.	.
<i>Bubulcus ibis</i>	Cattle Egret	1	0	1		X	X	C	B	.	.
<i>Butorides virescens</i>	Green Heron	1	0	1	X		X	C	B	.	.
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	1	0	0		X	X	U	B	.	.
<i>Cochlearius cochlearius</i>	Boat-billed Heron	1	0	1	X		X	R	B	.	.
<i>Ajaia ajaja</i>	Roseate Spoonbill	0	0	1		X	X	U	M	.	.
<i>Mycteria americana</i>	Wood Stork	0	0	1		X	X	U	M	T	T
<i>Coragyps atratus</i>	Black Vulture	1	1	1		X	X	C	B	.	.
<i>Cathartes aura</i>	Turkey Vulture	1	1	1		X	X	C	B	.	.
<i>Sarcoramphus papa</i>	King Vulture	1	0	1		X	X	R	B	E	E
<i>Cairina moschata</i>	Muscovy Duck	1	0	0		X	X	U	B	E	E
<i>Anas discors</i>	Blue-winged Teal	1	0	0		X	X	R	M	P	P
<i>Anas cyanoptera</i>	Cinnamon Teal	1	0	1		X	X	R	M	.	.
<i>Pandion haliaetus</i>	Osprey	1	0	1		X	X	C	B	.	.
<i>Leptodon cayanensis</i>	Gray-headed Kite	1	0	1		X	X	R	B	R	R
<i>Chondrohierax uncinatus</i>	Hook-billed Kite	1	0	1	X		X	U	B	R	R
<i>Elanoides forficatus</i>	American Swallow-tailed Kite	1	0	0	X		X	R	B	R	R

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Elanus leucurus</i>	White-tailed Kite	1	0	1	X		X	C	B		.
<i>Rostrhamus sociabilis</i>	Snail Kite	0	0	1	X		X	C	B		T
<i>Harpagus bidentatus</i>	Double-toothed Kite	1	0	1	X			R	B		R
<i>Ictinia mississippiensis</i>	Mississippi Kite	0	0	1			X	R	M		T
<i>Ictinia plumbea</i>	Plumbeous Kite	1	0	0	X		X	R	M?		R
<i>Accipiter striatus</i>	Sharp-shinned Hawk	0	1	0	X		X	R	B,W		T
<i>Accipiter bicolor</i>	Bicolored Hawk	1	0	0			X	R	B		R
<i>Geranospiza caerulescens</i>	Crane Hawk	1	0	1			X	U	B		T
<i>Leucopternis albicollis</i>	White Hawk	1	0	0			X	C	B		R
<i>Asturina nitida</i>	Gray Hawk	1	0	1	X		X	C	B		P
<i>Buteogallus anthracinus</i>	Common Black-Hawk	1	0	1	X		X	C	B		T
<i>Buteogallus urubitinga</i>	Great Black-Hawk	1	0	1	X		X	C	B		T
<i>Parabuteo unicinctus</i>	Harris' Hawk	0	0	1	X		X	R	B		T
<i>Harpophalaetus solitarius</i>	Solitary Eagle	0	1	1	X		X	U	B		E
<i>Buteo magister</i>	Roadside Hawk	1	0	1	X		X	C	B		P
<i>Buteo platypterus</i>	Broad-winged Hawk	0	1	0			X	U	M,W?		.
<i>Buteo brachyurus</i>	Short-tailed Hawk	0	0	1			X	U	B		.
<i>Buteo albicaudatus</i>	White-tailed Hawk	0	0	1	X		X	U	B		P
<i>Buteo albonotatus</i>	Zone-tailed Hawk	0	0	1	X		X	U	B		.
<i>Harpia harpyja</i>	Harpy Eagle	1	0	0	X		?	R	B		E
<i>Spizastur melanoleucus</i>	Black-and-White Hawk-Eagle	1	0	0	X			R	B		E
<i>Spizaetus tyrannus</i>	Black Hawk-Eagle	1	0	0	X		X	R	B		T
<i>Spizaetus ornatus</i>	Ornate Hawk-Eagle	1	1	1	X		X	R	B		E
<i>Caracara cheriway</i>	Crested Caracara	0	0	1			X	C	B		.
<i>Micrastur ruficollis</i>	Barred Forest-Falcon	0	1	0	X		X	C	B		R
<i>Micrastur semitorquatus</i>	Collared Forest-Falcon	1	0	1			X	U	B		R
<i>Herpotheres cachinnans</i>	Laughing Falcon	1	0	1			X	C	B		.
<i>Falco sparverius</i>	American Kestrel	1	0	1	X		X	U	B,M		.
<i>Falco ruficularis</i>	Bat Falcon	1	0	0	X		X	U	B		T
<i>Ortalis vetula</i>	Plain Chachalaca	1	0	0	X		X	C	B		.
<i>Ortalis poliocephala</i>	West Mexican Chachalaca	0	0	1	X		X	U	B		E
<i>Penelopina nigra</i>	Highland Guan	0	1	0	X	X	X	C	B		E

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Penelope purpurascens</i>	Crested Guan	1	1	1	X	X	X	C	B		P
<i>Oreophaps derbianus</i>	Horned Guan	0	1	0			?	R?	B	Q	E
<i>Crax rubra</i>	Great Curassow	1	0	0	X	X	X	U	B		T
<i>Odontophorus guttatus</i>	Spotted Wood-Quail	1	0	1	X	X	X	U	B		R
<i>Dactyortyx thoracicus</i>	Singing Quail	1	0	1	X			R	B		T
<i>Cyrtonyx ocellatus</i>	Ocellated Quail	0	1	0	X			R	B		R
<i>Colinus virginianus</i>	Northern Bobwhite	0	0	1	X			U	B		.
<i>Laterallus ruber</i>	Ruddy Crane	1	0	1	X			R	B		R
<i>Aramidés cajana</i>	Gray-necked Wood-Rail	1	0	0	X			U	B		R
<i>Amaurolimnas concolor</i>	Uniform Crane	1	0	0	X			R	B		R
<i>Porphyrula martinica</i>	Purple Gallinule	1	0	1	X			R	B		.
