

The avifauna of the Beni Biological Station, Bolivia

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Summary

An annotated compendium of all those bird species known to have occurred in the lowland “Man and Biosphere” Beni Biological Station (B.B.S.) reserve is provided. Previous checklists are reviewed, together with sightings accumulated over the 1992–1995 period during which approximately 70 new species have been added to the reserve inventory, bringing the total to 478. Occurrence across the 12 delineated habitats, relative abundance and sighting documentation are given for each species. The avifauna of the B.B.S. is mixed biogeographically; in addition to a substantial component of lowland birds widespread throughout South America, it is composed of Amazonian, cerrado and chaco elements also. Representation from the Bolivian Yungas is minimal. Significantly, no less than four threatened and 15 near-threatened species have occurred, including the little known Bolivian endemic Unicoloured Thrush *Turdus haplochrous*, and the enigmatic White-winged Nightjar *Caprimulgus candicans*, known until recently only from Emas National Park (Brazil). Short accounts are provided detailing records of all of these species. Birds of the reserve core, consisting largely of humid tropical forest formations inundated during the austral summer, appear not to be subjected currently to any serious environmental degradation, although some subsistence clearance by Chimane Indians in the northern reaches of the reserve gives some cause for concern. Of much greater import, however, are changes occurring outside the confines of the B.B.S. These include increasing urbanization immediately to the west (and associated road upgrading) and forest fragmentation to the south brought about by logging. The latter is especially worrying because linkage of the B.B.S. forest block to surrounding forest is already physically tenuous, and therefore it is imperative that future logging activities be geared to minimize isolation occurring and the damaging restriction of gene flow. Monitoring in rainforest immediately south of the reserve should become routine to warn of putative avifaunal impoverishments. Extensive surveying of the 2,500-ha El Porvenir estancia (savanna and related forest islands) due to be assimilated shortly into the B.B.S., which constitutes less than 2% of the area under consideration, has shown that it is used by no less than three threatened and up to nine near-threatened species. In the absence of data relating to other savanna areas (c. 15%) at present, the exact status of each species at the B.B.S. remains imprecise and begs for further research to be undertaken. Unfortunately, present management of the El Porvenir savanna is not conducive to the long-term maximization of populations of these species, several of which have local strongholds in this part of Beni. We recommend that the current policy of cattle ranching adopted by this estancia should cease or be reduced dramatically, to minimize grazing and trampling damage, and that measures should be taken to reduce incursions of fires started wilfully in neighbouring properties. The Academia Nacional de Ciencias de Bolivia, which administers the reserve, should be encouraged to safeguard and enhance the savanna complement further by ensuring that the impending ratification of El

Porvenir proceeds as quickly as possible, and by purchasing additional tracts of land to the south of the present southern reserve boundary, where feasible. Such actions should not only secure the future of the biota of the savanna habitat within the B.B.S. but also should ameliorate the degree of isolation which has occurred already by preserving the "curiches" (former river beds) and forest islands which act as access corridors for forest-dwelling and other birds.

Introduction

Bolivia has the richest avifauna of any land-locked country in the world but until comparatively recently documentation of this avifauna has lagged well behind that of most other Neotropical countries. The deserved resurgence of interest in the birds of Bolivia in the 1980s resulted in the publication of a much-needed modern checklist (Remsen and Traylor 1989), whose appearance was in turn responsible for catalysing a further acceleration of avian chronicling. To date, over 1360 species have been recorded (Arribas *et al.* 1995). Quite naturally, most attention has focused on the forested Andean slopes, where endemism is highest (Remsen and Parker 1995), meriting the recognition of five "Endemic Bird Areas" (E.B.A.s) (Bibby *et al.* 1992a). However, much of the country lies at low altitude, with Amazonian rainforest located to the north and xerophytic chaco (scrub-thorn) to the south, interposed between which is a complex mix of forest, savanna and grassland. Although embracing one E.B.A. only, the lowlands are inhabited by no less than 10 out of the 27 threatened birds listed for Bolivia by Collar *et al.* (1994), including four endemics, of which the highly localized Blue-throated Macaw *Ara glaucogularis* deserves specific mention (Jordan and Munn 1993, Brace *et al.* 1995c). Wege and Long (1995) described 10 lowland Key Areas, of which the Beni Biological Station (B.B.S.) (Estación Biológica del Beni), the subject of this paper, is one.

The ~160,000-ha (R. Urioste pers. comm.) B.B.S. (IUCN category I) (IUCN 1992) was afforded legally protected status by governmental decree in 1982, and became a UNESCO "Man and Biosphere" reserve in 1986. It encompasses seasonally wet tropical forest and savanna, swamps and lagoons. Of the 478 species recognized here as having occurred at the B.B.S., four are threatened: Crowned Eagle *Harpyhaliaetus coronatus*, White-winged Nightjar *Caprimulgus candicans*, Military Macaw *Ara militaris* and Black-masked Finch *Coryphaspiza melanotis* (Collar *et al.* 1994). Unicoloured Thrush *Turdus haplochrous* and Grey-and-chestnut (Rufous-rumped) Seedeater *Sporophila hypochroma*, regarded formerly as threatened (Collar *et al.* 1992, see Wege and Long 1995), are considered now to be near-threatened.

Cabot *et al.* (1986) produced the first avian checklist of the B.B.S., which included about 200 species. Subsequent surveys increased the inventory to approximately 320 species (Flores 1988, S. L. Hilty unpubl. data, Rocha 1988, 1990). The reserve management plan (Miranda *et al.* 1991), incorporating later observations (e.g. Parker *et al.* 1991), raised the total to over 400 (but overlooked several species reported in the earlier lists). Since 1992 there has been a presence during the austral winter of personnel from the University of Nottingham, U.K., which has amplified considerably our knowledge of this avifauna. Sightings by

White *et al.* (1993) in 1992 (R.C.B. present) made during International Council of Bird Preservation (ICBP) expeditionary survey work (July to October) included visits to two localities in the northern reaches of the reserve, which had been unexplored hitherto. As a consequence 52 species were added (as recognized here), of which the Unicoloured Thrush, a little known endemic, was perhaps the most significant find. R.C.B. visited for two weeks in August 1993 and was present, with J.H. and Earthwatch volunteer groups (Brace *et al.* 1995a), for six weeks in both 1994 and 1995; J.W.P.-H. joined us in 1995. Observations over the 1993–1995 period have concentrated principally on islands of forest set in savanna close to the headquarters at El Porvenir, although contiguous rainforest was explored as well. Although lying outside the current reserve boundary at the present time, records from this well-worked area are incorporated since official inclusion is impending (C. Miranda verbally 1996).

The purpose of this paper is to provide the first detailed appraisal of the reserve's avifauna. It highlights additional information acquired on the presence of threatened and near-threatened species during the 1992–1995 period. That considerable attention has been paid to savanna-based species is deemed of great merit because grasslands are being lost rapidly in South America (see Goriup 1988), affecting adversely such birds as Ocellated Crake *Micropygia schomburgkii*, Sharp-tailed Grass-tyrant *Culicivora caudacuta*, Black-masked Finch and Dark-throated Seedeater *Sporophila ruficollis*, all of which occur at the B.B.S. It is hoped that the availability of such a compendium will serve to draw attention to the especially rich biodiversity of one of the most publicized conservation units in Bolivia today, whose administrative body, the Academia Nacional de Ciencias de Bolivia, has been a major contributor to policy development of protected areas within the country.

Beni Biological Station (*Estación Biológica del Beni*) (B.B.S.)

Location, topography and climate

The B.B.S. is located within the provinces of Ballivián and Yacuma in the Benian lowlands, and lies 180 km to the west of Trinidad, the departmental capital, and 50 km to the east of San Borja (Figure 1). The core area, at an altitude of 190 to 220 m, measures roughly 80 by 30 km, c. 70% of which is covered by a variety of forest types (Figure 2). These include evergreen terra firme and open deciduous woodland (Miranda *et al.* 1991) but October to April inundation ensures that humid seasonal categories dominate. The Manique and Curiraba rivers form the northern and southern limits respectively of the reserve core. The former, a "white water" river, is responsible for much of the seasonal inundation. Its past meander dynamics have created a rich successional mix, which includes riparian and swamp forests. To the south of the Curiraba (a "black water" river) lies a block of savanna (also seasonally flooded) in which are dotted numerous forest islands ("islas des bosques"), ranging from a fraction of a hectare to several hectares in size; small patches of savanna are located too between the Aguas Negras and Curiraba rivers. The southern fringe of this savanna block is demarcated by the Trinidad to San Borja road, whose



Figure 1. The location of the Beni Biological Station (B.B.S.). Administrative departments of Bolivia are shown, together with some cities and towns. Borders of contiguous countries are indicated, and the focal position of Bolivia within South America highlighted in the insert.

construction in 1977 was responsible for some forest fragmentation (e.g. Florida fragment located adjacent to El Porvenir). It is to be noted, however, that a much greater area of savanna is present in the eastern sector of the reserve.

The 2,500-ha El Porvenir (PVR) *éstanca* (14°50'S 66°17'W) provides a corridor stretching from the reserve to this road (see Figure 3); the southernmost third of the PVR savanna is grazed by cattle. To reach the forest camps, El Trapiche (TPC) and Pascana (PSC), the only readily accessible sites for forest-based research, it is necessary to cross a corner of the El Triunfo (TRF) *éstanca*. When the B.B.S. was established, unofficial conservation "buffer zones" were recognized with a view to future incorporation and ratification. These areas included the PVR *éstanca* and adjacent land separating the local road and the Río Matos, and terrain immediately north of the Río Manique.

As a "Man and Biosphere" reserve, the welfare of the 1,200+ indigenous Chimane Indians living within the B.B.S. is catered for, and indeed the reserve forms one component of a larger area covered by the Chimane Ecosystem Programme (Conservation International 1988) designed to promote sustainability,

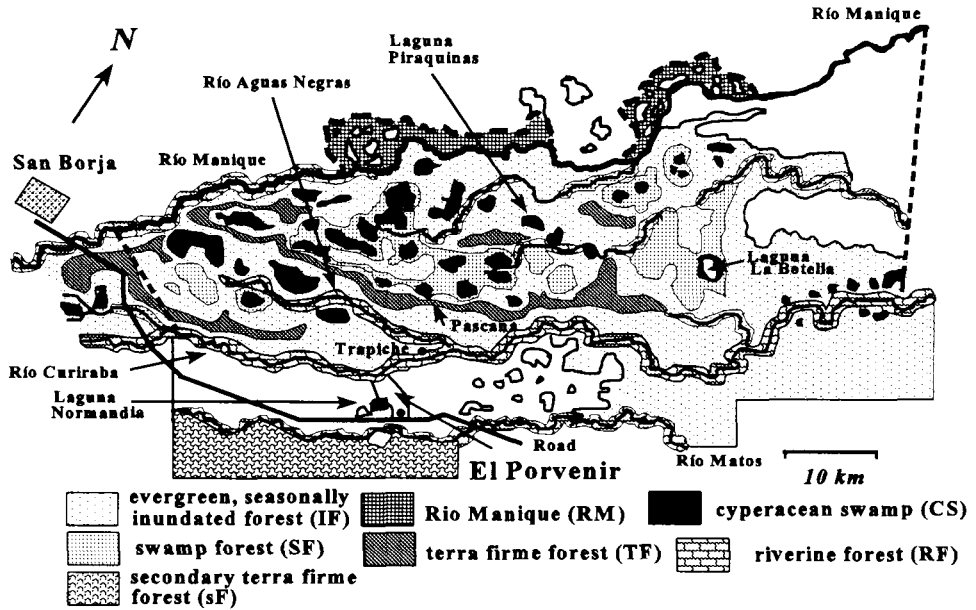


Figure 2. Current extent of, and predominant vegetational zones, within the Beni Biological Station (B.B.S.). To the south-west and north-east the limits of the B.B.S. are demarcated by dashed lines. To the north the reserve is delimited by the Río Manique (dashed line in part) and to the south – currently – by the Río Curiraba. Shown also is the area to the south of the latter where the El Porvenir estancia – soon to be incorporated into the B.B.S. – is located. Unstippled areas in the east, and adjacent to the road depicted, designate savanna; to the east of El Porvenir (only), a representative selection of savanna-based forest fragments/islands is depicted. Based on maps in Miranda *et al.* (1991).

self-determination, training and environmental awareness. One sector of this, which lies south of Totaizal and from which mahogany and cedar are extracted, is given over to “permanent production” forest (Dudley 1992).

The B.B.S. experiences a mean temperature of 26°C (range 11–38°C) and is subject to a mean humidity of 76% (range 60–90%) (Miranda *et al.* 1991). Annual precipitation averages 1800 mm, with rain during the wet season (November to May) emanating from Amazonia. Outside this season, rain is associated with periodic (*ca* 2–3 week intervals) cold fronts (“surazos”) moving northwards from Argentina.

Biogeography and habitat classification

The inventory of birds at the B.B.S. is extensive since the reserve combines depauperate Amazonian forest, cerrado and chaco avifaunal elements.

