

## **A Rapid Assessment of the Avifauna of the Upper Palumeu Watershed, Southeastern Suriname**

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## Chapter 10

### A rapid assessment of the avifauna of the upper Palumeu watershed, Southeastern Suriname

Brian J. O'Shea and Serano Ramcharan

#### SUMMARY

We present the results of ornithology surveys carried out during the SE Suriname RAP expedition, 8–29 March 2012. Birds were surveyed using line transect counts and casual observation in lowland forest around the Juuru and Kasikasima camps. A limited survey using mist nets was undertaken in high-elevation (800 m) savanna forest and scrub in the Grensgebergte. Our list of 313 species includes all birds seen or heard at the two RAP camps, the high-elevation satellite camp, the village of Palumeu, and during excursions along the Palumeu River. We recorded fourteen species listed as Vulnerable or Near-Threatened on the IUCN Red List, and consider another seven species as likely to occur in the region. Our records of several species represent range extensions within Suriname and the Guiana Shield. Whereas the lowland forest avifauna was broadly similar at the different localities, 32% of species were only observed at one of the four survey sites. The abundance of parrots and cracids was particularly noteworthy, especially compared to the more populated Kwamalasamutu region that we surveyed in 2010. The high-elevation savanna forest harbored several species not known to occur in the adjacent lowlands, and therefore had the most unique species assemblage of any site. Our results indicate that the lowland forest of SE Suriname probably contains the vast majority of bird species known to occur in the country's interior, including many species of high conservation value, arguing strongly for protection of the region's forests. We recommend further surveys of high-elevation sites in the Grensgebergte and other mountain ranges in southern Suriname, to better determine the range limits of species restricted to high-elevation forests.

#### INTRODUCTION

Birds are an important component of the ecology of tropical forests—they are major predators of arthropods and small vertebrates, and function as the primary dispersers of many tree species. As in many other taxonomic groups, species diversity is generally high at forested lowland sites in the

tropics. Because most birds are diurnal and many can be identified by sound alone, they can be surveyed relatively quickly. In addition, birds are generally ubiquitous, and many species are colorful—traits that render them appealing to nature-oriented tourists, whose revenue can provide an important contribution to local economies. Birds are therefore an ideal study group for rapid biodiversity surveys.

The avifauna of Suriname is well known (Ottema et al. 2009) though new records continue to accumulate as more interior localities are inventoried, particularly in the southern half of the country (O'Shea 2005, Mittermeier et al. 2010, Zyskowski et al. 2011, O'Shea and Ramcharan 2011). Much of the interior of Suriname is covered by unbroken tropical moist forest with few human settlements. Accordingly, the avifauna is diverse, and the country's forests support healthy populations of species that are of global conservation concern, such as large raptors, guans and curassows (Cracidae, hereafter “cracids”), and parrots. Many lowland species, though not endemic to Suriname itself, are nonetheless restricted to the Guiana Shield; the forests of Suriname are vital for the persistence of these species.

In addition to widespread lowland species, the mountains and plateaus of interior Suriname support a suite of species with highland affinities, tending not to occur below approximately 400 m. The distribution of these species within Suriname is not well understood, primarily because many highland areas in central and southern Suriname are extremely difficult to access. Highland species are particularly interesting because they persist as more-or-less isolated populations across the Guiana Shield, yet none of these species have been sampled adequately to determine the extent of morphological and genetic variation among their populations. Because little is known of their ecology and distribution, their vulnerability to climate change is difficult to assess, though this is an urgent priority in conservation planning for these species in the Guianan highlands.

The goal of this survey was to develop baseline data on the avifauna of selected localities in SE Suriname, with a particular focus on high-elevation forests in the Grensgebergte. This RAP was the second in a series of expeditions documenting the flora and fauna of southern Suriname; therefore, a

secondary goal was to compare the avifauna with that of the Kwamalasamutu region surveyed in 2010 (O'Shea and Ramcharan 2011). We also sought to confirm the presence of rare and endemic species, expand the known ranges of species with limited distributions in the Guianas, and assess the population status of several species important to the Trio and Wayana people, either as food or as flagship species for ecotourism.

## STUDY SITES AND METHODS

Birds were surveyed around four principal sites: the Juuru and Kasikasima camps, the Grensgebergte satellite camp, and the village of Palumeu. A map and coordinates of these localities are presented elsewhere in this report. The sites were surveyed on the following dates:

**Juuru:** 9–11, 13–14, 17–18 March. The Juuru camp was situated on the left bank of the upper Palumeu River, at the base of a steep hillside. From this camp we were able to survey terra firme forest on steep slopes at 270–420 m. Across the river, the forest was tall and seasonally inundated on level to gently sloping terrain, with many *Euterpe* palm swamps and a small open area dominated by *Guadua* bamboo.

**Kasikasima:** 20–28 March. The Kasikasima camp was situated along the left bank of the Palumeu River, approximately 61 km northeast of the Juuru camp and three km east of Kasikasima itself. The habitat at this site was primarily tall terra firme forest on rolling terrain, with occasional steep-sided creek valleys, some of them dominated by *Euterpe* palms. Around the base of Kasikasima, the forest was drier and shorter in stature.

**Grensgebergte:** 12, 14–16 March. The Grensgebergte satellite camp was at the summit of an unnamed mountain at an elevation of 790 m, approximately 16 km northwest of the Juuru camp; from here we were able to sample a limited area of forest habitat up to approximately 820 m. The habitat at this site was “savanna” forest consisting of densely spaced trees less than 30 cm dbh; this forest grew wherever there was a substantial soil layer, primarily along the ridge that formed the top of the mountain, and ranged from 10–30 m in height. Vegetation on rocky areas and steep slopes was dominated by ground bromeliads and grasses, with occasional small trees and substantial areas of open rock.

**Palumeu:** 8–9, 28–29 March. Aside from a brief early-morning boat trip near the village on 9 March, most survey effort around Palumeu was concentrated along the airstrip and around the tourist facilities maintained by METS.

At the Juuru and Kasikasima camps, 200-m line transects were established to gather quantitative data on bird species composition and abundance. Transects were spaced as far apart as logistics allowed, but were never closer than 200 m from one another. Three transects were sampled at the Juuru camp and five at the Kasikasima camp. Each transect was sampled only once. Starting at first light (0630–0635), one observer walked slowly for 30 minutes along the complete

length of a transect, counting all birds seen or heard. Transects were not conducted in rainy conditions, which precluded the establishment of any transects at the Grensgebergte camp, where rain at dawn was a daily event. Transect data were analyzed using EstimateS Version 8.2 (Colwell 2006); because few species were represented by more than 3 individuals on any transect, we calculated the Chao 2 estimator (Chao 1987), which estimates species richness based on incidence rather than abundance. We also applied Chao's Sørensen Similarity Index (Chao et al. 2005) to the transect data to assess community similarity among camps. To place the avifauna of the study areas in a broader geographic context, we included transect data gathered during the 2010 Kwamalasamutu RAP survey (O'Shea and Ramcharan 2011).