<i>Helionis fulica</i>	Sungrebe	1	0	0	X			R	B		.
<i>Aramus guarana</i>	Limpkin	1	0	0		X	X	U	B		T
<i>Burhinus bistriatus</i>	Double-striped Thick-knee	0	0	1	X			U	B		R
<i>Charadrius vociferus</i>	Killdeer	1	0	1		X	X	U	B,M		.
<i>Recurvirostra americana</i>	American Avocet	1	0	0		X	X	U	M		.
<i>Jacana spinosa</i>	Northern Jacana	1	0	1	X		X	C	B		.
<i>Tringa solitaria</i>	Solitary Sandpiper	1	0	0		X	X	R	W		.
<i>Actitis macularia</i>	Spotted Sandpiper	1	0	1	X		X	C	W		.
<i>Chlidonias niger</i>	Black Tern	1	0	0		X	X	U	W		.
<i>Columba livia</i>	Rock Dove	1	0	1		X	X	C	B		.
<i>Columba speciosa</i>	Scaled Pigeon	1	0	0		X	X	R	B		R
<i>Columba flavirostris</i>	Red-billed Pigeon	1	1	1		X	X	U	B		.
<i>Columba fasciata</i>	Band-tailed Pigeon	0	1	0	X			U	B		.
<i>Columba nigrirostris</i>	Short-billed Pigeon	1	0	0		X	X	C	B		R
<i>Zenaidura asiatica</i>	White-winged Dove	0	0	1		X	X	U	B		.
<i>Columbina inca</i>	Inca Dove	1	0	1	X		X	C	B		.
<i>Columbina passerina</i>	Common Ground-dove	1	0	0	X			U	B		.
<i>Columbina minuta</i>	Plain-breasted Ground-dove	1	0	0	X			R	B		.
<i>Columbina talpacoti</i>	Ruddy Ground-dove	1	0	1	X	X	X	C	B		.
<i>Claravis pretiosa</i>	Blue Ground-dove	1	0	0	X	X	X	C	B		R
<i>Leptotila verreauxi</i>	White-tipped Dove	1	1	1	X	X	X	C	B		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Leptotila rufaxilla</i>	Gray-fronted Dove	1	0	0	X	X	X	C	B		R
<i>Geotrygon albigacies</i>	White-faced Quail-dove	0	1	0	X	X		C	B		R
<i>Geotrygon montana</i>	Ruddy Quail-dove	1	0	1		X	X	U	B		.
<i>Aratinga holochlora</i>	Green Parakeet	0	0	1		X	X	U	B	Q	T
<i>Aratinga nana</i>	Olive-throated Parakeet	1	0	0	X	X	X	C	B		.
<i>Aratinga strenua</i>	Pacific Parakeet	0	0	1	X	X		U	B		.
<i>Aratinga canicularis</i>	Orange-fronted Parakeet	0	0	1	X	X	?	U	B		.
<i>Ara macao</i>	Scarlet Macaw	1	0	0				R	B		E
<i>Brotogeris jugularis</i>	Orange-chinned Parakeet	0	0	1	X			R	B		.
<i>Pionopsitta haematotis</i>	Brown-hooded Parrot	1	0	0	X	X	X	U	B		R
<i>Pionus senilis</i>	White-crowned Parrot	1	0	0	X	X	X	C	B		T
<i>Amazona albifrons</i>	White-fronted Parrot	0	0	1	X	X	X	U	B		.
<i>Amazona autumnalis</i>	Red-lored Parrot	1	0	0		X	X	U	B		.
<i>Amazona farina</i>	Mealy Parrot	1	0	0		X	X	C	B		T
<i>Amazona oratrix</i>	Yellow-headed Parrot	1	0	0	X			R	B	Q	E
<i>Amazona auropalliata</i>	Yellow-naped Parrot	0	0	1	X			R	B		T
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	1	0	0	X		X	U	W		.
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	1	0	1	X			U	W		.
<i>Coccyzus minor</i>	Mangrove Cuckoo	0	0	1			X	R	B		.
<i>Piaya cayana</i>	Squirrel Cuckoo	1	1	1		X	X	C	B		.
<i>Tapera naevia</i>	Striped Cuckoo	1	0	0	X		X	C	B		.
<i>Dromococcyx phasianellus</i>	Pheasant Cuckoo	1	1	0		X	X	C	B		R
<i>Morococcyx erythropygus</i>	Lesser Ground-Cuckoo	0	0	1	X			U	B		.
<i>Geococcyx velox</i>	Lesser Roadrunner	0	1	1	X		X	U	B		.
<i>Crotophaga sulcirostris</i>	Groove-billed Ani	1	0	1		X	X	C	B		.
<i>Tyto alba</i>	Common Barn-Owl	1	0	1	X			R	B		.
<i>Otus cooperi</i>	Pacific Screech-Owl	0	0	1	X			R	B		.
<i>Otus guatemalae</i>	Vermiculated Screech-Owl	1	0	0	X		X	U	B		R
<i>Lophostrix cristata</i>	Crested Owl	1	0	0		X	X	R	B		T
<i>Pulsatrix perspicillata</i>	Spectacled Owl	1	0	0		X	X	U	B		E
<i>Bubo virginianus</i>	Great Horned Owl	0	0	1	X			U	B		T

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Glaucidium griseiceps</i>	Central American Pygmy-Owl	1	1	0	X			R	B		R
<i>Glaucidium brasilianum</i>	Ferruginous Pygmy-Owl	0	0	1	X		X	C	B		T
<i>Ciccaba virgata</i>	Mottled Owl	1	1	1	X	X	X	C	B		T
<i>Ciccaba nigrolineata</i>	Black-and-White Owl	1	0	0	X		X	U	B		T
<i>Pseudoscops clamator</i>	Striped Owl	1	0	0	X			R	B		T
<i>Chordeiles minor</i>	Common Nighthawk	0	0	1			X	R	M		.