Miranda *et al.* (1991) provided a detailed listing of major macro-vegetational types/habitats (19 categories) recognised at the B.B.S. and we categorize bird distributions accordingly. Below we describe 12 categories including several alluded to by Flores (1988). Trees typical of each habitat are mentioned where appropriate (for detailed information see Killeen *et al.* 1993). Local names of

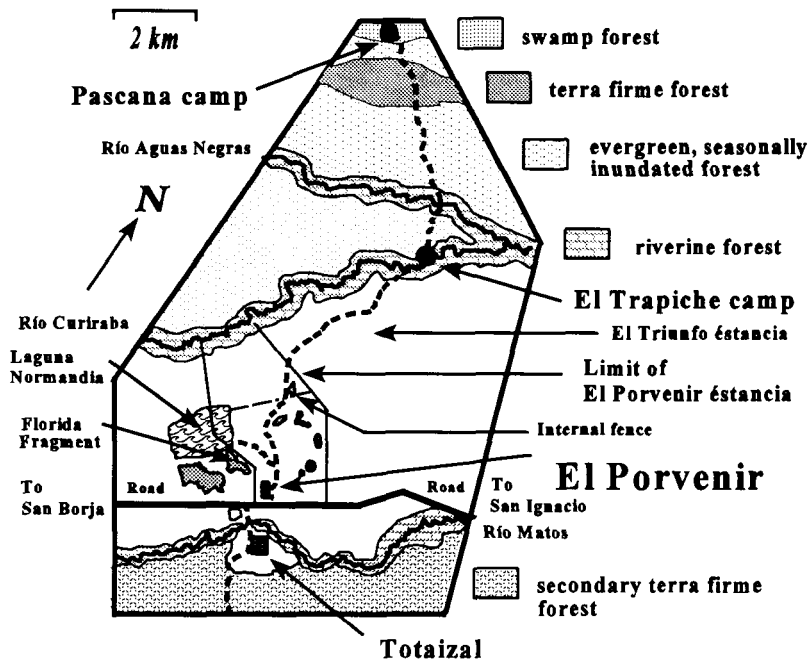


Figure 3. Study areas and associated terrains in the vicinity of the El Porvenir headquarters. Tracks linking El Porvenir with forest camps in the north and extending south from Totaizal into secondary terra firme forest, are indicated by dashed lines. The former in particular crosses open savanna (unstippled) in which lie many forest islands, some of which are illustrated, and two forest fragments including Florida.

especially conspicuous elements are included. The distribution of these habitats can be appreciated by reference to Figure 2 from which the relative extents of seven predominant categories, given below as percentages (somewhat artificially totalling 100%), have been derived employing a digitizer; abbreviations listed are those used in Appendix 1.

TF Evergreen terra firme (primary) forest (8%): *Ceiba pentandra* (kapok) (Bombacaceae), *Ficus* spp. (Moraceae), *Hevea brasiliensis* (Euphorbiaceae), *Swietenia macrophylla* (Meliaceae).

IF Evergreen, seasonally inundated forest (várzea) (46%): *Ficus* spp. (Moraceae), *Ceiba* spp. (Bombacaceae), *Astrocaryum macrocalyx*, *Scheelea princeps* (motacú palm) (Palmaceae).

RF Riverine (riparian) forest (8%): *Salix humboldtiana* (Salicaceae), *Cecropia* spp. (Moraceae), *Rheedia* spp. (Guttiferaceae).

SF Swamp forest (9%): lianas including *Ficus* spp. (Moraceae), *Bactris* spp. (Palmaceae), *Calycophyllum spruceanum* (Rubiaceae).

sF Secondary terra firme forest (largely "cut-over").

DF Open mixed deciduous forest: *Curatella americana* (Dilleniaceae), *Tabebuia* spp. (tajibó) (Bignoniaceae).

- FI Forest islands (<1 to c. 5 ha): *Guazuma ulmifolia* (coco) (Sterculiaceae), *Tabebuia impetiginosa*, *T. chrysantha* (Bignoniaceae), *Acrocomia totai* (total palm), *Scheelea princeps*, (Palmaceae).
- CH Chaco-like thorny scrub: *Acacia* sp. (Mimosoideae); *Copernicia alba* (Palmaceae).
- SV Savanna (largely seasonally inundated) (18% total – El Porvenir estancia 2%, other 16%): *Andropogon bicornis* (Graminaceae), *Curatella americana* (Dilleniaceae), *Tabebuia aurea*, *T. chrysantha* (Bignoniaceae).
- CR “Curichis”, seasonally wet, well vegetated (contiguous trees included), meandering, former river beds, usually with cyperacean components, and artificially created roadside drains/pools.
- CS Cyperacean swamps, and cyperacean fringes (including scattered trees) of lagoons (5%): *Rynchospora trispidata*, *Cyperus giganteus* (Cyperaceae), and associated open water.
- RM Río Manique (including sandy beaches) (6%).

Sections of the PVR savanna are burnt deliberately during the August–September period to stimulate the growth of grass for grazing; this also promotes reproduction of many herbaceous species (Killeen *et al.* 1990). The invasion of fires started in neighbouring estancias is not uncommon during these months, resulting in large areas being affected. Denevan (1966) suggested that the majority of the forest islands, which are slightly elevated (predominantly <1 m), owe their origins to human activities, but whilst abundant artefacts indicate past human occupancy (e.g. Majeño culture from 1,200 BC to 800 AD), other evidence favours most islands having been formed naturally (Erlichson and Faldin unpubl. data). Biogeographically, the flora of these islands is mixed (Killeen *et al.* 1993); correspondingly, their avifaunal compositions are distinct from that of adjacent rainforest (Brace *et al.* 1995b, unpublished).

Particular study locations/areas

El Porvenir estancia (Figure 3) White *et al.* (1993) examined this region for two weeks in 1992; expeditionary surveys led by Brace in 1994 and 1995 extended over 15 weeks in total. El Porvenir itself is the site of a former forest island, alongside which is a “curichi” attractive to waterbirds. Part of the Laguna Normandia, which has a dense, swampy cyperacean fringe with some emergent trees and bushes, is encapsulated by this estancia.

Forest camps approached from El Porvenir (Figure 3) Just north (c. 250 m) of the Curiraba (and c. 600 m distant from the northern fringe of the savanna) lies TPC, where White’s team stayed for one week in 1992, and to which Brace and colleagues paid six visits over the 1993–1995 period (total of approximately two weeks in residence). The low (<15 m) forest here is riverine (seasonally inundated) and dominated by palms; tangled bushes accompany the river bed itself but elsewhere undergrowth is not dense. The second camp, PSC, some 6 km further into the forest, lies alongside a small “black-water” lagoon sur-

ounded by higher and denser swamp-forest. From PSC tracks continue north-west and south-east. The route linking these two camps traverses the Aguas Negras and some terra firme forest. White's group spent 10 days at PSC. Although Brace's teams explored the TPC to PSC track to just beyond the Aguas Negras on many occasions, they visited PSC just once. This part of the reserve was visited by Rocha and Peñaranda (1992) to study the feeding ecology of four species of woodcreeper (Dendrocolaptidae).

Forest camps reached by boat along the Río Manique Two such camps were used in 1992 by White's team. One week was spent at Turtle camp (TRC) on the northern bank (*ca* 35 km from San Borja), where the strip of disturbed forest with some clearings and a Chimane village gives way quickly to savanna. Here, immediately south of riverine forest fringing the southern bank, is mature high canopy, terra firme forest, with a palm-dominated understorey and relatively open shrub layer; some bamboo was present. Final camp (FNC), the second location used (for two weeks), is in the north-eastern extremity of the reserve, on the south bank of the Manique, from which tracks lead into high (to 30 m) riverine and swamp forest (but quite open in places) giving access to an area of pampas-like savanna.

Much of the interior of the vast B.B.S. forest block, which is historically relatively young due to past changes in the course of the Manique, is inaccessible. Although large areas are flooded during the austral summer, a season with which we are unfamiliar, thus making access difficult, the raised water level of the Curiraba allows additional areas to be reached by boat.

Study methods

Although many sightings from 1992 onwards (White *et al.* 1993, R.C.B. *et al.* unpubl.) were made during censuses employing standard quantitative counting techniques, including timed line transects (walks), and square and point counts (Karr 1981, Bibby *et al.* 1992), observational methods have differed according to habitat and need. This point, together with the fact that the resulting species list (see Appendix 1) has been compiled principally from observations made by many people not engaged overtly in quantitative work, has meant that the presentation of comparative abundance data is not feasible. Nevertheless, using data from Miranda *et al.* (1991) as a guideline, we have attempted to provide a coarse abundance rating to indicate the status of species (within suitable habitat or habitats).

Mist-netting was undertaken to facilitate both the detection of cryptic species and species identification (e.g. *Synallaxis* spinetails). White and colleagues trapped birds on a routine basis in 1992 at the five principal locations visited. In 1994 and 1995, J.H. ringed and photographed birds mist-netted at the following locations: (i) PVR (open savanna), (ii) PVR (scrub), (iii) PVR (range of forest islands 1–5.5 ha), (iv) TPC (adjacent to the Río Curiraba riverbed), (v) TPC (forest *c.* 300–500 m north of the campsite). All those species inspected in the hand over the 1992–1995 period, are denoted (Trap). Tape-recording and the playback of vocalizations were employed to lure unrecognized callers into view. Prerecorded tapes were used to elicit calls, especially from cryptic species.

Systematic list and species accounts

Introductory comments

Ordering within the full species list provided in Appendix 1 is conservative and follows primarily Clements (1991). Rearrangements of suboscines at family and subfamily ranks, introduced by Ridgely and Tudor (1994), have not been incorporated here, but a number of recent taxonomic changes at the species level which follow Monroe and Sibley (1993) have been adopted.

All species regarded as threatened (THR) or near-threatened (NT) (Collar *et al.* 1994) receive treatment in the accounts below. Species recorded for the first time at the B.B.S. by White *et al.* (1993), or subsequently by us will be dealt with in a separate paper (Brace *et al.* unpubl.). Initial chronicling of species in previous reserve lists (or other sources) is acknowledged. All those species seen during field studies from 1992 onwards, which were listed previously, are denoted (o); additions are highlighted by giving the year of initial observation.

A total of 16 species listed by other authors have not been included here. Our reasons for omitting these species at this time are given in Appendix 2. Two B.B.S. entries given in Arribas *et al.* (1995) on the basis of our submissions, are withdrawn here: (1) Sooty-fronted Spinetail *S. frontalis*, spinetails considered to be this species (R.C.B., J.H. in 1994) have been re-identified as Pale-breasted *S. hypospodia*, a species whose plumage is highly variable (Brace *et al.* unpubl.); (2) White-winged Black-Tyrant *K. atterimus*, one *Knipolegus* seen in 1993, which was assigned to *K. atterimus* (R.C.B.), is regarded now as Hudson's *K. hudsoni*. Authors initials appearing in the following species accounts signify personal experience of the species concerned at the B.B.S.

Threatened and near-threatened species accounts

Greater Rhea *Rhea americana* (NT) Recorded on an irregular basis in the PVR and TRF savannas (R.C.B., J.H., J.P.-H.). Normally no more than two or three seen together, but a party of six was disturbed from the periphery of a forest island on one occasion (R.C.B.) (22 July 1993). It is pertinent to note that Dott (1984) commented that his sightings in Beni were the first published since those of Gyldenstolpe (1945). The degree of local threat to the species is not known, although it is said to be declining due to annual savanna burning (which coincides with breeding in Beni) and conversion to pasture (S. Stab verbally 1994), as is undoubtedly the case in Argentina (Bucher and Nores 1988). Most authors describe the species in Bolivia as rare (e.g. Remsen 1986, Kratter *et al.* 1993, Davis 1993).

Orinoco Goose *Neochen jubata* (NT) One in flight along the Río Manique (3 September 1992) (White *et al.* 1993) is the only sighting to report but it has been observed previously on wet savanna with short vegetation (Miranda *et al.* 1991), habitat in which the species occurs elsewhere in Beni (Remsen 1986). Occurs widely in Beni with concentrations (up to 250) known from the Lagunas Beni and Pando, and the Río Yacuma (Scott and Carbonell 1986) but its exact status in Bolivia is uncertain.

Agami (Chestnut-bellied) Heron *Agamia agami* (NT) Recorded from riverine forest and swampy areas (Miranda *et al.* 1991).

Zigzag Heron *Zebrilus undulatus* (NT) Added to the reserve list in 1992 (11 August); one was seen by the small lagoon at PSC (White *et al.* 1993). First recorded in Bolivia (north-east Beni) by Pearson (1975); known only from Beni and Santa Cruz (Arribas *et al.* 1995).

Crowned Eagle *Harpyhaliaetus coronatus* (THR – vulnerable) An immature was seen flying low over the Río Manique near TRC (1 September 1992) and good views obtained of an adult perched in a small tree (*Tabebuia aurea*) in savanna 2 km south-west of TPC (27 July 1993) (R.C.B.). Listed first in an early version (1989) of Miranda *et al.* (1991) (see Rocha 1990, but no further details secured), this predominantly open-country raptor was tabulated as having occurred in a range of habitats in the B.B.S. The few Bolivian reports of this species relate to Beni and Santa Cruz (Collar *et al.* 1992, Kraitter *et al.* 1993), though the initial one lacked a specific locality (Remsen and Traylor 1989). Its status in Bolivia is unclear but elsewhere the species is suffering from habitat modification and hunting pressure (Collar *et al.* 1994).