Casual observations of the avifauna were made by walking along trails to locate and identify birds, with an emphasis on concentrated food sources (e.g., fruiting and flowering trees), mixed-species foraging flocks, and vantage points where large areas of canopy or sky could be viewed. Birds were also surveyed during the course of boat excursions along the Palumeu River on two afternoons. A list of observed species was compiled at the end of each day.

At the Grensgebergte camp, birds were captured in 12×2-m ground-level mist nets set in low savanna forest at 820 m. Six nets were deployed for two days and opened primarily during the afternoon hours. Nets were kept closed during rains and at night. Birds captured in the nets were photographed and released.

Birds were documented using Marantz PMD-661 and PMD-660 digital sound recorders. To record the dawn soundscape, a stereo microphone pair was operated remotely for 2–3 hours on several mornings near the Kasikasima camp. Recordings will be deposited at the Macaulay Library at the Cornell Lab of Ornithology in Ithaca, New York, USA.

## RESULTS

We observed a total of 313 species during the RAP expedition; these are listed in Appendix 10.1. At each of the main RAP camps (Juuru and Kasikasima), we found a highly diverse avifauna consisting of species typical of both terra firme and seasonally inundated forest. Our survey efforts at the Juuru camp were hindered by persistent rain, which forced the cancellation of two transect surveys and flooded much of the forest surrounding the camp, rendering it inaccessible. As a result, we observed fewer species at the Juuru site (196) than at the Kasikasima site (233), though our transect data suggest that both localities harbor comparable bird diversity (Table 10.1). Chao 2 estimates of species richness from transect data were not significantly higher for the SE Suriname RAP camps than for the Kwamalasamutu RAP camps ( $t = 1.70$ ,  $p = 0.19$ ). Across all sites, the Chao 2 estimator tended to underestimate diversity (Table 10.1);

**Table 10.1.** Chao 2 estimates of species richness for the SE Suriname and Kwamalasamutu RAP surveys based on transect data.

Site	Number of transects	Species observed on transects	Chao 2 Mean (Upper 95% CI)	Total species observed at site
Kasikasima	5	80	141.63 (215.66)	233
Juuru	3	71	156.75 (255.34)	196
Werehpai	3	79	147.44 (220.01)	221
Sipaliwini	5	88	134.69 (190.48)	250
Kutari	5	89	143.56 (201.35)	216

**Table 10.2.** Values of Chao's Sørensen similarity index based on pairwise comparison of transect data from the Kwamalasamutu and SE Suriname RAP camps. Higher values indicate greater similarity in species composition. Sample sizes (number of transects per camp) are given in parentheses.

	Kasikasima	Juuru	Werehpai	Sipaliwini
Juuru	.789 (3)	-		
Werehpai	.765 (3)	.818 (3)	-	
Sipaliwini	.839 (5)	.630 (3)	.916 (3)	-
Kutari	.944 (5)	.964 (3)	1.000 (3)	.910 (5)

this is not surprising, given that fewer than half of species recorded at each site were detected on transect surveys (range 34.3–41.2%; mean = 36.5%).

The avifauna around the Juuru and Kasikasima camps contained many of the same species recorded on the Kwamalasamutu RAP survey (O'Shea and Ramcharan 2011). Chao's Sørensen index (Chao et al. 2005) predicted substantial similarity in species composition among our survey localities in southern Suriname, irrespective of distance or season (Table 10.2); this is corroborated by our own observations, with the twin caveats that certain species are more likely than others to be recorded on transect surveys by virtue of behavior alone, and that our transect methodology is biased toward species that tend to vocalize at dawn. The high similarity index values between Kwamalasamutu and SE Suriname RAP localities suggest that seasonal effects on species composition were negligible, although seasonal changes in vocal activity may have contributed to dramatic differences in the perceived abundances of many species.

Despite the superficial similarity in species composition among sites suggested by the transect data, there were salient differences as well. Of the 313 species observed on the RAP, 101 (32%) were observed at only one of the four sites. Juuru harbored 24 site-unique species, which is noteworthy considering the inclement weather and our limited mobility at this site relative to Kasikasima. Forty species were observed only at Kasikasima. The majority of the 22 species observed only in the vicinity of Palumeu are widespread species found commonly in disturbed habitats in the Guianas and much of Amazonia. On the other hand, we observed 15 species only at the Grensgebergte satellite camp, and most of these are

indeed restricted to high elevations where they occur in the Guianas (Table 10.3). The proportion of site-unique species, nearly one-third of the total, suggests important underlying environmental differences among these sites that may not be apparent from casual observation.

Overall, we found high heterogeneity in bird species richness and abundance between the Juuru and Kasikasima camps, and between the SE Suriname RAP sites and those surveyed during the Kwamalasamutu RAP in 2010. Differences in species richness among localities were not apparent from the transect data, and were largely due to our sporadic observations of rare and inconspicuous species which comprise the majority of bird species in tropical lowland forest. Differences among sites were also influenced by the patchy nature of certain habitats (e.g. inselbergs, bamboo) and the bird species restricted to those habitats, and, to a lesser degree, regional variation in the abundance of widespread bird species coupled with seasonal changes in vocal behavior. These factors could have rendered certain species considerably easier to detect at some sites than others.

## RARE AND THREATENED SPECIES

The recent revision of the IUCN Red List (IUCN 2012) includes 38 species known to occur in the Guiana Shield region; this represents a substantial increase from previous versions, and highlights the region's high level of endemism and the vulnerability of "game" birds to human encroachment on the region's forests. Twenty-nine Near-Threatened (NT) and Vulnerable (VU) species occur in Suriname; we recorded 14 of these on the RAP survey (see Appendix 10.1). An additional seven species that we did not observe during the RAP survey likely occur in the upper Palumeu watershed during all or part of the year: Agami Heron (*Agamia agami*; VU), Gray-bellied Hawk (*Accipiter poliogaster*; NT), Harpy Eagle (*Harpia harpyja*; NT), Crested Eagle (*Morphnus guianensis*; NT), Ornate Hawk-Eagle (*Spizaetus ornatus*; NT), Blue-cheeked Parrot (*Amazona dufresniana*; NT), and Olive-sided Flycatcher (*Contopus cooperi*; NT).

Both cracids and parrots were noted frequently on the SE Suriname RAP survey; by contrast, we observed relatively few at sites within a day's travel by boat from the village of Kwamalasamutu. This is perhaps the most significant difference in the avifaunas of the two survey areas. We observed

**Table 10.3.** Bird species observed in low savanna forest and scrub between 790–820 m at the Grensgebergte satellite camp. Species highlighted in bold were not observed at any of the other survey sites. Birds seen only in tall forest at this site are excluded; see Appendix 10.1 for complete species list.