<i>Nyctidromus albigollis</i>	Pauraque	1	0	1	X		X	C	B		.
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	1	0	0	X			R	W?		.
<i>Caprimulgus salicini</i>	Tawny-collared Nightjar	1	0	0	X			R	B?	Q	.
<i>Caprimulgus ridgwayi</i>	Buff-collared Nightjar	0	0	1	X			R	B	Q	.
<i>Caprimulgus vociferus</i>	Whip-poor-will	0	1	0	X		X	U	B,W		.
<i>Caprimulgus maculicaudus</i>	Spot-tailed Nightjar	1	0	0	X			R	B		.
<i>Nyctibius jamaicensis</i>	Common Potoo	1	0	1			X	U	B		.
<i>Streptoprocne rutila</i>	Chestnut-collared Swift	0	1	0	X			R	B		.
<i>Streptoprocne zonaris</i>	White-collared Swift	1	1	0	X	X	X	C	B		.
<i>Chaetura pelagica</i>	Chimney Swift	1	0	0	X			R	M		.
<i>Chaetura vauxi</i>	Vaux's Swift	0	1	1	X	X	X	C	B		.
<i>Panyptila sanctihieronymi</i>	Greater Swallow-tailed Swift	0	0	1	X			R	B		R
<i>Phaethornis superciliosus</i>	Long-tailed Hermit	1	1	1	X	X	X	C	B		.
<i>Phaethornis longuemareus</i>	Little Hermit	1	0	0	X	X	X	C	B		R
<i>Campylopterus curvipennis</i>	Wedge-tailed Sabrewing	1	1	0		X	X	C	B		R
<i>Campylopterus excellens</i>	Long-tailed Sabrewing	1	1	0		X	X	C	B	L	T
<i>Campylopterus rufus</i>	Rufous Sabrewing	0	1	0	X			R	B		T
<i>Campylopterus hemileucurus</i>	Violet Sabrewing	1	0	0	X	X	X	C	B		.
<i>Florisuga mellitora</i>	White-necked Jacobin	1	0	0	X	X	X	U	B		R
<i>Anthracoceros prevostii</i>	Green-breasted Mango	1	0	0	X			R	B		.
<i>Abeillia abeillei</i>	Emerald-chinned Hummingbird	0	1	0	X		X	U	B		T
<i>Lophornis helenae</i>	Black-crested Coquette	1	0	0	X	X	X	R	B		R
<i>Chlorostilbon canivetii</i>	Fork-tailed Emerald	1	0	1	X			R	B		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Cyananthus latirostris</i>	Broad-billed Hummingbird	1	0	0	X	X	X	R	B	Q	.
<i>Hylocharis eliciae</i>	Blue-throated Goldentail	0	0	1	X			R	B		.
<i>Hylocharis leucotis</i>	White-eared Hummingbird	0	1	0	X	X	X	U	B		.
<i>Amazilia candida</i>	White-bellied Emerald	1	0	0	X	X	X	C	B	R	R
<i>Amazilia cyanocephala</i>	Azure-crowned Hummingbird	0	1	0	X	X	X	U	B		.
<i>Amazilia beryllina</i>	Berylline Hummingbird	1	1	0	X	X	X	C	B		.
<i>Amazilia tzacatl</i>	Rufous-tailed Hummingbird	1	0	0	X	X	X	C	B	R	R
<i>Amazilia yucatanensis</i>	Buff-bellied Hummingbird	1	0	0	X			U	B		.
<i>Amazilia rutila</i>	Cinnamon Hummingbird	0	0	1	X			R	B		.
<i>Amazilia viridifrons</i>	Green-fronted Hummingbird	0	0	1	X			U	B	E	R
<i>Eupherusa eximia</i>	Stripe-tailed Hummingbird	0	1	0	X	X	X	U	B		.
<i>Lampornis viridipallens</i>	Green-throated Mountain-gem	0	1	0	X			U	B		R
<i>Lampornis amethystinus</i>	Amethyst-throated Hummingbird	0	1	0			X	U	B		
<i>Eugenes fulgens</i>	Magnificent Hummingbird	0	1	0	X			U	B		.
<i>Helimaster longirostris</i>	Long-billed Starthroat	1	0	1	X	X	X	U	B		R
<i>Helimaster constantii</i>	Plain-capped Starthroat	1	0	1	X			U	B		.
<i>Archilochus colubris</i>	Ruby-throated Hummingbird	1	0	1	X			C	W		.
<i>Trogon melanocephalus</i>	Black-headed Trogon	1	0	0	X			U	B		.
<i>Trogon citreolus</i>	Citreoline Trogon	0	0	1	X			U	B	E	.
<i>Trogon violaceus</i>	Violaceous Trogon	1	0	0	X		X	C	B		R
<i>Trogon collaris</i>	Collared Trogon	1	1	1	X	X	X	U	B		R
<i>Trogon massena</i>	Slaty-tailed Trogon	1	0	0	X	X	X	U	B		R
<i>Pharomacrus mocinno</i>	Resplendent Quetzal	0	1	0			X	U	B	E	E
<i>Hylomanes momotula</i>	Tody Motmot	1	0	0	X	X	X	U	B		R
<i>Aspatha gularis</i>	Blue-throated Motmot	0	1	0	X			R	B		T
<i>Momotus momota</i>	Blue-crowned Motmot	1	1	0	X	X	X	C	B		R
<i>Momotus mexicanus</i>	Russet-crowned Motmot	0	0	1	X			U	B	Q	.
<i>Electron carinatum</i>	Keel-billed Motmot	1	0	0	X		X	R	B		T
<i>Eumotus superciliosa</i>	Turquoise-browed Motmot	0	1	0	X			R	B		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Ceryle torquata</i>	Ringed Kingfisher	1	0	1	X		X	C	B		.
<i>Ceryle alcyon</i>	Belted Kingfisher	1	0	0	X			U	B		.
<i>Chloroceryle amazona</i>	Amazon Kingfisher	1	0	1		X	X	C	B		.