Crested Eagle *Morphnus guianensis* (NT) The sole report for the reserve is of an adult seen on 17 September 1992 perched in dense forest at FNC (White *et al.* 1993). Within Bolivia known only from two other departments: La Paz (Remsen and Parker 1995) and Santa Cruz (Noel Kempff Mercado National Park) (Vasquez unpubl. data, Pearce-Higgins *et al.* unpubl. data). It is regarded as rare in Bolivia as elsewhere (Collar and Andrew 1988) but its exact status is uncertain.

Harpy Eagle *Harpia harpyja* (NT) Scarce over dense terra firme forest (Miranda *et al.* 1991). One was picked up dead in the El Triunfo estancia in 1995 (S. Stab verbally 1995). The species has been recorded widely from Bolivia (Remsen and Traylor 1989, Davis *et al.* 1994).

Black-and-white Hawk-Eagle *Spizastur melanoleucus* (NT) Documented in Cabot *et al.* (1986), with a sighting 50 km east of San Borja mentioned in Cabot and Serrano (1986) taken to be the basis for inclusion by Miranda *et al.* (1991). One was seen at FNC on 16 September 1992 (White *et al.* 1993). Initial Bolivian sightings were summarized by Remsen and Ridgely (1980).

Ocellated Crake *Micropygia schomburgkii* (NT) A small number were heard and disturbed, and one photographed, in a recently burnt area of the PVR savanna, some 2 km north of El Porvenir during August 1994 (e.g. three on 3 August). Heard only in this savanna in 1995 (R.C.B., J.H.). Prior to these records, this cryptic species was not known from the B.B.S. but it is apparently numerous and widespread in grasslands (both seasonally inundated and well drained) in northern and eastern Bolivia and has been noted as occurring widely between the B.B.S. and San Borja, 50 km to the west (Parker 1989, Parker *et al.* 1991).

Before these observations, it was known in Beni from just one specimen, collected from San Joaquin (Blake 1977).

Military Macaw *Ara militaris* (THR – vulnerable) The only sighting was of a flock of 15 flying over pampas and forest adjacent to FNC on 17 September 1992 (White *et al.* 1993), the first Beni record of this Andean foothill species, known previously from Santa Cruz, Chuquisaca and Tarija (Remsen *et al.* 1986, Remsen and Traylor 1989). It has been recorded now apparently from La Paz also (Arribas *et al.* 1995).

White-winged Nightjar *Caprimulgus candidans* (THR – Critical) A male was collected by hand in open savanna near El Porvenir on 11 September 1987 (Davis and Flores 1994), representing the first record for Bolivia. It is very rare and had been recorded previously this century only from Emas National Park in Brazil (see Collar *et al.* 1992), some 1500 km to the east but in 1995 was discovered in the Reserva Natural de Bosque Mbaracayú, Paraguay (Lowen *et al.* 1996), the first confirmed record for that country. Clearly more information on the status of the species at the B.B.S. is required urgently.

Sharp-tailed Tyrant *Culicivora caudacuta* (NT) One seen in the PVR savanna on 13 August 1994 (J.H.) was the first B.B.S. record. In 1995, three were noted in the same area, typified by long grass, on both 20 and 28 August (R.C.B., J.W.P.-H.). It occurs locally within open grasslands but is apparently widespread in Beni (Schmitt and Schmitt, 1987, Parker 1989, Parker *et al.* 1991, Parker and Rocha 1991), with a number of previous sightings relating to areas immediately west of the B.B.S., where family parties were observed. To the east its distribution is presumably continuous through to Brazil; in the Noel Kempff Mercado National Park adjacent to the Brazilian border, it occupies cerrado on the Serranía de Huanchaca (Parker and Bates unpubl. data).

Hudson's Black-Tyrant *Knipolegus hudsoni* (NT) This winter visitor, whose documented occurrence at the B.B.S. by Cabot *et al.* (1986) was overlooked subsequently by Rocha (1990) and Miranda *et al.* (1991), was observed on most days in trees and bushes at woodland and road edges in the vicinity of PVR in 1992 (White *et al.* 1993). It was noted also in 1993, by R.C.B. (see "Introductory comments" above). A small number was seen (*c.* 6 maximum) on most days in the same area in both 1994 and 1995 (with, respectively, 11 and 13 individuals being mist-netted) (R.C.B., J.H., J.W.P.-H.). Re-trapping substantiated the impression gained that certain individuals were resident in particular forest islands (two birds: trapping intervals of five and eight days) but of greater moment was the re-trap of one bird in 1995 (5 August) in the same island as caught in the previous year (28 July) (Brace *et al.* 1996). Since *K. hudsoni* withdraws entirely from Bolivia during the austral summer to breed in central Argentina (Canevari *et al.* 1991), this particular individual is likely to have undertaken a round-trip of no less than 4000 km. In surveying the Chimane ecosystem programme area, Parker (1989) (with colleagues) reported seeing the species daily (up to 12 birds) in habitats similar to those indicated above.

Cock-tailed Tyrant *Alecturus tricolor* (NT) This species, which was listed by Miranda *et al.* (1991), is known within Bolivia only from scattered localities in Beni, Santa Cruz and La Paz (Ridgely and Tudor 1994). When surveying the Yacuma area (Beni) c. 150 km north of the B.B.S. in 1976 (November and December), Remsen (1986) located the species in grassland (one or two sightings per day). Closer to the B.B.S., Parker and colleagues (Parker 1989, Parker *et al.* 1991) found it in small numbers (up to 10 per day) between 15 and 45 km to the west (in June) but commented that much seemingly suitable habitat (tall grass) scrutinized, yielded no records. Such localized occupation by this declining species within large swathes of seasonally inundated savanna merits investigation (see Discussion).

Unicoloured Thrush *Turdus haplochrous* (NT) This lowland Bolivian endemic was, prior to being located in the reserve in 1992 (White *et al.* 1993, 1995), known solely from six specimens relating to three localities in Beni (see Collar *et al.* 1992), and from one sight record by T. A. Parker in Santa Cruz (J. Bates *in litt.* 1994). It has been found since in the Isiboro Sécure National Park in the south of Beni, with two specimens being collected in November 1993 (M. Carreño verbally 1995, Wege and Long 1995); we have verified the identification of the specimens concerned, which are deposited in the Museo de Historia Natural "Noel Kempff Mercado" (Santa Cruz). Observations at the B.B.S. were made in flooded riverine forest (*várzea*) in the vicinity of FNC; one individual was seen and one trapped on 7 September. Further sightings were obtained on 10 and 16 September involving one and two birds respectively. It seems likely that future surveys in similar terrain will uncover additional localities and recognition of this has come already with its demotion from threatened to near-threatened status (Collar *et al.* 1994).

White-rumped Tanager *Cypsnagra hirundinacea* (NT) This tanager of cerrados, campos and savannas is, as might be expected, confined to Beni and Santa Cruz within Bolivia (e.g. Parker 1989, Parker and Rocha 1991, Davis 1993, Pearce-Higgins 1996). It was added to the B.B.S. inventory by S. L. Hilty (unpubl. data) in 1988 but has not been recorded subsequently; thus it is seemingly only a wanderer to this area.

Black-masked Finch *Coryphasiza melanotis* (THR – vulnerable) First reported in the reserve in 1995 when, over the period 9–28 August, a small number (3–4 pairs) were seen in an area of savanna largely devoid of bushes or trees, 2 km north of El Porvenir (R.C.B., J.H., J.W.P.-H.); a male and female were trapped (together) on 26 August. It would appear to be locally common in Benian grasslands, and has been seen within 15+ km (to the west) of the reserve previously (Remsen 1986, Parker 1989). Reported from La Paz but curiously not from Santa Cruz as yet (Arribas *et al.* 1995).

Dark-throated Seedeater *Sporophila ruficollis* (NT) Two males were trapped in scrub in the PVR *é*stancia on 17 and 22 August 1994. In 1995 several were seen (including males on 6 and 30 August) in the TRF *é*stancia, and a total of 14 small *Sporophila* trapped (8–13 August), of which eight were readily identifiable

ruficollis males (R.C.B., J.H., J.W.P.-H.)). The species was claimed by White *et al.* (1993) but since only non-breeding individuals (20) were involved we are not prepared to accept that sighting. Within Bolivia it is known from Beni, Santa Cruz, La Paz and Tarija (Arribas *et al.* 1995). On the savanna at Los Fierros within the Noel Kempff Mercado National Park (Santa Cruz), *S. ruficollis* outnumbered *S. hypoxantha* by two to one and *S. hypochroma* by over three to one (Pearce-Higgins 1996, Pearce-Higgins *et al.* unpubl. data), relative abundances which reflect the situation to date at the B.B.S. It should be noted that both local migration and nomadic movements may result in considerable seasonal variation in the abundance of the species (S. Davis *in litt.* 1996).

Grey-and-chestnut (Rufous-rumped) Seedeater *Sporophila hypochroma* (NT)
First noted at the B.B.S. by S. L. Hilty (unpubl. data), it is found uncommonly in savanna-dominated areas (Miranda *et al.* 1991). White *et al.* (1993) commented that they had only one definite sighting (20 August 1992), a male accompanying a flock of Double-collared Seedeaters *S. caeruleascens*. On both 19 and 30 August 1995 a small group (*c.* five) of small *Sporophila* was seen alongside the San Borja to San Ignacio road, which fortunately included, on each occasion two male *S. hypochroma* in breeding attire (R.C.B., J.W.P.-H.).

Discussion

Avian diversity

Documentation of the avifauna of the B.B.S. has proceeded apace since the inception of the reserve in 1986, but until now a comprehensive and annotated treatment of this fauna has been lacking. Our paper, which lists over 70 species not mentioned in Miranda *et al.* (1991), has filled this gap. Of the species additions listed here, 52 can be attributed to the endeavours of White *et al.* (1993) in 1992, and 21 are a result of our survey work undertaken since. In addition to the four threatened species mentioned specifically in the Introduction, no less than 15 near-threatened birds (Collar *et al.* 1992) are listed now. Significantly, amongst these 19 species are 11 that rely wholly or partially upon the savanna habitat (see below).

Species richness in different habitats

We have attempted in Appendix 1 to detail the range of habitats occupied by the various species. Because our fieldwork has been restricted to certain locations within the reserve, we have had to rely heavily upon distributional information tabulated in Miranda *et al.* (1991). In doing so it has become apparent that although that data source is rich, it is not without flaws linked to the obvious misidentification of some species across certain, but not all, habitats. Consequently, we have deemed it appropriate to edit that information where necessary. We think that the habitat classification scheme adopted here, which was simplified from that used by Miranda *et al.* (1991), provides an effective working framework, although we do appreciate that certain categories are ecolo-

gically very close, especially so during the austral summer when much of the savanna and forest is inundated.

Notwithstanding the obvious dangers in both categorizing habitat diversity and assigning avian occurrence to those categories, such an approach does yield rough measures of species richness in different environments. However, strict comparisons in this regard should not be attempted since some habitats may have received less attention than others. Inspection of the column totals in Appendix 1 reveals that with the exception of the cyperacean swamps (CS) and Río Manique (RM) categories, all habitats contain 100 or more species. Although all the forest categories have high scores, that for riverine forest stands apart. Its apparent richness is due presumably to the fact that it is comprised of several subhabitats, though relative ease of observation at river margins may be an influential factor also. There is considerable species-sharing of landbirds across riverine, seasonally inundated (*várzea*) and terra firme forest types (e.g. Accipitridae, Columbidae, Psittacidae, Picidae, Dendrocolaptidae, Thamnophilidae). Amongst examples given by Remsen and Parker (1983) of habitat expansion of typical river-associated species into terra firme, Blue-throated Piping-guan *Pipile cumanensis*, Collared Trogon *Trogon collaris*, Blue-crowned Trogon *T. curuci*, Amazonian Antpitta *Hylopezus berlepschi* and Russet-backed Oropendola *Psarocolius angustifrons* all show the same tendency at the B.B.S. The apparently less distinctive nature of the avifauna of riverine habitats at the reserve is likely to be a consequence of the fact that much of the reserve is a closely knit mosaic of forest types (including swamp forest), with a proportion of the forest transitional in nature.

Turning to the forest islands, their apparent richness is perhaps a little surprising given that the normal expectation is to find relatively depauperate faunas in such relatively isolated situations (MacArthur and Wilson 1967, Bierregaard *et al.* 1992). This is not considered in detail here but pertinent factors are (i) that the diversities of these islands are swelled by species which use adjacent "curichis" (also fairly species-rich) and savanna, with the margins of the former providing ostensibly suitable access corridors; and (ii) that because the islands have had a long history (see Introduction) and are not a recent product of forest clearance, an avifaunal composition quite distinct from that of forests fragments has had time to become established. Examples of species found commonly in islands but rarely in the Florida fragment include, for example, Speckled Chachalaca *Ortalis guttata*, Blue-and-yellow Macaw *Ara araruana*, Rusty-backed Antwren *Formicivora rufa*, *Myiarchus* spp. and Plush-crested Jay *Cyanocorax chrysops*. Thus the "picture" which emerges for the more open areas of the reserve is not dissimilar to that of the mosaic of rainforest types referred to already; the several constituent habitats there blend physically and biotically, although of course the savanna *per se*, and chaco-like areas also, are used by substantially lower numbers of species (125 and 123, respectively). Indeed, if one considers strictly savanna-based (non-raptorial) species that are both widespread and abundant, only two qualify: Grassland Sparrow *Ammodramus humeralis* and Wedge-tailed Grass-Finch *Emberizoides herbicola*.