<i>Crypturellus soui</i>	Little Tinamou
<i>Ortalis motmot</i>	Variable Chachalaca
<i>Ictinia plumbea</i>	Plumbeous Kite
<i>Anurolimnas viridis</i>	Russet-crowned Crake
<i>Piaya cayana</i>	Squirrel Cuckoo
<i>Nyctidromus albigollis</i>	Common Pauraque
<b><i>Phaethornis augusti</i></b>	<b>Sooty-capped Hermit</b>
<i>Campylopterus largipennis</i>	Gray-breasted Sabrewing
<i>Thalurania furcata</i>	Fork-tailed Woodnymph
<b><i>Amazilia viridigaster</i></b>	<b>Green-bellied Hummingbird</b>
<i>Ramphastos tucanus</i>	White-throated Toucan
<i>Picumnus exilis</i>	Golden-spangled Piculet
<i>Ibycter americanus</i>	Red-throated Caracara
<i>Cercomacra tyrannina</i>	Dusky Antbird
<i>Pernostola rufifrons</i>	Black-headed Antbird
<i>Xiphorhynchus pardalotus</i>	Chestnut-rumped Woodcreeper
<i>Synallaxis macconnelli</i>	McConnell's Spinetail
<i>Mionectes macconnelli</i>	McConnell's Flycatcher
<i>Todirostrum cinereum</i>	Common Tody-Flycatcher
<b><i>Contopus virens/sordidulus</i> sp.</b>	<b>Eastern/Western Wood-Pewee</b>
<b><i>Knipolegus poecilurus</i></b>	<b>Rufous-tailed Tyrant</b>
<i>Myiozetetes cayanensis</i>	Rusty-margined Flycatcher
<i>Megarynchus pitangua</i>	Boat-billed Flycatcher
<i>Tyrannus melancholicus</i>	Tropical Kingbird
<i>Myiarchus ferox</i>	Short-crested Flycatcher
<i>Corapipo gutturalis</i>	White-throated Manakin
<i>Lepidothrix serena</i>	White-fronted Manakin
<i>Cyclarhis gujanensis</i>	Rufous-browed Peppershrike
<b><i>Hylophilus sclateri</i></b>	<b>Tepui Greenlet</b>
<b><i>Tachyphonus phoeniceus</i></b>	<b>Red-shouldered Tanager</b>
<i>Ramphocelus carbo</i>	Silver-beaked Tanager
<i>Thraupis episcopus</i>	Blue-gray Tanager
<b><i>Tangara gyrola</i></b>	<b>Bay-headed Tanager</b>
<i>Cyanerpes cyaneus</i>	Red-legged Honeycreeper
<i>Oryzoborus angolensis</i>	Chestnut-bellied Seed-Finch
<i>Coereba flaveola</i>	Bananaquit
<b><i>Zonotrichia capensis</i></b>	<b>Rufous-collared Sparrow</b>
<b><i>Piranga flava</i></b>	<b>Hepatic Tanager</b>
<b><i>Euphonia cyanocephala</i></b>	<b>Golden-rumped Euphonia</b>

15 species of parrots on the SE Suriname RAP—fourteen of which were recorded from the Kasikasima site alone—and although the diversity of parrots in the Kwamalasamutu region was comparable, their abundance was markedly lower during our survey in 2010. The abundance of larger parrot species (e.g., *Amazona*, *Ara*) in the more remote regions of SE Suriname is noteworthy, and underscores the importance of these forests in maintaining regional populations of species vulnerable to human persecution.

Large birds of prey were comparatively scarce during the survey, a fact we attribute primarily to the frequent rainy and overcast conditions, which limit these birds' tendency to soar and thus render them more difficult to detect. However, we are confident that large raptors occur throughout the region, as many of them are well known to the Trio and Wayana people.

## NOTEWORTHY OBSERVATIONS

**Rusty Tinamou** (*Crypturellus brevirostris*). This species was first recorded in Suriname during the 2010 Kwamalasamutu RAP survey (O'Shea and Ramcharan 2011). We again heard this species' distinctive call on one occasion at the Kasikasima site, along the trail to Kasikasima from the METS tourist camp. The bird vocalized only once and we were unable to record it. The species therefore remains undocumented for Suriname, although our records suggest that it is a low-density resident of lowland forests in the southern part of the country.

**White-tailed Hawk** (*Geranoaetus albicaudatus*). On 20 March, while scanning from the 500-m vantage point at the end of the METS trail to Kasikasima, we observed a subadult White-tailed Hawk soaring over the top of the Kasikasima massif. After moving a short distance to the east, the bird returned and perched on a small tree at the edge of the summit. White-tailed Hawk has a wide range in South America, but is typically found in open forest and savanna habitats rather than extensive regions of lowland humid forest. Although White-tailed Hawk is unlikely to occur regularly in southern Suriname away from the Sipaliwini savanna, it seems that the species may occasionally use the patchy scrub habitats that occur on inselbergs across the region.

**Violaceous Quail-Dove** (*Geotrygon violacea*). This enigmatic species is apparently rare in Suriname (O'Shea 2005) and its habitat requirements are unknown; at most localities, it is far outnumbered or replaced entirely by Ruddy Quail-Dove (*G. montana*). We flushed several quail-doves that appeared to be this species along trails at the Kasikasima site, but we could not get visual confirmation of their identity. However, BJO recorded one singing at length shortly after sunrise on 26 March. Kasikasima is therefore one of the few localities in Suriname where this species is known to occur.

**White-winged Potoo** (*Nyctibius leucopterus*). The first records for Suriname of this poorly known species have been



relatively recent (Ottema et al. 2009) and it is presumed to be a rare resident of lowland forest in the Guianas. We were therefore surprised to hear this species on at least three occasions at the Kasikasima site, where it was recorded singing at dawn on 22 March, and we also heard one from the Grensgebergte satellite camp at sunset on 14 March. This latter record (at 800 m) may represent an altitudinal range extension for the species.

**Sooty-capped Hermit** (*Phaethornis augusti*). This was the common hermit in savanna forest and open scrub at the Grensgebergte satellite camp (see page 30); we did not find it in tall forest or at lower elevations. In Suriname, the species was previously known only from the Sipaliwini savanna (O'Shea 2005; Mittermeier et al. 2010). Our records represent a small range extension.

**Orange-breasted Falcon** (*Falco deiroleucus*). On 24 March, we observed an Orange-breasted Falcon as it cruised past our vantage point at 500 m at the end of the METS tourist trail to Kasikasima. This bird was easily separable from the similar Bat Falcon (*F. rufigularis*) by both size and voice as it flew past us at close range. Orange-breasted Falcon has a large geographic range but is very locally distributed, often occurring near rock outcrops like Kasikasima, where we suspect they may breed. If confirmed, Kasikasima would be one of the only known breeding localities for this species in Suriname.