<i>Chloroceryle americana</i>	Green Kingfisher	1	0	1	X	X	X	C	B		.
<i>Chloroceryle aenea</i>	American Pygmy Kingfisher	1	0	1	X	X		U	B		.
<i>Notharchus macrorhynchos</i>	White-necked Puffbird	1	0	0	X		X	R	B		.
<i>Galbula ruficauda</i>	Rufous-tailed Jacamar	1	0	0	X	X	X	C	B		R
<i>Aulacorhynchus prasinus</i>	Emerald Toucanet	0	1	0	X		X	U	B		P
<i>Pteroglossus torquatus</i>	Collared Aracari	1	0	0	X	X	X	C	B		R
<i>Ramphastos sulfuratus</i>	Keel-billed Toucan	1	0	0	X		X	C	B		T
<i>Melanerpes formicivorus</i>	Acorn Woodpecker	0	1	0		X	X	U	B		.
<i>Melanerpes pucherani</i>	Black-cheeked Woodpecker	1	0	0	X	X	X	U	B		R
<i>Melanerpes aurifrons</i>	Golden-fronted Woodpecker	1	0	1	X		X	C	B		.
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker	0	1	0	X		X	R	W		.
<i>Picoides scalaris</i>	Ladder-backed Woodpecker	0	0	1			X	U	B		.
<i>Picoides villosus</i>	Hairy Woodpecker	0	1	0	X		X	C	B		.
<i>Ventilornis fumigatus</i>	Smoky-brown Woodpecker	1	0	1	X	X	X	U	B		R
<i>Piculus rubiginosus</i>	Golden-olive Woodpecker	1	1	1	X	X	X	U	B		.
<i>Ceileus castaneus</i>	Chestnut-colored Woodpecker	1	0	0	X	X	X	U	B		T
<i>Dryocopus lineatus</i>	Lineated Woodpecker	1	0	1	X	X	X	U	B		R
<i>Campophilus guatemalensis</i>	Pale-billed Woodpecker	1	0	1	X		X	U	B		R
<i>Synallaxis erythrorhox</i>	Rufous-breasted Spinetail	1	0	1	X	X	X	U	B		.
<i>Anabacerthia variegaticeps</i>	Spectacled Foliage-gleaner	0	1	0	X	X	X	U	B		.
<i>Automolus ochrolaemus</i>	Buff-throated Foliage-gleaner	1	0	0	X	X	X	C	B		R
<i>Xenops minutus</i>	Plain Xenops	1	0	0	X	X	X	C	B		T
<i>Sclerurus mexicanus</i>	Tawny-throated Leafosser	0	1	0	X		X	R	B		R
<i>Sclerurus guatemalensis</i>	Scaly-throated Leafosser	1	0	0	X	X	X	U	B		R
<i>Dendrocincla anabatina</i>	Tawny-winged Woodcreeper	1	0	0	X	X	X	C	B		T
<i>Dendrocincla homochroa</i>	Ruddy Woodcreeper	0	1	0	X	X	X	C	B		R
<i>Sittasomus griseicapillus</i>	Olivaceous Woodcreeper	1	1	1	X	X	X	C	B		R
<i>Glyphorhynchus spirurus</i>	Wedge-billed Woodcreeper	1	0	0	X	X	X	C	B		R

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Dendrocolaptes sanctithomae</i>	Barred Woodcreeper	1	0	0	X	X	X	U	B		R
<i>Xiphorhynchus flavigaster</i>	Ivory-billed Woodcreeper	0	1	0	X	X	X	C	B		.
<i>Xiphorhynchus erythropygius</i>	Spotted Woodcreeper	0	1	0	X	X	X	U	B		R
<i>Lepidocolaptes souleyetii</i>	Streak-headed Woodcreeper	1	0	1	X	X	X	U	B		.
<i>Lepidocolaptes affinis</i>	Spot-crowned Woodcreeper	0	1	0	X	X	X	U	B		.
<i>Taraba major</i>	Great Antshrike	1	0	0	X	X	X	U	B		R
<i>Thamnophilus doliatus</i>	Barred Antshrike	1	0	1	X	X	X	C	B		.
<i>Thamnistes anabatinus</i>	Russet Antshrike	1	0	0	X	X	X	R	B		R
<i>Microhoptias quixensis</i>	Dot-winged Antwren	1	0	0	X	X	X	R	B		R
<i>Cercomacra tyrannina</i>	Dusky Antbird	1	0	0	X	X	X	U	B		R
<i>Fornicarius analis</i>	Black-faced Anthrush	1	0	0	X	X	X	C	B		R
<i>Grallaria guatemalensis</i>	Scaled Antpitta	0	1	0	X	X	X	R	B		.
<i>Ornithion semiflavum</i>	Yellow-bellied Tyrannulet	1	0	0	X	X	X	R	B		R
<i>Camptostoma imberbe</i>	No. Beardless-Tyrannulet	0	0	1	X	X	X	U	B		.
<i>Myiopagis viridicata</i>	Greenish Elaenia	1	0	0	X	X	X	U	B		.
<i>Elaenia flavogaster</i>	Yellow-bellied Elaenia	1	0	0	X	X	X	C	B		.
<i>Mionectes olgaeus</i>	Ochre-bellied Flycatcher	1	0	0	X	X	X	C	B		R
<i>Leptopogon anaurocephalus</i>	Sepia-capped Flycatcher	1	0	0	X	X	X	C	B		R
<i>Oncostoma cinereigulare</i>	Northern Bentbill	1	0	0	X	X	X	U	B		R
<i>Poecilatriccus sylvia</i>	Slate-headed Tody-Flycatcher	1	0	0	X	X	X	U	B		R
<i>Todirostrum cinereum</i>	Common Tody-Flycatcher	1	0	0	X	X	X	U	B		R
<i>Rhynchocyclus brevirostris</i>	Eye-ringed Flatbill	0	1	0	X	X	X	U	B		.