Biogeographical representation

Table 1 provides a breakdown of the numbers of species associated with general biogeographical/vegetational regions in South America; note that 102 species

Table 1. Representation at the Beni Biological Station of species having different biogeographical distributions

Species category	Amazonia (west) and Andean foothills	Amazonia (general/central) and Guianan	Amazonia (east)	Cerrado	Chaco-cerrado	Lowlands	Other (restricted distribution)
Non-passerine							
<i>n</i> = 266 ^a	30	55	13	40	10	113	5
%	11	21	5	15	4	43	2
	37		19				
Passerine							
<i>n</i> = 333 ^b	63	86	27	53	30	65	9
%	19	26	8	16	9	20	3
	53		25				
Total							
<i>n</i> = 599 ^c	93	141	40	93	40	178	14
%	16	24	7	16	7	30	2
	47		23				

^{a,b,c} Indicate distributional category score totals. Since 102 species have been scored in more than one category, they are higher than the actual numbers of species involved, which are 233, 245 and 478, respectively. Percentages have been rounded-up. Biogeographical information has been derived from a variety of sources including Cracraft (1985), Haffer (1985), Miranda *et al.* (1991) and Stoltz *et al.* (1996).

have been scored for two or more regions. Overall, almost half of the scores are for Amazonian distributions, with about half of those in turn relating to species having extensive ranges within Amazonia. Not surprisingly, the east Amazonian grouping scores only 7% but surprisingly the west Amazonian together with the Andean foothill distributions account for just 16% (the passerine score being almost exactly twice that of non-passerines). Cerrado and chaco scores taken together comprise 23% of the distributions. Because it is not easy to split cleanly these two groups, a compromise solution has been adopted, with cerrado and chaco-cerrado categories being used. Despite this, the total cerrado representation (and count) is, as anticipated, more than double that of chaco-cerrado. Virtually all remaining scores (total of 32%) relate to species with extensive lowland distributions, with non-passerines having, not unexpectedly, a disproportionate showing. Note that input from the Bolivian Yungas only 150 km away is relatively limited.

Threatened and near-threatened birds of the savanna

Three of the four threatened species listed for the B.B.S. occur in the savanna, with two being restricted to this habitat; of the 15 near-threatened birds, the savanna plays host to no less than eight, of which five are confined to it (Table 2). A further species, Hudson's Black-Tyrant frequents the forest islands set within the main (El Porvenir) savanna block; it is an austral migrant, which may be in residence throughout the winter and can remain faithful to a particular island for more than one winter (Brace *et al.* 1996).

Tropical grasslands south of the Amazon in Brazil, in eastern Bolivia and elsewhere have been, or are being, converted rapidly for cattle production or agricultural purposes. The combined impact of heavy grazing, annual burning, introduction of non-native grasses, hunting (e.g. Greater Rhea) and trapping (e.g. *Sporophila* spp.), have influenced a substantial proportion (perhaps as great as 90%) of original habitat. Consequently many species typical of open and semi-open areas have suffered greatly (Bucher and Nores 1988, Cavalcanti 1988, Collar and Andrew 1988, Willis and Oniki 1988, Collar *et al.* 1992), such as the threatened Black-masked Finch *Coryphaspiza melanotis*, which has become very local throughout its extensive range (Ridgely and Tudor 1989) and which could not be found recently in formerly occupied sites in north-east Argentina (Pearman and Abadie unpubl. data). Our sightings, together with those of Remsen (1986), Parker (1989) and Parker *et al.* (1991), indicate that this finch and the near-threatened Sharp-tailed Tyrant, Cock-tailed Tyrant, White-rumped Tanager, Dark-throated Seedeater and Grey-and-chestnut (Rufous-rumped) Seedeater, are widespread, albeit patchily so, in the lowlands of Beni. Therefore it is clear that this department of Bolivia constitutes an important refuge for them. This region may be important also for the Long-winged Harrier *Circus buffoni*, which is local over much of its extensive geographical distribution and likely to be affected by wetland degradation (Bierregaard 1994).

The precise influence of burning on the ecology of the savanna, principally during the August to September period, is unclear but there is no doubt about its scale, which can be appreciated readily by flying into the department capital, Trinidad, during these months. For example, during August 1995, the airport

Table 2. Habitat usage by threatened and near-threatened birds recorded at the Beni Biological Station. Habitat codes are those used and referenced in Appendix 1; detailed descriptions of each habitat are given under Biogeography and habitat classification.

Threatened species (4)	Habitat	Near-threatened species (15)	Habitat
Crowned Eagle <i>Harpyhaliaetus coronatus</i>	IF, RF, CH, SV	Greater Rhea <i>Rhea americana</i>	SV
White-winged Nightjar <i>Caprimulgus candidans</i>	SV	Orinoco Goose <i>Neochen jubata</i>	SV, RM
Military Macaw <i>Ara militaris</i>	TF, IF	Agami Heron <i>Agamia agami</i>	RF, CR
Black-masked Finch <i>Coryphaspiza melanotis</i>	SV	Zigzag Heron <i>Zebrilus undulatus</i>	SF
		Crested Eagle <i>Morphnus guianensis</i>	IF, RF
		Harpy Eagle <i>Harpia harpyja</i>	TF
		Black-and-white Hawk-Eagle <i>Spizaetus melanoleucus</i>	TF, sF
		Ocellated Crane <i>Micropygia schomburgkii</i>	SV
		Sharp-tailed Tyrant <i>Culicivora caudacata</i>	SV
		Hudson's Black-Tyrant <i>Knipolegus hudsoni</i>	DF, FL, FF, CH, CR
		Cock-tailed Tyrant <i>Alecturus tricolor</i>	SV
		Unicoloured Thrush <i>Turdus haplochrous</i>	IF
		White-rumped Tanager <i>Cypsuagra hirundinacea</i>	SV
		Dark-throated Seedeater <i>Sporophila ruficollis</i>	CH, SV, CR
		Grey-and-chestnut Seedeater <i>Sporophila hypochroma</i>	CH, SV, CR

at Trinidad was closed for several days because of poor visibility due to smoke haze (T. Pérez verbally 1995), and the peripheries of several of the forest islands which we were investigating in the El Porvenir estancia at the B.B.S. were invaded by fires started in adjacent properties. Although some grassland species can tolerate regular burning and some, e.g. granivorous birds such as *Sporophila* spp. and Blue-black Grassquit *Volatinia jacarina* (Davis 1993) may actually benefit from it, for others such disturbance results in their disappearance, e.g. Ocellated Crake and Cock-tailed Tyrant (Cavalcanti 1988). Negret and Teixeira (1984) report that in avoiding fires, Ocellated Crakes "appeared dizzy and intoxicated" and were often preyed on by Aplomado Falcons *Falco femoralis* and could be captured "bare-handed". What should be stressed here is that whilst the irregular occurrence of fires is a quite natural and beneficial hazard of savanna life, the regularity and large-scale nature of induced burning in recent years is, to the contrary, highly detrimental. We have yet to quantify the impact of fire upon the savanna-based forest islands, but have done so with regards to grazing, which results in obvious reductions in the range of birds using island interiors but not in diversities recorded in the peripheries (Brace *et al.* unpubl.).

Conservation priorities: problems and recommendations

As a "Man and Biosphere" reserve, the B.B.S. has protected status but this in itself offers no guarantee that threats or social changes prevailing in areas surrounding the reserve will not be without future impact within the confines of the reserve. There are several areas of concern: (i) progressive (legal) encroachment into the northern forested areas by Chimane Indians who live along the banks of the Río Manique; (ii) considerable swelling of the population of San Borja (due principally to a migration of peoples from the Yungas), which is putting pressure on the integrity of the western extremity of the reserve; (iii) the completion (in early 1995) of a bridge over the Río Manique and associated road upgrading, which has resulted in a marked increase in traffic using the San Borja to Trinidad route passing immediately south of the El Porvenir estancia, and which is likely to lead to increased settlement along this route; and (iv) logging activities within the Chimane Permanent Production Forest to the south of the aforementioned road, which has led to habitat deterioration and fragmentation, initiated by road construction some 20 years ago. Note that to the north of the Río Manique, the northern boundary of the reserve, the forest gives way similarly to savanna, as it does in part to the east too (see Figure 2). Thus there is a real danger that the main B.B.S. forest block could become isolated totally as a result of these changes, leading to faunal impoverishment.

None of these changes in the near future is likely to put in jeopardy those near-threatened birds found predominantly within this forest block, namely Agami Heron, Zigzag Heron, Crested Eagle, Harpy Eagle, Black-and-white Hawk-Eagle and Unicoloured Thrush, since much of the reserve core is difficult of access. Nevertheless, careful monitoring is required to detect the onset of any putative avifaunal degradation. The park rangers (currently six employed) do receive basic training in biota reportage and continuation of data input from their observations is to be encouraged. Future survey work should aim to include visits to the more remote parts of the reserve (especially areas with cyperacean swamps), where surely additional species for the reserve will be

discovered. We feel that in the context of forewarning against declines in diversity, it is highly desirable to set up a monitoring programme in both primary and secondary terra firme forest to the south of Totaizal, the village through which wood is transported from logging concessions to the south and whose welfare and prosperity is tied closely to that of El Porvenir.

The 2,500-ha El Porvenir *éstanca*, which we have shown to support a rich array of threatened and near-threatened species, occupies less than 2% of the area considered in this paper but it should be emphasized that savanna in the eastern portion of the reserve swells this proportion to approximately 15%. Unfortunately we have not explored the latter area and thus it is not possible at the present time to assess the precise importance of the reserve as a whole to these species. Undoubtedly therefore a future priority is to examine the remaining savanna and assess fully the status of each "core" species. Currently two factors militate against the PVR *éstanca* acting as an effective conservation zone: (i) the southern third of the savanna is grazed heavily by 100–150 head of cattle, which are damaging many of the forest islands there (see above); and (ii) it is subject to multiple annual incursions of fire. The imminent, though belated, official ratification of PVR as part of the B.B.S. (C. Miranda verbally 1996) should serve to enhance the conservation status of the *éstanca*, which is treated locally already as an integral part of the Biosphere reserve. It is to be hoped that reserve expansion will take the southern border beyond El Porvenir to at least as far as the Río Matos (see Figure 3), which would help to preserve genetic linkage with good-quality forest beyond. To alleviate damage due to grazing it will be necessary to either curtail severely the presence of cattle (which provide much-needed income of course) or at least to reduce the area over which they graze. Ideally, they should be removed altogether. Unless grazing pressure is alleviated, then a substantial proportion of the forest islands will become damaged irreparably in the near future, due primarily to trampling which impairs sapling growth. Further pressure of this nature is linked to insufficient maintenance of boundary fencing, which permits cattle from neighbouring *éstanca*s to interlope. It is to be hoped that the recent designation of El Porvenir itself as a node of scientific excellence by the Third World Network of Scientific Organizations (M. Hassan *in litt.* 1994) will result indirectly in money being released to improve the management of this savanna. Additionally, steps must be taken to limit fire damage by, in the first instance, constructing better firebreaks. In the long term, the resolution should be to increase substantially the amount of this habitat within the B.B.S., a proposal which echoes the sentiments of Parker (1989). Due to the local nomadism of many savanna species, protection of adjacent properties should be sought also.

To end on a more specific note, the status of both Crowned Eagle and White-winged Nightjar need assessing urgently. With regard to the latter species, it is intended that a concerted search will be made in 1996 when we return to the B.B.S.

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Appendix 1. Bird species recorded at the Beni Biological Station, with their status, record documentation and habitats.

Status: NT, near-threatened; THR, threatened. Species: family ordering follows Clements (1991). Rec (record): details of sightings obtained during visits made in 1992 (White *et al.* 1993), and from 1993 to 1995; o, a species listed already for the B.B.S.; 92, etc., the year of the expedition during which the initial sighting was obtained for a species new to the reserve (if that was the sole expeditionary year in which the species was observed, the year is accompanied by an asterisk). Trap (trapped): examined following mist-netting. Ref (references): 1, Cabot *et al.* (1986); 2, Flores (1988); 3, S. L. Hilty (unpubl. data); 4, Rocha (1988); 5, Rocha (1990); 6, Miranda *et al.* (1991); 7, Davis and Flores (1994). Abun (abundance): F, recorded on most visits to suitable habitat; I, regularly recorded but on a minority of visits to suitable habitat; O, rarely recorded. Mig (migrant): A, austral; N, northern (only long-distance migrants highlighted).