**Chestnut-fronted Macaw** (*Ara severa*). We found Chestnut-fronted Macaw to be fairly common around the Juuru camp but absent from Kasikasima. This is notable considering that macaws are easy to detect, and indicates a possible distributional limit between the two localities, at least during the rainy season. This species appears to be patchily distributed in the Guiana Shield, as it is generally absent from forests of central Suriname, and also from large areas in northern Pará, Brazil (Aleixo et al. 2011).

**Wood-Pewee sp.** (*Contopus sordidulus/virens* sp.). On 22 March, we observed a wood-pewee sallying from a dead tree at 800 m near the Grensgebergte satellite camp. It was recognized immediately as a boreal migrant, either Western (*C. sordidulus*) or Eastern Wood-Pewee (*C. virens*). Although these two species can be separated by voice, their plumages are very similar. Plumage characters were more suggestive of *C. sordidulus* than *C. virens*, but we resisted the temptation to assign this bird to either species, as it was silent and lighting conditions were suboptimal. Records of migrant and wintering wood-pewees in the Guiana Shield are relatively few; *C. virens* has recently been reported from Pará, Brazil (Aleixo et al. 2011), whereas only *C. sordidulus* is known from French Guiana (Comité d'Homologation de Guyane 2012). Either species would be new for Suriname.

**Rufous-tailed Tyrant** (*Knipolegus poecilurus*). During the reconnaissance trip to the vicinity of the Grensgebergte satellite camp on 12 March, BJO observed a Rufous-tailed Tyrant in a patch of low savanna forest at 820 m as it foraged in the forest understory, 3–5 m above the ground, for several minutes. We failed to relocate the bird during our stay on

the mountain from 14–16 March. This species was recently found to occur in the Wilhelmina Mountains of Suriname by K. Zyskowski and colleagues (A. Spaans, *pers. comm.*); the closest previous records are from the tepui region, hundreds of kilometers to the west. These records extend the known range of the species into Suriname, and our observation suggests that it should occur in suitable habitat on higher mountains elsewhere in the country.

**Guianan Cock-of-the-rock** (*Rupicola rupicola*). We found the Cock-of-the-rock in tall forest at the Juuru, Grensgebergte, and Kasikasima camps; based on our own observations and those reported to us, they seem to be common in this region of Suriname. This spectacular bird is a flagship species for ecotourism.

**Tepui Greenlet** (*Hylophilus sclateri*). We found Tepui Greenlet to be fairly common in both low and tall forest at ~800 m around the Grensgebergte satellite camp. Although the center of its distribution is in the tepui region far to the west, this species is distributed fairly widely above 500 m in the Guiana Shield, occurring as far east as Tafelberg in central Suriname (Zyskowski et al. 2011) and as far south as the Acarai mountains along the Guyana/Brazil border (O'Shea 2008). Our records from the Grensgebergte represent a further range extension to the southeast.

## CONSERVATION RECOMMENDATIONS

The forests of SE Suriname harbor a rich avifauna that most likely includes the vast majority of the ~500 species known to occur in the country's interior. Although there were many similarities in species composition between our two lowland survey sites, and between SE Suriname and the Kwamalasamutu region, there were important differences as well. Perhaps most significant is the difference in abundance of parrots; SE Suriname is clearly a stronghold for parrots, particularly macaws, due primarily to the lack of human settlements and infrastructure that would make these birds more accessible to hunters and trappers. Likewise, the region's remoteness is important for the persistence of cracid populations, which tend to be reduced quickly by hunting, as has occurred in the Kwamalasamutu region. The Cock-of-the-rock, which we found to be common in the region's forests, is a huge draw for nature-oriented tourists, and we recommend that tour operators continue to highlight this species for visitors.

There is some evidence that the avifauna in the southern parts of the Guianas differs from sites further north, a pattern that has also been noted for trees. Virtually all recent records of new bird species for both Suriname and Guyana have come from the southern regions of those countries, and many of those species have yet to be found farther north, strongly suggesting that their distributions are limited by subtle environmental differences between northern and southern forests. This pattern, coupled with the remoteness of SE Suriname and the healthy populations of parrots and

cracids found there, argue strongly for protection of this region.

Future plans for mining and hydropower projects in the interior of Suriname pose potential threats to the region's spectacular bird diversity. Infrastructure expansion and large-scale extraction of the region's resources would lead to increased hunting, conversion of forest into open habitats with much less biodiversity, and degradation of remaining forest habitat. One of the greatest threats to the region at present is the continuing influx of small-scale gold miners, whose activities inflict tremendous damage on aquatic ecosystems and cause local depletion of fish and game animal populations. We recommend that gold miners be vigorously excluded from the sensitive headwaters of the Palumeu and other rivers originating in the highlands along Suriname's southern border, as part of a broader effort to protect habitats at these rivers' sources.

The conservation value of the highland forests of the Grensgebergte warrants further investigation. Several of our most interesting records came from the Grensgebergte camp, where we spent the least amount of time, and had the most limited mobility and the worst survey conditions. The highland forest, though relatively limited in extent, clearly provides important "islands" of habitat for several bird species that do not occur in the surrounding lowlands; to the extent that these forests may be threatened by climate change, it is an urgent priority to survey other mountains in the region to gain a more complete picture of the regional distributions of highland species.

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**Appendix 10.1.** Cumulative Bird List, SE Suriname RAP, 8–29 March 2012. This list includes all species seen and heard during the SE Suriname RAP, including each of the main RAP camps (Juuru and Kasikasima), the Grensgebergte (Rock) satellite camp at 800 m, and the village of Palumeu. Taxonomy and nomenclature follow the most current version of the American Ornithologists' Union South American Checklist Committee's *Classification of the Bird Species of South America* (<http://www.museum.lsu.edu/~Remsen/SACCBaseline.html>).