<i>Tohmomyias sulphurescens</i>	Yellow-olive Flycatcher	1	0	0	X	X	X	U	B		R
<i>Platyrinchilus cancrorninus</i>	Stub-tailed Spadebill	1	0	0	X	X	X	C	B		R
<i>Onychorhynchus coronatus</i>	Royal Flycatcher	1	0	0	X	X	X	C	B		R
<i>Terenotriccus erythrus</i>	Ruddy-tailed Flycatcher	1	0	0	X	X	X	R	B		R
<i>Myiobius sulphureipygus</i>	Sulphur-rumped Flycatcher	1	0	0	X	X	X	C	B		R
<i>Contopus cooperi</i>	Olive-sided Flycatcher	1	1	1	X	X	X	U	W		.
<i>Contopus pertinax</i>	Greater Pewee	0	1	0	X	X	X	U	B		.
<i>Contopus sordidulus</i>	Western Wood-Pewee	1	1	1	X	X	X	U	W		.
<i>Contopus virens</i>	Eastern Wood-Pewee	1	0	0	X	X	X	R	W		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Contopus cinereus</i>	Tropical Pewee	1	0	0		X	X	C	B		.
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	1	0	0	X	X		U	W		.
<i>Empidonax virescens</i>	Acadian Flycatcher	1	0	0	X			U	W		.
<i>Empidonax albonotum</i>	Alder Flycatcher	1	0	1	X	X		U	W		.
<i>Empidonax traillii</i>	Willow Flycatcher	1	0	0	X	X		U	W		.
<i>Empidonax albigularis</i>	White-throated Flycatcher	0	0	1			X	U	B		.
<i>Empidonax minimus</i>	Least Flycatcher	0	0	1	X			U	W		.
<i>Empidonax hammondi</i>	Hammond's Flycatcher	0	0	1	X			U	W		.
<i>Empidonax oberholseri</i>	Dusky Flycatcher	0	0	1	X			U	W		.
<i>Empidonax flavescens</i>	Yellowish Flycatcher	0	1	0	X		X	U	B		.
<i>Sayornis nigricans</i>	Black Phoebe	1	1	1			X	C	B		.
<i>Sayornis phoebe</i>	Eastern Phoebe	0	0	1	X			R	W		.
<i>Pyrocephalus rubinus</i>	Vermilion Flycatcher	0	0	1			X	C	B		.
<i>Attila spadiceus</i>	Bright-rumped Attila	1	0	1	X	X	X	U	B		R
<i>Rhytipterna holerythra</i>	Rufous Mourner	1	0	0	X	X	X	C	B		R
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher	1	1	1	X	X	X	C	B		.
<i>Myiarchus nuttingi</i>	Nutting's Flycatcher	0	0	1	X			U	B?		.
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	1	0	0		X		C	W		.
<i>Myiarchus tyrannulus</i>	Brown-crested Flycatcher	0	0	1	X			U	B		.
<i>Deltarhynchus flammulatus</i>	Flammulated Flycatcher	0	0	1	X			U	B		E
<i>Pitangus sulphuratus</i>	Great Kiskadee	1	0	1	X		X	C	B		.
<i>Megarynchus pitangua</i>	Boat-billed Flycatcher	1	0	1	X		X	U	B		.
<i>Myiozetetes similis</i>	Social Flycatcher	1	0	1	X	X	X	C	B		.
<i>Myiodynamastes maculatus</i>	Streaked Flycatcher	1	0	0	X			R	B		.
<i>Myiodynamastes luteiventris</i>	Sulphur-bellied Flycatcher	1	0	0	X			C	B		.
<i>Legatus leucophaeus</i>	Piratic Flycatcher	1	0	0	X		X	C	B		.
<i>Tyrannus melancholicus</i>	Tropical Kingbird	1	0	1	X	X	X	C	B		.
<i>Tyrannus crassirostris</i>	Thick-billed Kingbird	0	0	1			X	R	B		E
<i>Tyrannus verticalis</i>	Western Kingbird	0	0	1	X			U	W		.
<i>Tyrannus tyrannus</i>	Eastern Kingbird	0	0	1			X	C	W		.
<i>Tyrannus forficatus</i>	Scissor-tailed Flycatcher	1	0	1	X		X	C	W		.
<i>Pachyrhamphus cinnamomeus</i>	Cinnamon Becard	1	0	0	X	X	X	U	B		R

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Pachyramphus major</i>	Gray-collared Becard	0	1	0	X			R	B		.
<i>Pachyramphus aglaiae</i>	Rose-throated Becard	1	0	1			X	U	B		.
<i>Tityra semifasciata</i>	Masked Tityra	1	1	1	X		X	C	B		.
<i>Tityra inquisitor</i>	Black-crowned Tityra	1	0	0	X	X	X	U	B		.
<i>Lipaugus unirufus</i>	Rufous Piha	1	0	0	X	X	X	U	B		R
<i>Laniocera rufescens</i>	Speckled Mourner	1	0	0	X	X	X	R	B		R
<i>Schijffornis turdinus</i>	Thrushlike Manakin	1	0	0	X	X	X	U	B		.
<i>Cotinga amabilis</i>	Lovely Cotinga	1	0	0	X	X	X	R	B		T
<i>Manacus candei</i>	White-collared Manakin	1	0	0	X	X	X	U	B		R
<i>Chiroxiphia linearis</i>	Long-tailed Manakin	0	0	1	X		X	C	B		T
<i>Pipra mentalis</i>	Red-capped Manakin	1	0	0	X	X	X	C	B		.
<i>Lanius ludovicianus</i>	Loggerhead Shrike	0	0	1	X			U	B		.
<i>Vireo griseus</i>	White-eyed Vireo	1	0	1	X	X	X	U	W		.
<i>Vireo bellii</i>	Bell's Vireo	1	0	1	X			R	W		.
<i>Vireo solitarius</i>	Solitary Vireo	0	1	0	X			U	W,B?		.
<i>Vireo flavifrons</i>	Yellow-throated Vireo	1	0	0	X			U	W		.
<i>Vireo gilvus</i>	Warbling Vireo	1	0	1	X			U	W		.