Habitat designations: TF, terra firme forest; IF, seasonally inundated forest; RF, riverine forest; SF, swamp forest; sF, secondary forest; DF, deciduous forest; FI, forest island; CH, chaco; SV, savanna, CR, "curichi"; CS, cyperacean swamp, and cyperacean fringe to lagoon; RM, Río Manique (including banks). For habitat descriptions see Biogeography and habitat classification section. Note that secondary terra firme forest occurring to the south of the San Ignacio (Trinidad) to San Borja road (see Figures 2 and 3) lies currently outside the reserve, and thus sightings from that area have not been incorporated.

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	sF	DF	FI	CH	SV	CR	CS	RM
TINAMIDAE (Tinamous): 8 species																	
	<i>Tinamus major</i>	0		1	I		X	X									
	<i>Tinamus guttatus</i>			1	O		X	X									
	<i>Crypturellus cinereus</i>	0		6	I		X	X	X								X
	<i>Crypturellus soui</i>	0		4	F		X	X									
	<i>Crypturellus undulatus</i>	0		6	F		X	X	X	X							X
	<i>Crypturellus parvirostris</i>	0	T	1	I		X	X	X	X	X						X
	<i>Rhynchotus rufescens</i>	0		1	F		X	X									X
	<i>Nothura boraquira</i>	0		6	O												X
RHEIDAE (Rheas): 1 species																	
NT	<i>Rhea americana</i>	0		1	I												X
PHALACROCORACIDAE (Cormorants): 1 species																	
	<i>Phalacrocorax brasilianus</i>	0		1	F				X								X
	NEOTROPIC CORMORANT																X

ANHINGIDAE (Anhingas): 1 species

Anhinga anhinga

0 1 F X X X

ANHIMIDAE (Screamers): 1 species

Chauna torquata

0 1 F X X X X

ANATIDAE (Ducks, Geese): 5 species

Dendrocygna viduata WHITE-FACED WHISTLING-DUCK X X
Dendrocygna autumnalis BLACK-BELLIED WHISTLING-DUCK X X X
Neochen jubata ORINOCO GOOSE X
Cairina moschata MUSCOVY DUCK X X
Anazonetta brasiliensis BRAZILIAN TEAL X X

NT

ARDEIDAE (Herons, Bitterns): 13 species

Syrigma sibilatrix WHISTLING HERON X X X
Egretta caerulea LITTLE BLUE HERON X X X
Egretta thula SNOWY EGRET X X X
Ptilerodius pileatus CAPPED HERON X X X
Ardea coccy COCOI HERON X X X
Ardea alba GREAT EGRET X X X
Bubulcus ibis CATTLE EGRET X X X
Butoroides striatus STRIATED HERON X X X
Agamia agami AGAMI HERON X X
Nycticorax nycticorax BLACK-CROWNED NIGHT-HERON X X X
Cochlearius cochlearius BOAT-BILLED HERON X X X
Tigrisoma lineatum RUFESCENT TIGER-HERON X X X
Zibralius undulatus ZIGZAG HERON X X X

NT

92*

THRESKIORNITHIDAE (Ibises, Spoonbills): 5 species

Phimosus infuscatus BARE-FACED IBIS X X X
Theristicus caerulescens PLUMBEOUS IBIS X X X
Theristicus caudatus BUFF-NECKED IBIS X X
Mesembrinibis cayennensis GREEN IBIS X X X
Ajaia ajaja ROSEATE SPOONBILL X X X

NT

CICONIIDAE (Storks): 3 species									
<i>Mycteria americana</i>	0	1	F	X	X	X	X	X	X
WOOD STORK									
<i>Ciconia maguari</i>	0	1	I		X	X	X	X	X
MAGUARI STORK									
<i>Jabiru mycteria</i>	0	1	F						
JABIRU									
CATHARTIDAE (New World Vultures): 5 species									
<i>Coragyps atratus</i>	0	1	F	X	X	X	X	X	X
BLACK VULTURE									
<i>Cathartes aura</i>	0	1	F	X	X	X	X	X	X
TURKEY VULTURE									
<i>Cathartes burrovianus</i>	0	1	F	X	X	X	X	X	X
LESSER YELLOW-HEADED VULTURE									
<i>Cathartes melambrotus</i>	0	6	I	X	X	X	X	X	X
GREATER YELLOW-HEADED VULTURE									
<i>Sarcorhamphus papa</i>	0	1	I	X	X	X	X	X	X
KING VULTURE									
PANDIONIDAE (Osprey): 1 species									
<i>Pandion haliaetus</i>	0	1	O	N?				X	X
OSPREY									
ACCIPITRIDAE (Kites, Hawks, Eagles): 24 species									
<i>Leptodon cayanensis</i>	0	6	I	X	X	X	X	X	X
GREY-HEADED KITE									
<i>Chondrohierax uncinatus</i>	0	6	I	X	X	X	X	X	X
HOOK-BILLED KITE									
<i>Elanoides forficatus</i>	0	1	I	X	X	X	X	X	X
SWALLOW-TAILED KITE									
<i>Gampsonyx swainsonii</i>	92*		O					X	X
PEARL KITE									
<i>Rostrhamus sociabilis</i>	0	1	F	X	X	X	X	X	X
SNAIL KITE									
<i>Rostrhamus hamatus</i>	0	1	I	X	X	X	X	X	X
SLENDER-BILLED KITE									
<i>Harpagus bidentatus</i>	0	1	I	X	X	X	X	X	X
DOUBLE-TOOTHED KITE									
<i>Ictinia plumbea</i>	0	1	F	X	X	X	X	X	X
PLUMBEOUS KITE									
<i>Circus buffoni</i>	0	1	F	X	X	X	X	X	X
LONG-WINGED HARRIER									
<i>Geranospiza caerulescens</i>	0	1	I	X	X	X	X	X	X
CRANE HAWK									
<i>Leucopternis schistacea</i>	92	T	I	X	X	X	X	X	X
SLATE-COLOURED HAWK									
<i>Buteogallus urubitinga</i>	0	1	F	X	X	X	X	X	X
GREAT BLACK-HAWK									
<i>Buteogallus meridionalis</i>	0	1	F	X	X	X	X	X	X
SAVANNA HAWK									
<i>Parabuteo unicinctus</i>	0	6	I	X	X	X	X	X	X
HARRIS' HAWK									
<i>Busarellus nigricollis</i>	0	1	F	X	X	X	X	X	X
BLACK-COLLARED HAWK									
<i>Harpagofidiaeus coronatus</i>	0	6	O	X	X	X	X	X	X
CROWNED EAGLE									
<i>Buteo nitida</i>	92*		O	X	X	X	X	X	X
GREY HAWK									
<i>Buteo maguirostris</i>	0	T	F	X	X	X	X	X	X
ROADSIDE HAWK									
<i>Buteo albicaudatus</i>	0	1	I	X	X	X	X	X	X
WHITE-TAILED HAWK									
<i>Buteo albonotatus</i>	0	3	O	X	X	X	X	X	X
ZONE-TAILED HAWK									
<i>Morphnus guianensis</i>	92*		O	X	X	X	X	X	X
CRESTED EAGLE									

THR

NT

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	SF	sF	DF	FI	CH	SV	CR	CS	RM
NT	<i>Harpia harpyja</i>				6	O		X										
	BLACK-AND-WHITE HAWK-EAGLE								X									
NT	<i>Spizastur melanoleucus</i>	0			1	O			X									
	BLACK HAWK-EAGLE	0			6	I		X			X							
	FALCONIDAE (Caracaras, Falcons): 9 species																	
	<i>Daptrius ater</i>				6	I		X	X									
	BLACK CARACARA				6	O		X										
	<i>Daptrius americanus</i>				1	F			X									
	RED-THROATED CARACARA				1	F				X								
	<i>Caracara plancus</i>	0			1	F				X								
	CRESTED CARACARA	0			1	F				X								
	<i>Mitogo chimachima</i>	0			1	I				X								
	YELLOW-HEADED CARACARA	0			1	I				X								
	<i>Herpethothes cassinans</i>	0			6	I		X	X									
	LAUGHING FALCON	0			6	I		X	X									
	<i>Micrastur semitorquatus</i>	0			6	F				X								
	COLLARED FOREST-FALCON	0			6	F				X								
	<i>Falco sparverius</i>	0			1	F				X								
	AMERICAN KESTREL	0			1	F				X								
	<i>Falco femoralis</i>	0			1	F				X								
	APLOMADO FALCON	0			1	I			X									
	BAT FALCON	0			1	I			X									
	CRACIDAE (Chachalacas, Guans, Curassows): 4 species																	
	<i>Ortalis guttata</i>	0			1	F			X	X								
	SPECKLED CHACHALACA	0			2	I		X	X	X								
	<i>Penelope jacquacu</i>	0			1	O		X	X	X								
	SPIX'S GUAN	0			1	O		X	X	X								
	<i>Mitu tuberosa</i>	0			1	O		X	X	X								
	BLUE-THROATED PIPING-GUAN	0			1	O		X	X	X								
	RAZOR-BILLED CURASSOW	0			6	F		X	X	X								
	ODONTOPHORIDAE (Wood-Partridges): 1 species																	
	<i>Odontophorus stellatus</i>	0			6	F		X	X	X								
	STARRED WOOD-QUAIL	0			6	F		X	X	X								
	RALLIDAE (Rails, Coots): 5 species																	
NT	<i>Micropygia schomburgkii</i>	94*			1	I								X				
	OCELLATED CRAKE	0			3	O			X									
	<i>Laterallus melanophaius</i>	0			1	F												
	RUFOUS-SIDED CRAKE	0			3	I												
	<i>Aramides cajaneus</i>	0			3	I												
	GREY-NECKED WOOD-RAIL	0			6	O												
	<i>Porzana albicollis</i>	0			3	I												
	ASH-THROATED CRAKE	0			6	O												
	<i>Porphyryla martinicus</i>	0			6	O												
	PURPLE GALLINULE	0			6	O												
	HELIORNITHIDAE (Sungrebes): 1 species																	
	<i>Helioornis fulica</i>	0			6	I				X								
	SUNGREBE	0			6	I				X								

CICONIIDAE (Storks): 3 species

Mycteria americana WOOD STORK X X X X
Ciconia maguari MAGUARI STORK X X X X
Jabiru mycteria JABIRU X X X X

CATHARTIDAE (New World Vultures): 5 species

Coragyps atratus BLACK VULTURE X X X X X X X X
Cathartes aura TURKEY VULTURE X X X X X X X X
Cathartes burrovianus LESSER YELLOW-HEADED VULTURE X X X X X X X X
Cathartes melambrotus GREATER YELLOW-HEADED VULTURE X X X X X X X X
Sarcorampus pupa KING VULTURE X X X X X X X X

PANDIONIDAE (Osprey): 1 species

Pandion haliaetus OSPREY X X X X

ACCIPITRIDAE (Kites, Hawks, Eagles): 24 species

Leptodon cayanensis GREY-HEADED KITE X X X X
Chondrohierax uncinatus HOOK-BILLED KITE X X X X
Elanoides forficatus SWALLOW-TAILED KITE X X X X X X X X
Gampsonyx swainsonii PEARL KITE X X X X
Rostrhamus sociabilis SNAIL KITE X X X X
Rostrhamus hamatus SLENDER-BILLED KITE X X X X
Harpagus bidentatus DOUBLE-TOOTHED KITE X X X X
Ictinia plumbea PLUMBEOUS KITE X X X X X X X X
Circus buffoni LONG-WINGED HARRIER X X X X X X X X
Geranospiza caerulescens CRANE HAWK X X X X
Leucopternis schistacea SLATE-COLOURED HAWK X X X X
Buteo gallus urubitinga GREAT BLACK-HAWK X X X X X X X X
Buteo gallus meridionalis SAVANNA HAWK X X X X X X X X
Parabuteo unicinctus HARRIS' HAWK X X X X X X X X
Buteo cellus nigricollis BLACK-COLLARED HAWK X X X X X X X X
Harpohalictus coronatus CROWNED EAGLE X X X X X X X X
Buteo nitida GREY HAWK X X X X X X X X
Buteo magirostris ROADSIDE HAWK X X X X X X X X
Buteo albicaudatus WHITE-TAILED HAWK X X X X X X X X
Buteo albonotatus ZONE-TAILED HAWK X X X X X X X X
Morphnus guianensis CRESTED EAGLE X X X X