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Tinamidae</b>						
<i>Tinamus major</i>	Great Tinamou	X	X	X	X	NT
<i>Crypturellus cinereus</i>	Cinereous Tinamou	X			X	
<i>Crypturellus soui</i>	Little Tinamou		X	X	X	
<i>Crypturellus variegatus</i>	Variegated Tinamou	X	X	X	X	
<i>Crypturellus brevirostris</i>	Rusty Tinamou			X		
<b>Cracidae</b>						
<i>Penelope marail</i>	Marail Guan	X		X		
<i>Penelope jacquacu</i>	Spix's Guan	X		X		
<i>Pipile cumanensis</i>	Blue-throated Piping-Guan	X				VU
<i>Ortalis motmot</i>	Variable Chachalaca	X	X		X	
<i>Crax alector</i>	Black Curassow	X		X		VU
<b>Odontophoridae</b>						
<i>Odontophorus gujanensis</i>	Marbled Wood-Quail	X	X	X	X	NT
<b>Ardeidae</b>						
<i>Tigrisoma lineatum</i>	Rufescent Tiger-Heron	X		X		
<i>Zebrilus undulatus</i>	Zigzag Heron	X			X	NT
<i>Ardea cocoi</i>	Cocoi Heron			X	X	
<i>Pilherodius pileatus</i>	Capped Heron			X	X	
<b>Threskiornithidae</b>						
<i>Mesembrinibis cayennensis</i>	Green Ibis	X		X	X	
<b>Cathartidae</b>						
<i>Cathartes melambrotus</i>	Greater Yellow-headed Vulture	X	X	X	X	
<i>Sarcorampus papa</i>	King Vulture	X	X	X		
<b>Pandionidae</b>						
<i>Pandion haliaetus</i>	Osprey				X	
<b>Accipitridae</b>						
<i>Elanoides forficatus</i>	Swallow-tailed Kite	X	X		X	
<i>Harpagus bidentatus</i>	Double-toothed Kite	X		X	X	
<i>Ictinia plumbea</i>	Plumbeous Kite	X	X	X	X	
<i>Buteogallus urubitinga</i>	Great Black Hawk		X	X		
<i>Geranoaetus albicaudatus</i>	White-tailed Hawk			X		
<i>Pseudastur albicollis</i>	White Hawk	X				
<i>Buteo brachyurus</i>	Short-tailed Hawk		X			



Appendix 10.1. *continued*

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Psophiidae</b>						
<i>Psophia crepitans</i>	Gray-winged Trumpeter	X		X		
<b>Rallidae</b>						
<i>Aramides cajaneus</i>	Gray-necked Wood-Rail	X				
<i>Anurolimnas viridis</i>	Russet-crowned Crake		X		X	
<b>Eurypygidae</b>						
<i>Eurypyga helias</i>	Sunbittern	X				
<b>Charadriidae</b>						
<i>Charadrius collaris</i>	Collared Plover				X	
<b>Scolopacidae</b>						
<i>Actitis macularius</i>	Spotted Sandpiper			X	X	
<b>Columbidae</b>						
<i>Columbina passerina</i>	Common Ground Dove			X	X	
<i>Columbina talpacoti</i>	Ruddy Ground Dove				X	
<i>Patagioenas speciosa</i>	Scaled Pigeon				X	
<i>Patagioenas plumbea</i>	Plumbeous Pigeon	X	X	X	X	
<i>Patagioenas subvinacea</i>	Ruddy Pigeon	X	X	X	X	NT
<i>Leptotila verreauxi</i>	White-tipped Dove			X	X	
<i>Leptotila rufaxilla</i>	Gray-fronted Dove	X	X	X	X	
<i>Geotrygon violacea</i>	Violaceous Quail-Dove			X		
<i>Geotrygon montana</i>	Ruddy Quail-Dove	X		X		
<b>Cuculidae</b>						
<i>Coccyua minuta</i>	Little Cuckoo				X	
<i>Piaya cayana</i>	Squirrel Cuckoo	X	X	X	X	
<i>Piaya melanogaster</i>	Black-bellied Cuckoo			X		
<i>Crotophaga ani</i>	Smooth-billed Ani				X	
<b>Strigidae</b>						
<i>Megascops watsonii</i>	Tawny-bellied Screech-Owl	X		X		
<i>Megascops guatemalae</i>	Vermiculated Screech-Owl		X			
<i>Lophotrix cristata</i>	Crested Owl			X		
<i>Pulsatrix perspicillata</i>	Spectacled Owl	X				
<i>Ciccaba virgata</i>	Mottled Owl	X				
<i>Glaucidium hardyi</i>	Amazonian Pygmy-Owl	X				
<b>Nyctibiidae</b>						
<i>Nyctibius grandis</i>	Great Potoo				X	
<i>Nyctibius leucopterus</i>	White-winged Potoo		X	X		

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Appendix 10.1. *continued*

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Caprimulgidae</b>						
<i>Lurocalis semitorquatus</i>	Short-tailed Nighthawk			X		
<i>Nyctidromus albicollis</i>	Common Pauraque	X	X		X	
<i>Caprimulgus nigrescens</i>	Blackish Nightjar			X		
<i>Hydropsalis climacocerca</i>	Ladder-tailed Nightjar			X		
<b>Apodidae</b>						
<i>Chaetura spinicaudus</i>	Band-rumped Swift	X	X	X	X	
<i>Chaetura chapmani</i>	Chapman's Swift	X	X	X	X	
<i>Aeronautes montivagus</i>	White-tipped Swift			X		
<i>Panyptila cayennensis</i>	Lesser Swallow-tailed Swift	X	X			
<b>Trochilidae</b>						
<i>Topaza pella</i>	Crimson Topaz	X		X	X	
<i>Phaethornis ruber</i>	Reddish Hermit	X		X		
<i>Phaethornis augusti</i>	Sooty-capped Hermit		X			
<i>Phaethornis bourcieri</i>	Straight-billed Hermit	X	X	X		
<i>Phaethornis superciliosus</i>	Long-tailed Hermit	X		X		
<i>Phaethornis malaris</i>	Great-billed Hermit	X	X			
<i>Heliobryx auritus</i>	Black-eared Fairy	X		X		
<i>Campylopterus largipennis</i>	Gray-breasted Sabrewing	X	X	X	X	
<i>Thalurania furcata</i>	Fork-tailed Woodnymph	X	X	X		
<i>Amazilia</i> cf. <i>brevirostris</i>	Hummingbird sp.			X		
<i>Amazilia viridigaster</i>	Green-bellied Hummingbird		X			
<i>Hylocharis sapphirina</i>	Rufous-throated Sapphire	X				
<b>Trogonidae</b>						
<i>Trogon melanurus</i>	Black-tailed Trogon		X	X	X	
<i>Trogon viridis</i>	Green-backed Trogon	X		X	X	
<i>Trogon violaceus</i>	Guianan Trogon	X		X	X	
<i>Trogon rufus</i>	Black-throated Trogon			X		
<i>Trogon collaris</i>	Collared Trogon	X				
<b>Alcedinidae</b>						
<i>Megaceryle torquata</i>	Ringed Kingfisher	X		X	X	
<i>Chloroceryle amazona</i>	Amazon Kingfisher			X	X	
<i>Chloroceryle americana</i>	Green Kingfisher	X		X		
<i>Chloroceryle inda</i>	Green-and-rufous Kingfisher	X		X		
<i>Chloroceryle aenea</i>	American Pygmy Kingfisher	X		X		
<b>Momotidae</b>						
<i>Momotus momota</i>	Amazonian Motmot	X	X	X	X	