<i>Vireo leucophrys</i>	Brown-capped Vireo	0	1	0	X			U	B		.
<i>Vireo philadelphicus</i>	Philadelphia Vireo	1	0	0	X			U	W		.
<i>Vireo olivaceus</i>	Red-eyed Vireo	1	0	0	X			U	W		.
<i>Vireo flavoviridis</i>	Yellow-green Vireo	1	0	1	X			C	B		.
<i>Hylophilus ochraceiceps</i>	Tawny-crowned Greenlet	1	0	0	X	X	X	C	B		R
<i>Hylophilus decurtatus</i>	Lesser Greenlet	1	0	1	X			R	B		R
<i>Vireolanus pulchellus</i>	Green Shrike-Vireo	1	0	0	X			U	B		R
<i>Cyclarhis gujanensis</i>	Rufous-browed Peppershrike	1	0	1	X			R	B		.
<i>Calocitta formosa</i>	White-throated Magpie-Jay	0	0	1	X			C	B		.
<i>Cyanocorax yncas</i>	Green Jay	1	0	1	X			U	B		.
<i>Cyanocorax morio</i>	Brown Jay	1	0	0	X	X	X	C	B		.
<i>Cyanolyca cucullata</i>	Azure-hooded Jay	0	1	0	X	X	X	U	B		T
<i>Aphelocoma unicolor</i>	Unicolored Jay	0	1	0	X			R	B		P
<i>Corvus corax</i>	Common Raven	0	1	0	X			R	B		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Eremophila alpestris</i>	Horned Lark	0	0	1	X			U	B		.
<i>Progne chalybea</i>	Gray-breasted Martin	1	0	1			X	U	B		.
<i>Stelgidopteryx serripennis</i>	No. Rough-winged Swallow	1	0	1			X	C	B		.
<i>Hirundo rustica</i>	Barn Swallow	1	0	0			X	C	B		.
<i>Campylorhynchus zonatus</i>	Band-backed Wren	1	0	0	X		X	C	B		.
<i>Campylorhynchus rufinucha</i>	Rufous-naped Wren	0	0	1	X			U	B		.
<i>Salpinctes obsoletus</i>	Rock Wren	0	0	1	X			U	B		.
<i>Catherpes mexicanus</i>	Canyon Wren	0	1	1	X			U	B		.
<i>Hylorchilus navae</i>	Nava's Wren	1	0	0		?		U	B	L	T
<i>Thryothorus maculipectus</i>	Spot-breasted Wren	1	1	0	X		X	C	B		.
<i>Thryothorus pleurostictus</i>	Banded Wren	0	0	1	X			C	B		.
<i>Thryothorus modestus</i>	Plain Wren	0	0	1	X			U	B		.
<i>Troglodytes musculus</i>	House Wren	1	0	1	X		X	C	B		.
<i>Uropsila leucogastra</i>	White-bellied Wren	1	0	0		X	X	R	B	E	R
<i>Henicorhina leucosticta</i>	White-breasted Wood-Wren	1	0	1	X		X	C	B		R
<i>Henicorhina leucophrys</i>	Gray-breasted Wood-Wren	0	1	0	X		X	U	B		R
<i>Ramphocaeus melanurus</i>	Long-billed Gnatwren	1	0	0	X		X	U	B		R
<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher	1	0	1				U	W?B?		.
<i>Polioptila albiloris</i>	White-lored Gnatcatcher	0	0	1	X			U	B		.
<i>Polioptila plumbea</i>	Tropical Gnatcatcher	1	0	0	X			U	B		R
<i>Sialia sialis</i>	Eastern Bluebird	0	1	0			X	U	B		.
<i>Myadestes occidentalis</i>	Brown-backed Solitaire	0	1	0	X			U	B		P
<i>Myadestes unicolor</i>	Slate-colored Solitaire	0	1	0	X		X	C	B		P
<i>Catharus aurantirostris</i>	Orange-billed Nightingale-Thrush	1	1	1	X			U	B		.
<i>Catharus frontzii</i>	Ruddy-capped Nightingale-Thrush	0	1	0	X			U	B		.
<i>Catharus mexicanus</i>	Black-headed Nightingale-Thrush	0	1	0	X		X	C	B		R
<i>Catharus dryas</i>	Spotted Nightingale-Thrush	0	1	0	X		X	C	B		.
<i>Catharus fuscescens</i>	Veery	1	0	0		X	X	R	M		.
<i>Catharus ustulatus</i>	Swainson's Thrush	1	0	0	X		X	C	W		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Hylocichla mustelina</i>	Wood Thrush	1	0	0	X	X	X	C	W		.
<i>Turdus infuscatus</i>	Black Robin	0	1	0	X	X		U	B		R
<i>Turdus plebejus</i>	Mountain Robin	0	1	0	X	X		R	B		R
<i>Turdus grayi</i>	Clay-colored Robin	1	0	1	X	X	X	C	B		.
<i>Turdus assimilis</i>	White-throated Robin	1	0	1	X	X	X	C	B		.
<i>Turdus rufopalliatus</i>	Rufous-backed Robin	0	0	1	X	X		U	W		.
<i>Dumetella carolinensis</i>	Gray Catbird	1	0	0	X	X	X	C	W		.
<i>Mimus gilvus</i>	Tropical Mockingbird	0	0	1	X	X		C	B		.
<i>Bonbycilla cedrorum</i>	Cedar Waxwing	1	0	1			X	U	W		.
<i>Vermivora peregrina</i>	Tennessee Warbler	1	0	0	X	X	X	U	W		.
<i>Vermivora celata</i>	Orange-crowned Warbler	1	0	1	X	X	X	U	W		.
<i>Vermivora ruficapilla</i>	Nashville Warbler	1	1	1	X	X	X	C	W		.
<i>Parula americana</i>	Northern Parula	1	0	0	X	X		U	W		.
<i>Parula pitiayumi</i>	Tropical Parula	1	0	1			X	C	B		.
<i>Dendroica petechia</i>	Yellow Warbler	1	0	0			X	C	W		.