THR

NT

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	SF	sF	DF	FI	CH	SV	CR	CSRM	
NT	<i>Harpia harpyja</i>			6	O		X											
NT	<i>Spizastur melanoleucus</i>	0		1	O		X	X										
	<i>Spizaetus tyrannus</i>	0		6	I		X	X			X							
	FALCONIDAE (Caracaras, Falcons): 9 species																	
	<i>Daptrius ater</i>			6	I		X	X										
	<i>Daptrius americanus</i>			6	O		X		X									
	<i>Caracara plancus</i>	0		1	F				X	X	X	X	X	X	X	X	X	
	<i>Mitogo chimachima</i>	0		1	F				X	X	X	X	X	X	X	X	X	
	<i>Herpotheres cacinmans</i>	0		1	I				X	X	X	X	X	X	X	X	X	
	<i>Micrastur semitorquatus</i>	0		6	I		X	X	X		X							
	<i>Falco sparverius</i>	0		6	F				X	X	X	X	X	X	X	X	X	
	<i>Falco femoralis</i>	0		1	F				X	X	X	X	X	X	X	X	X	
	<i>Falco rufigularis</i>	0		1	I				X		X	X	X	X	X	X	X	
	CRACIDAE (Chachalacas, Guans, Curassows): 4 species																	
	<i>Ortalis guttata</i>	0		1	F			X	X		X	X	X	X	X	X	X	
	<i>Penelope jacquacu</i>	0		2	I		X	X	X									
	<i>Pipile cumanensis</i>	0		1	O		X	X	X									
	<i>Mitu tuberosa</i>	0		1	O		X	X	X									
	ODONTOPHORIDAE (Wood-Partridges): 1 species																	
	<i>Odontophorus stellatus</i>	0		6	F		X	X	X									
	RALLIDAE (Rails, Coots): 5 species																	
NT	<i>Micropygia schomburgkii</i>	94*			I									X				
	<i>Laterallus melanophaius</i>	0		3	O			X								X	X	
	<i>Aramidides cajanica</i>	0		1	F											X	X	
	<i>Porzana albicollis</i>	0		3	I											X	X	
	<i>Porphyryla martinicus</i>	0		6	O											X	X	
	HELIORNITHIDAE (Sungrebes): 1 species																	
	<i>Heliornis fulica</i>	0		6	I				X								X	

EURYPYGIDAE (Sunbittern): 1 species										
<i>Eurypyga helias</i>										
	0	T	1	I	X	X	X		X	X
SUNBITTERN										
ARAMIDAE (Limpkin): 1 species										
<i>Aramus squaratus</i>	0		1	F					X	X
LIMPKIN										
PSOPHIIDAE (Trumpeters): 1 species										
<i>Psophia leucophaea</i>	0		4	O	X		X			
PALE-WINGED TRUMPETER										
JACANIDAE (Jacanas): 1 species										
<i>Jacana jacana</i>	0	T	1	F					X	X
WATTLED JACANA										
SCOLOPACIDAE (Sandpipers, Snipe): 8 species										
<i>Gallinago paraguanae</i>			1	O					X	
SOUTH AMERICAN SNIBE										
<i>Bartramia longicauda</i>			1	O					X	
UPLAND SANDPIPER							N			
<i>Tringa melanoleuca</i>	0		1	I			N		X	X
GREATER YELLOWLEGS										
<i>Tringa flavipes</i>	0		1	I			N		X	X
LESSER YELLOWLEGS										
<i>Tringa solitaria</i>	0		6	I			N		X	X
SOLITARY SANDPIPER										
<i>Actitis macularia</i>	0		1	F			N		X	X
SPOTTED SANDPIPER										
<i>Calidris minutilla</i>	0		6	O			N		X	
LEAST SANDPIPER										
<i>Calidris melanotos</i>	0		6	I			N		X	X
PECTORAL SANDPIPER										
RECURVIROSTRIDAE (Stilts, Avocets): 1 species										
<i>Himantopus melanurus</i>			6	O						X
WHITE-BACKED STILT										
CHARADRIIDAE (Plovers, Lapwings): 4 species										
<i>Pluvialis dominica</i>	0		6	I			N		X	X
AMERICAN GOLDEN-PI OVER										
<i>Charadrius collaris</i>	0		1	F					X	
COLLARED PLOVER										
<i>Vanellus cayanus</i>	0		1	I					X	X
PIED LAPWING										
<i>Vanellus chilensis</i>	0		1	F					X	X
SOUTHERN LAPWING										
LARIDAE (Gulls, Terns): 2 species										
<i>Phaethusa simplex</i>	92*		1	I					X	
LARGE-BILLED TERN										
<i>Sterna superciliosa</i>	0		1	I					X	X
YELLOW-BILLED TERN										

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	SF	sF	DF	FI	CH	SV	CR	CSRM
	RYNCHOPIDAE (Skimmers): 1 species																
	<i>Rynchops niger</i>	0	1		I												X
	BLACK SKIMMER																
	COLUMBIDAE (Pigeons, Doves): 13 species																
	<i>Columba speciosa</i>		1		O		X	X	X	X	X	X	X				
	<i>Columba picazuro</i>	0	3		I		X	X	X	X	X	X	X	X	X	X	
	<i>Columba caneyensis</i>	0	T		F		X	X	X	X	X	X	X	X	X	X	
	<i>Columba plumbea</i>	92			I		X	X	X	X	X	X	X	X	X	X	
	<i>Columba subcinerea</i>	0	1		I		X	X	X	X	X	X	X				
	<i>Zenaidura macroura</i>	0	1		O									X	X		
	<i>Columbina talpacoti</i>	0	1		I		X	X	X	X	X	X	X	X	X	X	
	<i>Columbina picui</i>	0	T		F				X	X	X	X	X	X	X	X	
	<i>Claravis pretiosa</i>	0	1		I		X	X	X	X	X	X	X	X	X	X	
	<i>Leptotila terrauxi</i>	0	T		F		X	X	X	X	X	X	X	X	X	X	
	<i>Leptotila rufaxilla</i>	0	T	2	F		X	X	X	X	X	X	X	X	X	X	
	<i>Geotrygon violacea</i>	0	6		O		X	X	X	X	X	X	X	X	X	X	
	<i>Geotrygon montana</i>	0	T	5	I		X	X	X	X	X	X	X	X	X	X	
	PSITTACIDAE (Macaws, Parrots): 21 species																
	<i>Ara ararauna</i>	0	1		F		X	X	X	X	X	X	X				
THR	<i>Ara militaris</i>	92*			O		X	X	X	X	X	X	X				
	<i>Ara macao</i>	0	5		O		X	X	X	X	X	X	X				
	<i>Ara chloroptera</i>	0	1		I		X	X	X	X	X	X	X				
	<i>Ara severa</i>	0	T	1	F		X	X	X	X	X	X	X	X	X	X	
	<i>Ara auricollis</i>	0	T	3	I		X	X	X	X	X	X	X	X	X	X	
	<i>Ara nobilis</i>	0	1		I		X	X	X	X	X	X	X				
	<i>Aratinga leucophthalma</i>	0	3		F		X	X	X	X	X	X	X	X	X	X	
	<i>Aratinga weddellii</i>	0	3		F		X	X	X	X	X	X	X	X	X	X	
	<i>Aratinga aurca</i>	0	3		F		X	X	X	X	X	X	X	X	X	X	
	<i>Pyrrhura molinae</i>	0	6		O		X	X	X	X	X	X	X	X	X	X	
	<i>Forpus xanthopterygius</i>	0	6		F		X	X	X	X	X	X	X	X	X	X	
	<i>Brotogeris chiriri</i>	0	1		F		X	X	X	X	X	X	X	X	X	X	
	<i>Brotogeris cyanoptera</i>	92			F		X	X	X	X	X	X	X	X	X	X	
	<i>Brotogeris sanctithomae</i>	0	6		I		X	X	X	X	X	X	X	X	X	X	

<i>Pionites leucogaster</i>					6	O			X						
<i>Pionopsitta barrabandi</i>					6	O	X	X	X						
<i>Pionus meustruus</i>		0	1	F	1	F	X	X	X						
<i>Amazona aestiva</i>		0	1	I	1	I	X	X	X	X					
<i>Amazona amazonica</i>		0	1	I	1	I	X	X	X	X					
<i>Amazona farinosa</i>		0	6	I	6	I	X	X	X	X					
OPISTHOCOMIDAE (Hoatzin): 1 species															
<i>Opisthocomus hoatzin</i>		0	1	F	1	F	X	X	X						X
CUCULIDAE (Cuckoos): 9 species															
<i>Coccyzus cinereus</i>		0	1	I	1	I	X	X	X	X					X
<i>Coccyzus americanus</i>		0	2	O	2	O	X	X	X	X					X
<i>Piaya cayana</i>		0	1	F	1	F	X	X	X	X					X
<i>Piaya mitrata</i>		0	T	3	1	I	X	X	X	X					X
<i>Crotaphaga major</i>		0	1	O	1	O	X	X	X	X					X
<i>Crotaphaga ani</i>		0	T	1	F	F	X	X	X	X	X				X
<i>Guira guira</i>		0	1	F	1	F	X	X	X	X	X				X
<i>Tapera naevia</i>		0	T	3	F	F	X	X	X	X	X				X
<i>Dromococcyx phasianellus</i>		0 ⁹²					X	X	X	X					X
TYTONIDAE (Barn-Owls): 1 species															
<i>Tyto alba</i>		0	3	I	3	I	X	X	X						X
STRIGIDAE (Owls): 9 species															
<i>Otus choliba</i>		0	3	F	3	F	X	X	X	X	X				X
<i>Otus watsonii</i>		0	6	I	6	I	X	X	X	X					X
<i>Bubo virginianus</i>		0	6	O	6	O	X	X	X	X					X
<i>Strix hubbuda</i>		0	6	I	6	I	X	X	X	X					X
<i>Lophostrix cristata</i>		0	6	O	6	O	X	X	X	X					X
<i>Pulsatrix perspicillata</i>		0	5	O	5	O	X	X	X	X	X				X
<i>Glaucidium brasilianum</i>		95	6	O	6	O	X	X	X	X	X	X			X
<i>Speotyto cunicularia</i>		0	6	O	6	O	X	X	X	X	X				X
<i>Asio clamator</i>		0	6	O	6	O	X	X	X	X	X				X

Status Species

Rec Trap Ref Abun Mig TF IF RF SF sF DF FI CH SV CR CS RM

RAMPHASTIDAE (Toucans): 5 species

<i>Pteroglossus inscriptus</i>								X	X										
<i>Pteroglossus castanotis</i>	0	T	1					X	X					X					X
<i>Pteroglossus beauharnaisii</i>	92*							X	X	X	X								
<i>Ramphastos tocanus</i>	0							X	X	X	X			X					X
<i>Ramphastos toco</i>	0							X						X	X	X			X

PICIDAE (Woodpeckers): 16 species

<i>Picumnus albosquammatus</i>	0	T	1	F				X	X					X	X				X
<i>Picumnus rufiventris</i>	0	T	6	I				X	X										
<i>Melanerpes candidus</i>	0			I										X	X	X			X
<i>Melanerpes crinitatus</i>	0			F				X	X					X	X				X
<i>Veniliornis passerinus</i>	0			I				X	X	X	X			X	X				X
<i>Veniliornis affinis</i>	0			I				X	X	X									
<i>Piculus lanceolatus</i>	94*	T	4	I				X	X	X									
<i>Piculus chrysochloros</i>	92			I				X	X	X				X					
<i>Colaptes campestris</i>	0			F				X	X	X				X	X	X			X
<i>Celeus elegans</i>	0			O				X	X										
<i>Celeus lugubris</i>	0			I				X	X	X									
<i>Celeus flacus</i>	94			O				X	X	X									
<i>Celeus spectabilis</i>	0			O				X											
<i>Dryocopus lineatus</i>	0			I				X	X	X				X	X	X			X
<i>Campephilus rubricollis</i>	0			I				X	X										
<i>Campephilus melanoleucos</i>	0			F				X	X	X				X	X	X			X

DENDROCOLAPTIDAE (Woodcreepers): 14 species

<i>Dendrocincla fuliginosa</i>	0			I				X	X	X	X			X	X				
<i>Dendrocincla merula</i>	0	T	4	F				X	X	X	X								
<i>Decorychura longicauda</i>	0	T	2	F				X	X	X	X								
<i>Sittasomus griseicapillus</i>	0	T	2	F				X	X	X	X			X	X				X
<i>Nasica longirostris</i>	0			I				X	X	X	X			X					
<i>Xiphocolaptes major</i>	94*			O				X	X	X	X								X
<i>Dendrocolaptes certhia</i>	0			O				X	X	X	X			X	X				X
<i>Dendrocolaptes picumnus</i>	0			O				X	X	X	X								X