*table continued on next page*

Appendix 10.1. *continued*

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Galbulidae</b>						
<i>Galbula albirostris</i>	Yellow-billed Jacamar	X		X	X	
<i>Galbula galbula</i>	Green-tailed Jacamar				X	
<i>Galbula dea</i>	Paradise Jacamar	X	X	X	X	
<i>Jacamerops aureus</i>	Great Jacamar			X		
<b>Bucconidae</b>						
<i>Notharchus macrorhynchos</i>	Guianan Puffbird	X		X		
<i>Bucco tamatia</i>	Spotted Puffbird	X			X	
<i>Bucco capensis</i>	Collared Puffbird			X		
<i>Malacoptila fusca</i>	White-chested Puffbird			X		
<i>Nonnula rubecula</i>	Rusty-breasted Nunlet	X			X	
<i>Monasa atra</i>	Black Nunbird	X	X	X		
<i>Chelidoptera tenebrosa</i>	Swallow-winged Puffbird			X	X	
<b>Capitonidae</b>						
<i>Capito niger</i>	Black-spotted Barbet	X		X		
<b>Ramphastidae</b>						
<i>Ramphastos tucanus</i>	White-throated Toucan	X	X	X	X	
<i>Ramphastos vitellinus</i>	Channel-billed Toucan	X	X	X	X	
<i>Selenidera culik</i>	Guianan Toucanet	X		X		
<i>Pteroglossus viridis</i>	Green Aracari	X		X	X	
<i>Pteroglossus aracari</i>	Black-necked Aracari	X		X	X	
<b>Picidae</b>						
<i>Picumnus exilis</i>	Golden-spangled Piculet	X	X	X	X	
<i>Veniliornis cassini</i>	Golden-collared Woodpecker	X	X	X		
<i>Piculus flavigula</i>	Yellow-throated Woodpecker	X		X		
<i>Colaptes rubiginosus</i>	Golden-olive Woodpecker		X	X		
<i>Celeus undatus</i>	Waved Woodpecker	X		X		
<i>Celeus elegans</i>	Chestnut Woodpecker	X		X		
<i>Celeus torquatus</i>	Ringed Woodpecker	X		X		
<i>Dryocopus lineatus</i>	Lineated Woodpecker	X	X	X	X	
<i>Campephilus rubricollis</i>	Red-necked Woodpecker	X	X	X		
<i>Campephilus melanoleucos</i>	Crimson-crested Woodpecker	X		X	X	
<b>Falconidae</b>						
<i>Micrastur ruficollis</i>	Barred Forest-Falcon	X	X	X	X	
<i>Micrastur gilvicolis</i>	Lined Forest-Falcon			X	X	
<i>Micrastur mirandollei</i>	Slaty-backed Forest-Falcon	X				
<i>Ibyster americanus</i>	Red-throated Caracara	X	X	X	X	
<i>Daptrius ater</i>	Black Caracara			X	X	
<i>Falco rufigularis</i>	Bat Falcon			X	X	
<i>Falco deiroleucus</i>	Orange-breasted Falcon			X		NT

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## Appendix 10.1. continued

Scientific name	English name	Juru	Rock	Kasikasima	Palumeu	IUCN
<b>Psittacidae</b>						
<i>Ara ararauna</i>	Blue-and-yellow Macaw			X	X	
<i>Ara macao</i>	Scarlet Macaw	X		X		
<i>Ara chloropterus</i>	Red-and-green Macaw	X	X	X	X	
<i>Ara severus</i>	Chestnut-fronted Macaw	X				
<i>Aratinga leucophthalma</i>	White-eyed Parakeet			X	X	
<i>Pyrrhura picta</i>	Painted Parakeet	X		X	X	
<i>Brotogeris chrysoptera</i>	Golden-winged Parakeet	X	X	X	X	
<i>Touit purpuratus</i>	Sapphire-rumped Parrotlet			X		
<i>Pionites melanocephalus</i>	Black-headed Parrot	X		X		
<i>Derophtus accipitrinus</i>	Red-fan Parrot	X		X	X	
<i>Pytilia caica</i>	Caica Parrot	X		X		NT
<i>Pionus menstruus</i>	Blue-headed Parrot	X	X	X	X	
<i>Pionus fuscus</i>	Dusky Parrot	X		X	X	
<i>Amazona amazonica</i>	Orange-winged Parrot			X	X	
<i>Amazona farinosa</i>	Mealy Parrot	X	X	X	X	
<b>Thamnophilidae</b>						
<i>Cymbilaimus lineatus</i>	Fasciated Antshrike	X	X	X	X	
<i>Frederickena viridis</i>	Black-throated Antshrike	X		X		
<i>Taraba major</i>	Great Antshrike	X			X	
<i>Thamnophilus murinus</i>	Mouse-colored Antshrike	X		X	X	
<i>Thamnophilus punctatus</i>	Northern Slaty-Antshrike		X	X		
<i>Thamnophilus amazonicus</i>	Amazonian Antshrike	X		X		
<i>Thamnomanes ardesiacus</i>	Dusky-throated Antshrike			X		
<i>Thamnomanes caesi</i>	Cinereous Antshrike	X		X		
<i>Isleria guttata</i>	Rufous-bellied Antwren	X		X		
<i>Epinecrophyllos gutturalis</i>	Brown-bellied Antwren	X		X		NT
<i>Myrmotherula brachyura</i>	Pygmy Antwren	X		X		
<i>Myrmotherula surinamensis</i>	Guianan Streaked-Antwren	X		X	X	VU
<i>Myrmotherula axillaris</i>	White-flanked Antwren		X	X	X	
<i>Myrmotherula longipennis</i>	Long-winged Antwren			X		
<i>Myrmotherula menetriesii</i>	Gray Antwren	X		X		
<i>Herpsilochmus sticturus</i>	Spot-tailed Antwren	X		X		
<i>Herpsilochmus stictocephalus</i>	Todd's Antwren	X	X	X		
<i>Microrhopias quixensis</i>	Dot-winged Antwren	X				
<i>Hypocnemis cantator</i>	Guianan Warbling-Antbird	X	X	X	X	NT
<i>Terenura cf. spodioptila</i>	Ash-winged Antwren	X		X		
<i>Cercomacra cinerascens</i>	Gray Antbird	X		X	X	
<i>Cercomacra tyrannina</i>	Dusky Antbird	X	X	X	X	
<i>Myrmoborus leucophrys</i>	White-browed Antbird	X			X	
<i>Hypocnemoides melanopogon</i>	Black-chinned Antbird	X			X	
<i>Sclateria naevia</i>	Silvered Antbird	X		X	X	
<i>Percnostola rufifrons</i>	Black-headed Antbird	X	X	X	X	