<i>Dendroica pensylvanica</i>	Chestnut-sided Warbler	1	0	0			X	U	M		.
<i>Dendroica magnaolia</i>	Magnolia Warbler	1	0	1		X	X	C	W		R
<i>Dendroica coronata</i>	Yellow-rumped Warbler	0	1	0	X	X		U	W		.
<i>Dendroica tomsendii</i>	Townsend's Warbler	0	1	0	X	X	X	U	W		.
<i>Dendroica occidentalis</i>	Hermit Warbler	1	1	1	X	X		U	W		.
<i>Dendroica virens</i>	Black-throated Green Warbler	1	0	0	X	X	X	C	W		R
<i>Dendroica fusca</i>	Blackburnian Warbler	1	0	0	X	X		U	M		.
<i>Dendroica dominica</i>	Yellow-throated Warbler	1	0	0	X	X		U	M		.
<i>Mniotilta varia</i>	Grace's Warbler	0	1	0	X	X		U	B?W?		.
<i>Setophaga ruticilla</i>	Black-and-white Warbler	1	1	1	X	X	X	C	W		.
<i>Helminthos vermivorus</i>	American Redstart	1	0	1	X	X	X	C	W		.
<i>Seturus aurocapillus</i>	Worm-eating Warbler	1	0	1	X	X	X	U	W		R
<i>Seturus noveboracensis</i>	Ovenbird	1	0	1	X	X	X	C	W		R
<i>Sciurus motacilla</i>	Northern Waterthrush	1	0	1	X	X	X	C	W		R
<i>Sciurus novboracensis</i>	Louisiana Waterthrush	1	1	1	X	X	X	C	W		R
<i>Oporornis formosus</i>	Kentucky Warbler	1	0	0	X	X	X	C	W		.
<i>Oporornis philadelphia</i>	Mourning Warbler	1	0	0	X	X	X	R	W		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Geothlypis poliocephala</i>	Gray-crowned Yellowthroat	0	1	1		X	X	C	B		.
<i>Geothlypis trichas</i>	Common Yellowthroat	1	1	1			X	C	W		
<i>Geothlypis nelsoni</i>	Hooded Yellowthroat	1	0	0			X	U	B		T
<i>Wilsonia citrina</i>	Hooded Warbler	1	0	0		X	X	U	W		
<i>Wilsonia pusilla</i>	Wilson's Warbler	1	1	1		X	X	C	W		.
<i>Wilsonia canadensis</i>	Canada Warbler	1	0	0	X		X	U	W		R
<i>Myioborus pictus</i>	Painted Redstart	0	1	0		X	X	U	B		R
<i>Myioborus miniatus</i>	Slate-throated Redstart	0	1	0	X		X	C	B		R
<i>Euthlypis lachrymosa</i>	Fan-tailed Warbler	0	0	1	X		X	U	B		.
<i>Basileuterus culicivorus</i>	Golden-crowned Warbler	1	0	1	X	X	X	C	B		R
<i>Basileuterus culicivorus</i>	Rufous-capped Warbler	1	0	1	X	X	X	C	B		.
<i>Basileuterus belli</i>	Golden-browed Warbler	0	1	0	X		X	C	B		.
<i>Basileuterus belli</i>	Yellow-breasted Chat	1	0	1	X	X	X	C	W		.
<i>Icteria virens</i>	Red-breasted Chat	0	0	1	X		X	U	B		.
<i>Granatellus venustus</i>	Red-breasted Chat	0	0	1	X		X	U	B		.
<i>Granatellus sallaci</i>	Gray-throated Chat	1	0	0	X		X	U	B		.
<i>Coereba flaveola</i>	Bananaquit	1	0	0		X	X	C	B		.
<i>Chlorospingus ophthalmicus</i>	Common Bush-Tanager	0	1	0	X	X	X	U	B		.
<i>Eucometis penicillata</i>	Gray-headed Tanager	1	0	0	X	X	X	C	B		R
<i>Lanio aurantius</i>	Black-throated Shrike-Tanager	1	0	0	X	X	X	U	B		R
<i>Habia rubica</i>	Red-crowned Ant-Tanager	1	0	1	X	X	X	C	B		.
<i>Habia fuscicauda</i>	Red-throated Ant-Tanager	1	0	1	X	X	X	C	B		.
<i>Piranga flava</i>	Hepatic Tanager	0	1	0	X		X	U	B		.
<i>Piranga rubra</i>	Summer Tanager	1	1	1	X	X	X	U	W		.
<i>Piranga ludoviciana</i>	Western Tanager	1	1	1	X		X	U	W		.
<i>Piranga bidentata</i>	Flame-colored Tanager	0	1	0	X		X	U	B		.
<i>Piranga leucoptera</i>	White-winged Tanager	0	1	0	X	X	X	C	B		.
<i>Ramphocelus sanguinolentus</i>	Crimson-collared Tanager	1	0	0	X	X	X	C	B		.
<i>Ramphocelus passerinii</i>	Scarlet-rumped Tanager	1	0	0	X	X	X	C	B		.
<i>Thraupis episcopus</i>	Blue-gray Tanager	1	0	0	X	X	X	C	B		.
<i>Thraupis abbas</i>	Yellow-winged Tanager	1	0	0	X	X	X	C	B		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Euphonia affinis</i>	Scrub Euphonia	1	0	0			X	U	B		.
<i>Euphonia hirundinacea</i>	Yellow-throated Euphonia	1	0	0	X	X	X	C	B		.
<i>Euphonia elegantissima</i>	Blue-hooded Euphonia	0	1	0	X			U	B		.
<i>Euphonia gouldi</i>	Olive-backed Euphonia	1	0	0		X	X	C	B		R
<i>Chlorophonia occipitalis</i>	Blue-crowned Chlorophonia	0	1	0	X			U	B		.
<i>Tangara larcata</i>	Golden-masked Tanager	1	0	0	X	X	X	U	B		R
<i>Chlorophanes spiza</i>	Green Honeycreeper	1	0	0			X	U	B		.