Status Species Rec Trap Ref Abun Migz TF IF RF SF sF DF FI CH SV CR CS RM

<i>Thaenomanes schistogynus</i>	BLUISH-SLATE ANTSRIKE	0		3	I			X	X	X	X								
<i>Myrmotherula brachyura</i>	PYGMY ANTREN	0		6	I			X	X	X	X								
<i>Formicivora rufa</i>	RUSTY-BACKED ANTWREN	0	T	3	F													X	X
<i>Cercomacra cinerascens</i>	GREY ANTBIRD	0		4	O			X											
<i>Cercomacra melanaria</i>	MAYO GROSSO ANTBIRD	0		3	I													X	X
<i>Myrmoborus leucophrys</i>	WHITE-BROWED ANTBIRD	0	T	1	F			X	X	X	X								
<i>Myrmoborus myotherinus</i>	BLACK-FACED ANTBIRD	0		6	O			X	X	X	X								
<i>Hypocnemoides maculicauda</i>	BAND-TAILED ANTBIRD	0	T	3	F			X	X	X	X								
<i>Scaligeria naxvva</i>	SILVERED ANTBIRD	0		6	I			X	X	X	X								
<i>Myrmeciza hemimelaena</i>	CHESTNUT-TAILED ANTBIRD	0	T	4	I			X	X	X	X								
<i>Myrmeciza hyperythra</i>	PLUMBEOUS ANTBIRD	0	T	2	F			X	X	X	X								X
<i>Myrmeciza atrothorax</i>	BLACK-THROATED ANTBIRD	0		3	F			X	X	X	X								X
<i>Phlegopsis nigromaculata</i>	BLACK-SPOTTED BARE-EYE	0	T	2	F			X	X	X	X								X
FORMICARIIDAE (Anthrushes, Antpittas): 3 species																			
<i>Formicarius colina</i>	RUFOUS-CAPPED ANTHTHRUSH	0		6	O			X											
<i>Formicarius analis</i>	BLACK-FACED ANTHTHRUSH	0	T	2	I			X	X	X	X								
<i>Hylopezus berlepschi</i>	AMAZONIAN ANTPITTA	0		6	O			X	X	X	X								
COTINGIDAE (Cotingas): 5 species																			
<i>Lipaugus vociferans</i>	SCREAMING PIHA	0		6	I			X	X	X	X								
<i>Cotinga maynana</i>	PLUM-THROATED COTINGA	0		6	O			X	X	X	X								
<i>Gymnoderus foetidus</i>	BARE-NECKED FRUITCROW	92		1	I			X	X	X	X								X
<i>Querula purpurata</i>	PURPLE-THROATED FRUITCROW	92		1	I			X	X	X	X								X
<i>Cephalopterus ornatus</i>	AMAZONIAN UMBRELLABIRD	0		6	O			X											X
PIPRIDAE (Manakins): 7 species																			
<i>Pipra fasciata</i>	BAND-TAILED MANAKIN	0	T	1	F			X	X	X	X								X
<i>Pipra chloromeros</i>	ROUND-TAILED MANAKIN	0		6	O			X	X	X	X								
<i>Pipra coronata</i>	BLUE-CROWNED MANAKIN	0		6	O			X	X	X	X								
<i>Neopelma sulphureiventer</i>	SULPHUR-BELLIED TYRANT-MANAKIN	92	T	1	I			X	X	X	X								X
<i>Tyrannistes stolzmanni</i>	DWARF TYRANT-MANAKIN	0		6	I			X	X	X	X								X
<i>Schiffornis major</i>	GREATER SCHIFFORNIS	0		6	O			X	X	X	X								X
<i>Schiffornis turdinus</i>	THRUSH-LIKE SCHIFFORNIS	0	T	4	I			X	X	X	X								X

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	SF	sF	DF	FI	CI	SV	CR	CSRM
NT	<i>Knipolegus hudsoni</i>	0	T	1	F	A						X	X	X			X
	<i>Hymenops perspicillatus</i>	0	T	3	F	A											X X
	<i>Floicula albiventris</i>	0	T	3	I	A											X X
	<i>Arundinicola leucocephala</i>	0	T	3	F												X X
NT	<i>Alcedrinus tricolor</i>	0		6	O												X
	<i>Gubernetes yctajpa</i>	0	T	1	I							X					X
	<i>Satrapa icterophrys</i>	0	T	1	F	A						X	X	X			X X
	<i>Machelonus rixosus</i>	0	T	1	F												X X
	<i>Attila cinnamomeus</i>	0		4	I		X	X				X					X
	<i>Attila boliviensis</i>	0	T	3	F		X	X	X			X					X X
	<i>Casiornis rufa</i>	0		5	I	A						X					X
	<i>Laniocera hypopyrrhia</i>			4	O		X					X					X
	<i>Sirystes sibilator</i>	92*			O												X
	<i>Myiarchus tuberculifer</i>	0		3	F		X	X				X	X	X			X X
	<i>Myiarchus swainsoni</i>	0	T	1	F	A						X	X	X			X X
	<i>Myiarchus cinerascens</i>	0	T	1	F		X	X	X			X	X	X			X X
	<i>Myiarchus tyrannulus</i>	92			I	A						X	X	X			X X
	<i>Tyrannus albogularis</i>			1	F	A						X	X	X			X X
	<i>Tyrannus melancholicus</i>	0	T	1	F	A						X	X	X			X X
	<i>Tyrannus saxana</i>	0		6	I	A						X	X	X			X X
	<i>Tyrannus tyrannus</i>	0		1	F	N						X	X	X			X X
	<i>Empidonax varius</i>	92			I	A						X	X	X			X X
	<i>Myiophobus pitangus</i>	0	T	1	F		X	X	X			X	X	X			X X
	<i>Myiodynastes maculatus</i>	0	T	1	I	A						X	X	X			X X
	<i>Myiozetetes similis</i>	0	T	3	F		X	X	X			X	X	X			X X
	<i>Phibolador litor</i>	0	T	3	F		X	X	X			X	X	X			X X
	<i>Pitangus sulphuratus</i>	0	T	1	F		X	X	X			X	X	X			X X
	<i>Xenopsaris albinnucha</i>	94	T	1	O							X	X	X			X X
	<i>Pachyrhamphus polychlopterus</i>	0	T	1	I		X	X	X			X	X	X			X X
	<i>Pachyrhamphus marginatus</i>	0	T	6	O		X	X	X			X	X	X			X X
	<i>Pachyrhamphus minor</i>	92*			I		X										X
	<i>Tityra cayana</i>	0		6	I		X	X	X			X	X	X			X X
	<i>Tityra semifasciata</i>	0		3	I		X	X	X			X	X	X			X X
	<i>Tityra inquisitor</i>	92*			I		X	X	X			X	X	X			X X

CORVIDAE (Jays): 2 species										
<i>Cyanocorax cyanocephalus</i>										X X X X X X
<i>Cyanocorax chrysops</i>	0	T	1	F						X X X X X X
	0		1	I						X X X X X X
VIREONIDAE (Vireos): 4 species										
<i>Cyclopterus gujanensis</i>	0		3	I						X X X X X X
<i>Vireo olivaceus</i>	0	T	6	I	'A, N'	X				X X X X X X
<i>Hypothymis pectoralis</i>	95	T		O		X				X X X X X X
<i>Hypothymis ochraceiceps</i>			6	O	X					X X X X X X
TURDINAE (Thrushes): 6 species										
<i>Cathartes ustulatus</i>			1	O	N					X X X X X X
<i>Turdus amurochalinus</i>	0	T	1	F	A					X X X X X X
<i>Turdus ignobilis</i>	0		6	I						X X X X X X
<i>Turdus hainanensis</i>	0	T	1	I		X				X X X X X X
<i>Turdus hainanensis</i>	92*	T		O		X				X X X X X X
<i>Turdus albicollis</i>	92*			I						X X X X X X
MIMIDAE (Mockingbirds): 2 species										
<i>Mimus saturninus</i>	0		3	F						X X X X X X
<i>Mimus triurus</i>			6	O	A					X X X X X X
TROGLODYTIDAE (Wrens): 8 species										
<i>Donacobius atricapillus</i>	0	T	3	F						X X X X X X
<i>Campylorhynchus turdinus</i>	0		3	I		X				X X X X X X
<i>Cistothorus platensis</i>	93			F						X X X X X X
<i>Thryothorus gentilis</i>	92	T		F		X				X X X X X X
<i>Thryothorus guarayanus</i>	0	T	1	F		X				X X X X X X
<i>Troglodytes aedon</i>	0	T	1	F		X				X X X X X X
<i>Microcerculus marginatus</i>			4	I		X				X X X X X X
<i>Cyphorhinus aradii</i>	0		2	I		X				X X X X X X
POLIPTILIDAE (Gnatcatchers): 1 species										
<i>Poliptila dumicola</i>	0	T	6	F						X X X X X X

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	Sf	DF	FI	CH	SV	CR	CSRM
	HIRUNDINIDAE (Swallows): 11 species															
	<i>Tachycineta albiventer</i>	0	6	F										X	X	X
	<i>Tachycineta leucorrhoa</i>	92		I	A								X	X	X	X
	<i>Progne tapera</i>	0	1	I	A								X	X	X	
	<i>Progne subis</i>	92*		O	N											X
	<i>Progne chalybea</i>	92		F	A								X	X	X	X
	<i>Notiochelidon cyanoleuca</i>	92		I	A?								X	X	X	
	<i>Aticora fasciata</i>	92*		F												X
	<i>Stelgidopteryx fuscata</i>	0	3	I	I			X					X	X		
	<i>Stelgidopteryx ruficollis</i>	0	3	F	A?								X	X	X	X
	<i>Riparia riparia</i>	0	1	F	N								X	X	X	
	<i>Hirundo rustica</i>	0	1	F	N				X				X	X	X	
	MOTACILLIDAE (Pipits): 1 species															
	<i>Anthus lutescens</i>	0	T	I									X			X
	<i>YELLOWISH PIPT</i>															
	PARULIDAE (Wood Warblers): 5 species															
	<i>Parula ptilinopus</i>	92		I					X	X			X			X
	<i>Geothlypis aquinoctialis</i>	0	T	I	F								X			X
	<i>Basiluterus culicivorus</i>	0	T	2	F			X	X	X						
	<i>Basiluterus flavocelis</i>	92*		O									X			
	<i>Basiluterus rivularis</i>	0	6	O												X
	<i>NEOTROPICAL RIVER WARBLER</i>															
	EMBERIZIDAE (Tanagers, Buntings, Sparrows and Allies): 54 species															
	<i>Ammodramus hamerhalsi</i>	0	T	1	F								X	X	X	X
	<i>Ammodramus aurifrons</i>	0	1	I					X	X			X			
	<i>Arremon taciturnus</i>	0	T	4	I				X	X						
	<i>Paroaria coronata</i>	0	6	I									X	X		
	<i>Paroaria gularis</i>	0	T	3	F				X	X			X	X	X	X
	<i>Coereba flavola</i>	0	1	F					X	X			X	X		
	<i>Conirostrum speciosum</i>	0	6	I					X	X			X	X		
	<i>Schistochlamys melanopsis</i>	0	T	1	F				X	X			X	X	X	X
	<i>Cypsioides hirundinacea</i>	0	T	1	F				X	X			X	X	X	X
	<i>Cissops leucirana</i>	94		I												X

NT

<i>Thyropopsis sordida</i>				92	T											X	X	
<i>Hemithraupis guira</i>				92		I					X	X				X	X	
<i>Hemithraupis flavicollis</i>						O	6		X									
<i>Nemosia pilenta</i>				92		I					X	X				X		
<i>Eucometis penicillata</i>						I	1				X	X				X		
<i>Lanio versicolor</i>				92*		I			X	X						X		
<i>Tachyphonus lactuosus</i>				0	T	F	4		X	X	X							
<i>Habia rubica</i>				0	T	F	4		X	X								
<i>Piranga olivacea</i>						O	6	N	X			X				X		
<i>Ramphocelus carbo</i>				0	T	F	1		X	X		X				X	X	
<i>Thraupis sayaca</i>				0	T	F	1		X	X		X				X	X	
<i>Thraupis palmarum</i>				0	T	F	1		X	X		X				X	X	
<i>Euphonia chlorotica</i>				0	T	F	1		X	X		X				X	X	
<i>Euphonia lanirostris</i>				0	T	I	3		X	X		X				X	X	
<i>Euphonia chrysopasta</i>						O	4		X									
<i>Tangara mexicana</i>				92		I			X	X						X		
<i>Tangara chilensis</i>				0		I	6		X	X		X						
<i>Tangara schrankii</i>				0		I	5		X	X		X						
<i>Tangara nigrovincta</i>						I	6		X	X		X						
<i>Tangara celia</i>						O	6		X									
<i>Dacnis lineata</i>				92*		O			X							X		
<i>Dacnis cayana</i>				0	T	F	4		X	X		X				X		X
<i>Cyanerpes cyaneus</i>				0		I	4		X	X		X						
<i>Tersina viridis</i>						O	6		X									
<i>Corophaspiza melanotis</i>				95		I										X		
<i>Corophospiza cucullatus</i>				94	T	I			X			X				X		
<i>Donacobispiza albifrons</i>				94	T	I						X				X	X	
<i>Sicalis flavola</i>				0	T	F	6					X				X	X	
<i>Emberizoides herbicola</i>				0	T	F	1					X				X	X	
<i>Embernagra platensis</i>				0		O	6									X		
<i>Volatinia jacarina</i>				0	T	F	3									X	X	
<i>Sporophila schistacea</i>				0	T	I	1		X	X						X	X	
<i>Sporophila collaris</i>				0	T	I	1	A								X	X	
<i>Sporophila lincola</i>				0	T	F	1	A								X	X	
<i>Sporophila caerulea</i>				0	T	F	1	A								X	X	
<i>Sporophila leucoptera</i>				92	T	I										X	X	