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Appendix 10.1. *continued*

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<i>Schistocichla leucostigma</i>	Spot-winged Antbird	X				
<i>Myrmeciza ferruginea</i>	Ferruginous-backed Antbird	X		X		
<i>Myrmornis torquata</i>	Wing-banded Antbird	X		X		NT
<i>Pithys albifrons</i>	White-plumed Antbird	X		X		
<i>Gymnopathys rufigula</i>	Rufous-throated Antbird	X		X	X	
<i>Hylophylax naevius</i>	Spot-backed Antbird	X		X		
<i>Willisornis poecilinotus</i>	Common Scale-backed Antbird	X		X		
<b>Conopophagidae</b>						
<i>Conopophaga aurita</i>	Chestnut-belted Gnateater			X		
<b>Grallariidae</b>						
<i>Grallaria varia</i>	Variegated Antpitta	X	X	X		
<i>Hylopezus macularius</i>	Spotted Antpitta	X	X	X	X	
<i>Myrmothera campanisona</i>	Thrush-like Antpitta	X	X	X	X	
<b>Formicariidae</b>						
<i>Formicarius colma</i>	Rufous-capped Antthrush	X		X		
<i>Formicarius analis</i>	Black-faced Antthrush	X	X	X		
<b>Furnariidae</b>						
<i>Sclerurus mexicanus</i>	Tawny-throated Leaftosser	X				
<i>Sclerurus rufigularis</i>	Short-billed Leaftosser			X		
<i>Sclerurus caudacutus</i>	Black-tailed Leaftosser	X				
<i>Deconychura longicauda</i>	Long-tailed Woodcreeper			X		NT
<i>Dendrocincla fuliginosa</i>	Plain-brown Woodcreeper	X		X		
<i>Glyphorhynchus spirurus</i>	Wedge-billed Woodcreeper	X	X	X	X	
<i>Dendrexetastes rufigula</i>	Cinnamon-throated Woodcreeper	X			X	
<i>Dendrocolaptes certhia</i>	Amazonian Barred-Woodcreeper	X		X		
<i>Dendrocolaptes picumnus</i>	Black-banded Woodcreeper	X		X		
<i>Hylexetastes perrotii</i>	Red-billed Woodcreeper	X		X		
<i>Xiphorhynchus pardalotus</i>	Chestnut-rumped Woodcreeper	X	X	X		
<i>Xiphorhynchus guttatus</i>	Buff-throated Woodcreeper				X	
<i>Campyloramphus procurviroides</i>	Curve-billed Scythebill	X				
<i>Lepidocolaptes albolineatus</i>	Lineated Woodcreeper			X		
<i>Xenops tenuirostris</i>	Slender-billed Xenops	X				
<i>Xenops minutus</i>	Plain Xenops			X		
<i>Philydor erythrocerum</i>	Rufous-rumped Foliage-gleaner			X		
<i>Philydor pyrrhodes</i>	Cinnamon-rumped Foliage-gleaner	X			X	
<i>Automolus ochrolaemus</i>	Buff-throated Foliage-gleaner	X		X	X	
<i>Automolus infuscatus</i>	Olive-backed Foliage-gleaner	X		X		
<i>Automolus rufipileatus</i>	Chestnut-crowned Foliage-gleaner	X				
<i>Synallaxis gujanensis</i>	Plain-crowned Spinetail				X	
<i>Synallaxis macconnelli</i>	McConnell's Spinetail		X		X	

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## Appendix 10.1. continued

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Tyrannidae</b>						
<i>Tyrannulus elatus</i>	Yellow-crowned Tyrannulet	X		X	X	
<i>Myiopagis gaimardii</i>	Forest Elaenia	X	X	X	X	
<i>Myiopagis flavivertex</i>	Yellow-crowned Elaenia	X				
<i>Ornithion inermis</i>	White-lored Tyrannulet			X		
<i>Camptostoma obsoletum</i>	Southern Beardless-Tyrannulet	X		X	X	
<i>Corythopis torquatus</i>	Ringed Antpipit	X		X		
<i>Zimmerius acer</i>	Guianan Tyrannulet	X	X	X		
<i>Phylloscartes virescens</i>	Olive-green Tyrannulet			X		
<i>Mionectes oleagineus</i>	Ochre-bellied Flycatcher			X		
<i>Mionectes macconnelli</i>	McConnell's Flycatcher	X	X	X		
<i>Myiornis ecaudatus</i>	Short-tailed Pygmy-Tyrant	X		X		
<i>Lophotriccus vitiensis</i>	Double-banded Pygmy-Tyrant	X		X		
<i>Lophotriccus galeatus</i>	Helmeted Pygmy-Tyrant	X		X		
<i>Hemitriccus josephinae</i>	Boat-billed Tody-Tyrant	X		X		
<i>Hemitriccus zosterops</i>	White-eyed Tody-Tyrant	X		X		
<i>Todirostrum cinereum</i>	Common Tody-Flycatcher		X	X	X	
<i>Todirostrum pictum</i>	Painted Tody-Flycatcher	X		X		
<i>Tolmomyias assimilis</i>	Yellow-margined Flycatcher	X	X	X		
<i>Tolmomyias poliocephalus</i>	Gray-crowned Flycatcher	X		X		
<i>Platyrinchus saturatus</i>	Cinnamon-crested Spadebill			X		
<i>Platyrinchus platyrhynchos</i>	White-crested Spadebill			X		
<i>Myiophobus fasciatus</i>	Bran-colored Flycatcher				X	
<i>Terentotriccus erythrurus</i>	Ruddy-tailed Flycatcher	X				
<i>Hirundinea ferruginea</i>	Cliff Flycatcher		X	X		
<i>Contopus virens/sordidulus</i> sp.	Eastern/Western Wood-Pewee		X			
<i>Knipolegus poecilurus</i>	Rufous-tailed Tyrant		X			
<i>Legatus leucophaius</i>	Piratic Flycatcher				X	
<i>Myiozetetes cayanensis</i>	Rusty-margined Flycatcher		X	X	X	
<i>Myiozetetes luteiventris</i>	Dusky-chested Flycatcher	X		X		
<i>Pitangus sulphuratus</i>	Great Kiskadee			X	X	
<i>Conopias parvus</i>	Yellow-throated Flycatcher		X	X	X	
<i>Megarynchus pitangua</i>	Boat-billed Flycatcher		X		X	
<i>Tyrannus melancholicus</i>	Tropical Kingbird		X	X	X	
<i>Rhytipterna simplex</i>	Grayish Mourner	X		X		
<i>Sirystes sibilator</i>	Sirystes			X		
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher	X		X		
<i>Myiarchus ferox</i>	Short-crested Flycatcher		X	X	X	
<i>Ramphotrigon ruficauda</i>	Rufous-tailed Flatbill			X		
<i>Attila cinnamomeus</i>	Cinnamon Attila				X	
<i>Attila spadiceus</i>	Bright-rumped Attila	X		X	X	