<i>Cyanerpes lucidus</i>	Shining Honeycreeper	1	0	0			X	R	B		R
<i>Cyanerpes cyaneus</i>	Red-legged Honeycreeper	1	0	0	X	X	X	C	B		.
<i>Volatinia jacarina</i>	Blue-black Grassquit	1	0	1	X		X	C	B		.
<i>Sporophila schistacea</i>	Slate-colored Seedeater	1	0	0	X		X	R	B?		R
<i>Sporophila americana</i>	Variable Seedeater	1	0	0	X	X	X	C	B		.
<i>Sporophila torqueola</i>	White-collared Seedeater	1	0	1	X	X	X	C	B		.
<i>Sporophila minuta</i>	Ruddy-breasted Seedeater	1	0	0	X			R	B		.
<i>Oryzoborus funereus</i>	Thick-billed Seed-Finch	1	0	0	X			R	B		.
<i>Diglossa baritula</i>	Cinnamon-bellied Flowerpiercer	0	1	0	X			U	B		.
<i>Buarremon brunneipectus</i>	Chestnut-capped Brush-Finch	0	1	0	X		X	U	B		.
<i>Arremon aurantirostris</i>	Orange-billed Sparrow	1	0	0	X	X	X	C	B		R
<i>Arremonops ruficollis</i>	Olive Sparrow	1	0	0	X			U	B		.
<i>Aimophila ruficauda</i>	Stripe-headed Sparrow	0	0	1	X			U	B		.
<i>Aimophila sumichrasti</i>	Cinnamon-tailed Sparrow	0	0	1	X			C	B		L
<i>Aimophila rufescens</i>	Rusty Sparrow	0	1	0	X			C	B		.
<i>Spizella passerina</i>	Chipping Sparrow	0	1	0	X			U	B,W		.
<i>Ammodramus sacannarium</i>	Grasshopper Sparrow	1	0	1	X			U	B		.
<i>Melospiza lincolni</i>	Lincoln's Sparrow	1	1	1	X			C	W		.
<i>Saltator coerulescens</i>	Grayish Saltator	1	0	1			X	U	B		.
<i>Saltator maximus</i>	Buff-throated Saltator	1	0	1	X	X	X	C	B		.
<i>Saltator atriceps</i>	Black-headed Saltator	1	0	1	X		X	C	B		.
<i>Caryothraustes polioptera</i>	Black-faced Grosbeak	1	0	0	X	X	X	C	B		.
<i>Cardinalis cardinalis</i>	Northern Cardinal	0	0	1	X			R	B		.
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	1	0	0	X	X	X	U	W		.

Appendix 1. continued.

Species	English name	AT	MT	PA	Old specimen	New specimen	Sighting	Abundance	Status	Endemism	NOM
<i>Cyanocopsa cyanooides</i>	Blue-black Grosbeak	1	0	1	X	X	X	U	B		R
<i>Cyanocopsa parrellina</i>	Blue Bunting	1	0	1	X	X	X	U	B		.
<i>Guiraca caerulea</i>	Blue Grosbeak	1	0	1	X	X	X	U	B,W		.
<i>Passerina rostrata</i>	Rose-bellied Bunting	0	0	1	X	X	X	U	B	L	E
<i>Passerina cyanea</i>	Indigo Bunting	1	0	1	X	X	X	C	W		.
<i>Passerina leclancherii</i>	Orange-breasted Bunting	0	0	1	X	X	X	U	B	E	.
<i>Passerina ciris</i>	Painted Bunting	1	0	0	X	X	X	U	W		.
<i>Spiza americana</i>	Dickcissel	0	0	1	X	X	X	U	M		.
<i>Sturnella magna</i>	Eastern Meadowlark	0	0	1	X	X	X	R	B?W?		.
<i>Dives dives</i>	Melodious Blackbird	1	0	0	X	X	X	C	B		.
<i>Quiscalus mexicanus</i>	Great-tailed Grackle	1	0	1	X	X	X	C	B		.
<i>Molothrus aeneus</i>	Bronzed Cowbird	1	0	1	X	X	X	C	B		.
<i>Molothrus ater</i>	Brown-headed Cowbird	1	0	1	X	X	X	C	B		.
<i>Scaphidura oryzivora</i>	Giant Cowbird	1	0	0	X	X	X	R	B		.
<i>Icterus prothemelas</i>	Black-cowled Oriole	1	0	0	X	X	X	C	B		.
<i>Icterus wagleri</i>	Black-vented Oriole	1	0	1	X	X	X	R	B		T
<i>Icterus maculialatus</i>	Bar-winged Oriole	0	1	1	X	X	X	R	B		.
<i>Icterus spurius</i>	Orchard Oriole	1	0	1	X	X	X	C	W		.
<i>Icterus chrysater</i>	Yellow-backed Oriole	0	1	0	X	X	X	U	B		.
<i>Icterus mesomelas</i>	Yellow-tailed Oriole	1	0	0	X	X	X	R	B		.
<i>Icterus pustulatus</i>	Streak-backed Oriole	0	0	1	X	X	X	U	B		.
<i>Icterus gularis</i>	Altamira Oriole	1	0	1	X	X	X	C	B		.
<i>Icterus galbula</i>	Baltimore Oriole	1	0	1	X	X	X	U	W		.
<i>Amblycercus holosericeus</i>	Yellow-billed Caticue	1	0	0	X	X	X	U	B	Q	.
<i>Cacicus melanicterus</i>	Yellow-winged Caticue	0	0	1	X	X	X	U	B		.
<i>Psarocolius wagleri</i>	Chestnut-headed Oropendola	1	0	0	X	X	X	C	B		T
<i>Psarocolius montezuma</i>	Montezuma Oropendola	1	0	0	X	X	X	C	B		R
<i>Carduelis notata</i>	Black-headed Siskin	0	1	0	X	X	X	U	B		.
<i>Loxia curvirostra</i>	Red Crossbill	0	1	0	X	X	X	R	B		.
<i>Passer domesticus</i>	House Sparrow	1	0	1	X	X	X	C	B		.

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