THR

Status Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	SF	sF	DF	FI	CH	SV	CR	CS	SRM
HIRUNDINIDAE (Swallows): 11 species																	
<i>Tachycineta albicenter</i>	0	6	F											X	X	X	
<i>Tachycineta leucorrhoa</i>	92	1	I	A										X	X	X	
<i>Progne tapera</i>	0	1	I	A										X	X	X	
<i>Progne subis</i>	92*		O	N										X	X	X	
<i>Progne chalybea</i>	92		F	A										X	X	X	
<i>Notiochelidon cyanolenca</i>	92*		I	A?										X	X	X	
<i>Atitoca fasciata</i>	0	3	I				X							X	X	X	
<i>Stelgidopteryx fucata</i>	0	3	F	A?										X	X	X	
<i>Stelgidopteryx ruficollis</i>	0	1	F	N										X	X	X	
<i>Riparia riparia</i>	0	1	F	N				X						X	X	X	
<i>Hirundo rustica</i>	0	1	F	N										X	X	X	
MOTACILLIDAE (Pipits): 1 species																	
<i>Anthus lutescens</i>	0	1	I											X	X	X	
PARULIDAE (Wood Warblers): 5 species																	
<i>Parula pitayumi</i>	92		I					X	X					X	X	X	
<i>Geothlypis acquiductialis</i>	0	T	F					X	X					X	X	X	
<i>Basilicuster culicivorus</i>	0	T	F				X	X	X								
<i>Basilicuster flavcolus</i>	92*		O					X									
<i>Basilicuster ritularis</i>	6		O														
EMBERIZIDAE (Tanagers, Buntings, Sparrows and Allies): 54 species																	
<i>Ammodramus humeralis</i>	0	T	F								X	X	X	X	X	X	
<i>Ammodramus aurifrons</i>	0	1	I					X	X					X	X	X	
<i>Arremon taciturnus</i>	0	T	I					X	X								
<i>Paroaria coronata</i>	0	6	I					X	X					X	X	X	
<i>Paroaria gularis</i>	0	T	F					X	X					X	X	X	
<i>Coccyza flaccida</i>	0	1	F					X	X					X	X	X	
<i>Controstrium speciosum</i>	0	6	I					X	X					X	X	X	
<i>Schistochlamys melanopsis</i>	0	T	F					X	X					X	X	X	
<i>Cypsuagra hirundinacea</i>	0	T	O					X						X	X	X	
<i>Cissopis leucorhoa</i>	94		I														X

NT

<i>Thlypopsis sordida</i>	ORANGE-HEADED TANAGER	92	T		F		X	X	X	X	X	X	
<i>Hemithraupis guina</i>	GUIRA TANAGER	92			I		X	X	X	X	X	X	
<i>Hemithraupis flavicollis</i>	YELLOW-BACKED TANGER			6	O		X						
<i>Nonosia pileata</i>	HOODED TANAGER	92			I		X	X	X	X	X	X	
<i>Eucometis penicillata</i>	GREY-HEADED TANAGER	0	T	1	I		X	X	X	X	X	X	
<i>Lanio versicolor</i>	WHITE-WINGED SHRIKE-TANAGER	92*			I		X	X	X	X	X	X	
<i>Tachyphonus luctuosus</i>	WHITE-SHOULDERED TANAGER	0	T	4	F		X	X	X	X	X	X	
<i>Habia rubica</i>	RED-CROWNED ANT-TANAGER	0	T	4	F		X	X	X	X	X	X	
<i>Piranga olicacea</i>	SCARLET TANAGER			6	O	N	X	X	X	X	X	X	
<i>Ramphocelus carbo</i>	SILVER-BEAKED TANAGER	0	T	1	F		X	X	X	X	X	X	
<i>Thraupis sayaca</i>	SAYACA TANAGER	0	T	1	F		X	X	X	X	X	X	
<i>Thraupis palmarum</i>	PALM TANAGER	0	T	1	F		X	X	X	X	X	X	
<i>Euphonia chlorotica</i>	PURPLE-THROATED EUPHONIA	0	T	1	F		X	X	X	X	X	X	
<i>Euphonia laniirostris</i>	THICK-BILLED EUPHONIA	0	T	3	I		X	X	X	X	X	X	
<i>Euphonia chrysopasta</i>	WHITE-LORED EUPHONIA			4	O		X	X	X	X	X	X	
<i>Tangara mexicana</i>	TURQUOISE TANAGER	92			I		X	X	X	X	X	X	
<i>Tangara chilensis</i>	PARADISE TANAGER	0		6	I		X	X	X	X	X	X	
<i>Tangara schirankii</i>	GREEN-AND-GOLD TANAGER	0		5	I		X	X	X	X	X	X	
<i>Tangara nigrocincta</i>	MASKED TANAGER			6	I		X	X	X	X	X	X	
<i>Tangara velia</i>	OPAL-RUMPED TANAGER			6	O		X	X	X	X	X	X	
<i>Dacnis lineata</i>	BLACK-FACED DACNIS	92*			O		X	X	X	X	X	X	
<i>Dacnis cayana</i>	BLUE DACNIS	0	T	4	F		X	X	X	X	X	X	
<i>Cyanerpes cyaneus</i>	RED-LEGGED HONEYCREEPER	0		4	I		X	X	X	X	X	X	
<i>Tersina viridis</i>	SWALLOW-TANAGER			6	O		X	X	X	X	X	X	
<i>Corophospiza melanotis</i>	BLACK-MASKED FINCH	95	T		I								X
<i>Corophospiza cucullatus</i>	RED-CRESTED FINCH	94	T		I						X	X	X
<i>Donacospiza albifrons</i>	LONG-TAILED REED-FINCH	94	T		I						X	X	X
<i>Stelalis flavella</i>	SAFFRON FINCH	0	T	6	F						X	X	X
<i>Emberizoides herbicola</i>	WEDGE-TAILED GRASS-FINCH	0	T	1	F						X	X	X
<i>Embernagra platensis</i>	GREAT PAMPA-FINCH	0		6	O						X	X	X
<i>Volatinia jacarina</i>	BLUE-BLACK GRASSQUIT	0	T	3	F						X	X	X
<i>Sporophila schistacea</i>	SLATE-COLOURED SEEDEATER	0	T	1	F		X	X	X	X	X	X	X
<i>Sporophila collaris</i>	RUSTY-COLLARED SEEDEATER	0	T	1	I	A					X	X	X
<i>Sporophila lineola</i>	LINED SEEDEATER	0	T	1	F	A					X	X	X
<i>Sporophila caerulescens</i>	DOUBLE-COLLARED SEEDEATER	0	T	1	F	A					X	X	X
<i>Sporophila leucoptera</i>	WHITE-BELLIED SEEDEATER	92	T		I						X	X	X

THR

Status	Species	Rec	Trap	Ref	Abun	Mig	TF	IF	RF	SF	sF	DF	FI	CH	SV	CR	CS	RM	
	<i>Sporophila hypoxantha</i>	95		I									X	X	X				
NT	<i>Sporophila ruficollis</i>	92	T	I									X	X	X				
NT	<i>Sporophila hypochroma</i>	0		3	O								X	X	X				
	<i>Oryzoborus angolensis</i>	0	T	3	F								X	X	X				
	<i>Phacellus auroventris</i>	92		I					X										
	<i>Saltator maximus</i>	0	T	4	F		X	X	X	X	X	X							
	<i>Saltator coerulescens</i>	0		3	I				X	X	X								
	<i>Cyanococcyzops cyanoides</i>	0	T	3	I		X		X										
ICTERIDAE (Troupials and Allies): 14 species																			
	<i>Psarocolius decumanus</i>	0	T	1	F		X	X	X	X	X	X							
	<i>Psarocolius angustifrons</i>	0		6	I		X	X	X										
	<i>Cacicus cela</i>	0		1	F		X	X	X	X	X	X	X	X					
	<i>Cacicus haemorrhous</i>	0		6	O		X												
	<i>Cacicus solitarius</i>	0		3	I		X	X											
	<i>Icterus cyanensis</i>	0	T	1	F		X	X		X	X	X							
	<i>Icterus jamaicensis</i>	0		3	I		X	X		X	X	X							
	<i>Agelaius cyanopus</i>	0	T	3	F								X	X	X				
	<i>Leistes superciliosus</i>	0		3	F														
	<i>Amblyramphus holosericeus</i>	0		3	F				A?										
	<i>Gnorimopsar chopi</i>	0		3	F								X	X	X				
	<i>Lampropsar tanagrae</i>	0		6	F				X	X	X	X	X	X	X				
	<i>Molothrus bonariensis</i>	0	T	3	F		X	X	X	X	X	X	X	X	X				
	<i>Molothrus bonariensis</i>	0		1	O				X	X	X	X	X	X	X				
	<i>Scaphidura oryzivora</i>	0		1	I		X	X	X	X	X	X	X	X	X				

Total number of species = 478

395 159

48 175 176 274 100 155 121 187 123 125 171 88 44

Appendix 2. Species which have appeared in previous B.B.S lists, but which are not accepted.

Species listed solely in Miranda *et al.* (1991).

1. Wattled Curassow *Crax globulosa* (THR – vulnerable). Although our extensive enquiries (S. Stab verbally 1992, White *et al.* 1993) have revealed probable sightings by Chimane Indians in terra firme forest 30 km south of the reserve, occurrence within the B.B.S. itself was not substantiated. Recent reports of the species come only from Brazil and Colombia (Collar *et al.* 1994).
2. Grey-bellied Goshawk *Accipiter poliogaster* (NT). In the absence of specific documentation we reject records of this species, which is rare in lowland forest throughout its range (Collar and Andrew 1988).
3. Paint-billed Crake *Neocrex erythrops*. In view of the fact that the distribution of this crake in Bolivia is little known (Remsen and Traylor, 1983, Parker and Rowlett 1984), we are not including it at this time. It was incorporated presumably on the basis of a non-specific reference to *Neocrex* sp. in Cabot *et al.* (1986).
4. Groove-billed Ani *Crotophaga sulcirostris*. The distribution of this species in South America does not encompass Bolivia (Sibley and Monroe 1990), and the entry refers obviously to Smooth-billed Ani *Crotophaga ani*.
5. White-bellied Spinetail *Synallaxis propinqua*. The habitat was given as terra firme forest. Since this species is regarded as an obligate river-island occupant (Remsen and Parker 1983, Rosenberg 1990), records, which have come from terra firme forest, are regarded as highly suspicious. Its fragmented distribution encompasses Brazil, Colombia, Ecuador and Peru, but in Bolivia is known only from Pando (Río Beni) (Ridgely and Tudor 1994, Arribas *et al.* 1995).
6. Veery *Catharus fuscescens*. There are few Bolivian records (Remsen and Ridgely 1980, Davis 1993), and therefore in the absence of specific documentation, it is not included here.
7. Yellow Warbler *Dendroica petechia*. Excluded for the same reason as Veery.

Those species which have appeared in other lists.

1. Solitary Eagle *Harpyhaliaetus solitarius* (NT). This bird was recorded by Cabot *et al.* (1986) as having been seen in both forests and savanna (very rare). However, since it inhabits usually the upper tropical zone (Remsen and Ridgely 1980, Remsen and Traylor 1989), it is presumed that these sightings relate to immature Crowned Eagle *H. coronatus* (with which it was at one time considered conspecific). Indeed, the first documented sighting for Beni of *H. solitarius* at 1050 m some 40 km west of San Borja, was quite recent (Parker 1989, Parker *et al.* 1991); elsewhere it is local in La Paz, Cochabamba, Santa Cruz and Chuquisaca (Arribas *et al.* 1995).
2. Orange-breasted Falcon *Falco deiroleucus* (NT). Listed by White *et al.* (1993) on the basis of a sighting along the Río Manique (TRC), the usual habitat of this species is foothills (see Cabot and Serrano 1986) and thus its occurrence at the B.B.S., where confusion with Bat Falcon *Falco rufigularis* Howell and Whitaker 1995) is possible, seems unlikely.
3. Azure Gallinule *Porphyryula flavirostris*. Listed as questionable by Cabot *et al.* (1986).
4. Lesser Nighthawk *Chordeiles acutipennis*. The possibility of confusion with *C. minor* was not considered by White *et al.* (1993).
5. Ashy-tailed Swift *Chaetura andrei*. Documentation necessary to eliminate other similar *Chaetura* spp. was not provided by White *et al.* (1993).
6. Rufous-throated Sapphire *Hylocharis sapphirina*. Previous inclusions of this hummingbird are attributable to Cabot *et al.* (1986). Since this species is virtually unknown in Bolivia (J. V. Remsen *in litt.*) it seems almost certain that confusion (re: ♀ *H. sapphirina*) with Gilded Hummingbird *H. chrysura*, which has similarly a rufous throat, was involved; thus we reject previous claims.
7. Stripe-chested Antwren *Myrmotherula longicauda*. This species was recorded by White *et al.* (*loc cit.*), but the possibility of the trapped bird in question being Streaked Antwren *M. surinamensis* was not considered fully. Evaluation of this potential addition is still ongoing, however, with additional photographs supplied by A. G. White being studied currently.
8. Cocoa Thrush *Turdus fumigatus*. This species, which was listed by Cabot *et al.* (1986), Flores (1988) and Rocha (1990), is regarded here as Hauxwell's Thrush *T. hauxwelli* considered formerly as conspecific; it is doubtful whether *T. fumigatus* has been recorded from Bolivia (see Ridgely and Tudor 1989 for discussion).

9. Carmiol's (Olive) Tanager *Chlorothraupis carmioli*. List by Rocha (1990) but not included in Miranda et al. (1991). This tanager is essentially an Andean foothill species (>500 m) (e.g. Schmitt and Schmitt 1987, Parker 1989) and seems unlikely to wander to lowland Beni. It is pertinent to note that immature Black-faced Tanagers *Schistochlamys melanopsis* (a species which is a widespread and common resident) are not dissimilar to *C. carmioli* in appearance.

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