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## Appendix 10.1. continued

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Cotingidae</b>						
<i>Phoenicircus carnifex</i>	Guianan Red-Cotinga			X		
<i>Rupicola rupicola</i>	Guianan Cock-of-the-rock	X	X	X		
<i>Querula purpurata</i>	Purple-throated Fruitcrow	X	X	X	X	
<i>Perissocephalus tricolor</i>	Capuchinbird	X		X		
<i>Lipaugus vociferans</i>	Screaming Piha	X	X	X	X	
<i>Procnias albus</i>	White Bellbird		X			
<i>Xipholena punicea</i>	Pompadour Cotinga	X				
<i>Gymnoderus foetidus</i>	Bare-necked Fruitcrow	X				
<b>Pipridae</b>						
<i>Tyranneutes virescens</i>	Tiny Tyrant-Manakin	X		X		
<i>Corapipo gutturalis</i>	White-throated Manakin	X	X	X		
<i>Lepidothrix serena</i>	White-fronted Manakin	X	X	X		
<i>Manacus manacus</i>	White-bearded Manakin	X		X	X	
<i>Pipra pipra</i>	White-crowned Manakin		X	X		
<i>Pipra erythrocephala</i>	Golden-headed Manakin	X	X	X		
<b>Tityridae</b>						
<i>Schiffornis turdina</i>	Brown-winged Schiffornis	X		X		
<i>Pachyramphus marginatus</i>	Black-capped Becard	X		X		
<i>Pachyramphus minor</i>	Pink-throated Becard	X				
<b>Incertae sedis</b>						
<i>Piprites chloris</i>	Wing-barred Piprites	X		X		
<b>Vireonidae</b>						
<i>Cyclarhis gujanensis</i>	Rufous-browed Peppershrike		X		X	
<i>Vireolanius leucotis</i>	Slaty-capped Shrike-Vireo	X	X	X		
<i>Vireo olivaceus</i>	Red-eyed Vireo			X		
<i>Hylophilus thoracicus</i>	Lemon-chested Greenlet	X		X	X	
<i>Hylophilus sclateri</i>	Tepui Greenlet		X			
<i>Hylophilus muscicapinus</i>	Buff-cheeked Greenlet	X		X		
<i>Hylophilus ochraceiceps</i>	Tawny-crowned Greenlet			X		
<b>Hirundinidae</b>						
<i>Pygochelidon melanoleuca</i>	Black-collared Swallow			X		
<i>Atticora fasciata</i>	White-banded Swallow			X	X	
<i>Progne tapera</i>	Brown-chested Martin				X	
<i>Progne chalybea</i>	Gray-breasted Martin				X	
<i>Tachycineta albiventer</i>	White-winged Swallow			X	X	
<i>Hirundo rustica</i>	Barn Swallow		X	X	X	

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## Appendix 10.1. continued

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Troglodytidae</b>						
<i>Microcerculus bambla</i>	Wing-banded Wren	X		X		
<i>Troglodytes aedon</i>	House Wren				X	
<i>Pheugopedius coraya</i>	Coraya Wren	X	X	X	X	
<i>Cantorchilus leucotis</i>	Buff-breasted Wren	X		X	X	
<i>Henicorhina leucosticta</i>	White-breasted Wood-Wren		X			
<i>Cyphorhinus arada</i>	Musician Wren	X				
<b>Poliopitilidae</b>						
<i>Microbates collaris</i>	Collared Gnatwren	X		X		
<i>Ramphocaenus melanurus</i>	Long-billed Gnatwren	X		X		
<i>Poliopitila plumbea</i>	Tropical Gnatcatcher				X	
<b>Turdidae</b>						
<i>Turdus fumigatus</i>	Cocoa Thrush	X				
<i>Turdus albicollis</i>	White-necked Thrush	X	X	X		
<b>Thraupidae</b>						
<i>Lamprospiza melanoleuca</i>	Red-billed Pied Tanager	X	X	X		
<i>Tachyphonus surinamus</i>	Fulvous-crested Tanager	X		X		
<i>Tachyphonus phoeniceus</i>	Red-shouldered Tanager		X			
<i>Lanio fulvus</i>	Fulvous Shrike-Tanager	X		X		
<i>Ramphocelus carbo</i>	Silver-beaked Tanager	X	X	X	X	
<i>Thraupis episcopus</i>	Blue-gray Tanager		X	X	X	
<i>Thraupis palmarum</i>	Palm Tanager				X	
<i>Tangara mexicana</i>	Turquoise Tanager				X	
<i>Tangara gyrola</i>	Bay-headed Tanager		X			
<i>Dacnis lineata</i>	Black-faced Dacnis			X		
<i>Dacnis cayana</i>	Blue Dacnis			X		
<i>Cyanerpes caeruleus</i>	Purple Honeycreeper	X		X		
<i>Cyanerpes cyaneus</i>	Red-legged Honeycreeper		X	X		
<i>Volatinia jacarina</i>	Blue-black Grassquit			X	X	
<i>Oryzoborus angolensis</i>	Chestnut-bellied Seed-Finch	X	X	X		
<i>Coereba flaveola</i>	Bananaquit	X	X	X	X	
<b>Incertae sedis</b>						
<i>Saltator grossus</i>	Slate-colored Grosbeak	X	X	X		
<i>Saltator maximus</i>	Buff-throated Saltator	X		X	X	
<b>Emberizidae</b>						
<i>Zonotrichia capensis</i>	Rufous-collared Sparrow		X			
<i>Arremon taciturnus</i>	Pectoral Sparrow	X		X	X	

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Appendix 10.1. *continued*

Scientific name	English name	Juuru	Rock	Kasikasima	Palumeu	IUCN
<b>Cardinalidae</b>						
<i>Piranga flava</i>	Hepatic Tanager		X			
<i>Granatellus pelzelni</i>	Rose-breasted Chat			X		
<i>Caryothraustes canadensis</i>	Yellow-green Grosbeak	X		X		
<i>Periporphyrus erythromelas</i>	Red-and-black Grosbeak			X		NT
<i>Cyanocompsa cyanooides</i>	Blue-black Grosbeak	X	X	X	X	
<b>Parulidae</b>						
<i>Parula pitiayumi</i>	Tropical Parula		X			
<i>Phaeothlypis rivularis</i>	Riverbank Warbler	X		X		
<b>Icteridae</b>						
<i>Psarocolius viridis</i>	Green Oropendola	X	X	X	X	
<i>Psarocolius decumanus</i>	Crested Oropendola				X	
<i>Cacicus cela</i>	Yellow-rumped Cacique			X	X	
<i>Cacicus haemorrhous</i>	Red-rumped Cacique			X		
<i>Molothrus oryzivorus</i>	Giant Cowbird				X	
<b>Fringillidae</b>						
<i>Euphonia plumbea</i>	Plumbeous Euphonia				X	
<i>Euphonia violacea</i>	Violaceous Euphonia			X	X	
<i>Euphonia cyanocephala</i>	Golden-rumped Euphonia		X			
<i>Euphonia cayennensis</i>	Golden-sided Euphonia	X	X	X		
<b>313 spp.</b>		<b>196</b>	<b>103</b>	<b>233</b>	<b>133</b>	