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New and noteworthy observations on the Paraguayan avifauna

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Paraguay is divided by the Río Paraguay into two discrete biogeographical regions. To the west lies the Chaco, a vast expanse of thorn scrub forests and seasonally inundated palm savannas. To the east, the Oriente combines several distinct ecosystems, and its avifauna is correspondingly diverse (Hayes 1995). In the northeast lie *cerrado* (Brazilian *cerradão*; defined by Stotz *et al.* 1996 as "open *campo* grasslands with a sparse cover of shrubs and trees"), in the southwest lie natural grasslands and marshes, and to the east is the humid Interior Atlantic Forest.

Habitat destruction, of both the humid subtropical forests and the virgin grasslands, along with disturbance through hunting, trapping, pollution and infrastructural development, is rapidly depleting Paraguay's avifauna. Less than 13% of the country's Atlantic Forest remains, and almost all of this is partially degraded (Bozzano & Weik 1992, DOA 1996). The grasslands of central South America are severely threatened by conversion to agricultural uses and have been long neglected as a conservation issue (Collar *et al.* 1992). No less than 24 of the bird species now recorded in Paraguay are listed as threatened with global extinction by Collar *et al.* (1994).

From July to December 1995, we carried out over 2000 hours of ornithological fieldwork in a variety of habitats at fourteen sites in the Oriente and one site in the Chaco. The conservation results of this fieldwork have been published elsewhere (Lowen *et al.* 1996a, 1996b). From these surveys, and from other recent unpublished fieldwork, we present noteworthy observations of 43 species, about 7% of the country's avifauna (645 species: Hayes 1995).

We define "noteworthy" as follows: (a) first reliable country records (seven species: Russet-crowned Crane *Anurolimnas viridis*, Ocellated Crane *Micropygia schomburgkii*, Spot-tailed Nightjar *Caprimulgus maculicaudus*, White-winged Nightjar *Caprimulgus candicans*, Hellmayr's Pipit *Anthus hellmayri*, Masked Tityra *Tityra semifasciata* and Yellow-bellied Seedeater *Sporophila nigricollis*); (b) first reliable country records for 50 years (eight species); (c) species with five or fewer reliable country records (an additional 24 species); (d) first reliable records for the Oriente (two species, excluding new country records) or the Chaco (four species, excluding new country records). Hayes (1995) provides appropriate baseline data with which to categorise our records, and subsequent fieldwork (e.g. Madroño & Esquivel 1995, Madroño & Esquivel 1997) is cited where relevant.

We publish elsewhere (Lowen *et al.* in press) a reassessment of the abundance and distribution of birds in Paraguay, which includes first records of 26 species for five of the seven biogeographic regions into which Hayes (1995) divides Paraguay.

Abbreviations, conventions and species accounts

Dpto. = Departamento; MN = Monumento Natural; MNHNP = Museo Nacional de Historia Natural del Paraguay; PN = Parque Nacional; RNBm = Reserva Natural del Bosque Mbaracayú, Dpto. Canindeyú; RNP = Reserva Natural Privada; RVS = Reserva de Vida Silvestre.

Where possible, records were formally documented in one or more of the accepted manners (e.g. good quality photograph or tape-recording) and this is indicated in the text. For all mist-netted birds, full biometric data and a blood sample were taken before being photographed and released. Photographs and biometrics are available from the authors. Blood samples have been deposited with the Centre for Tropical Biodiversity, Copenhagen. Tape-recordings have been deposited at the National Sound Archive, Wildlife Section, London. We distinguish single- and multi-person records, listing up to three observers in alphabetical order. Authors are indicated by their initials; other observers are named in full. We use "*et al.*" to indicate that more than three observers were involved. All sight/aural records are supported by extensive field notes. No specimens were taken.

Taxonomy and nomenclature for non-passerines follows Clements (1991), for passerines Ridgely & Tudor (1989, 1994). Species order follows Clements (1991). In each account, we give the species' global status (if listed in Collar *et al.* 1994) and its status in Paraguay (according to Hayes 1995). We follow this with our records and summarise their significance. In certain cases, we include a brief discussion of status or identification features. For all localities mentioned, Appendix 1 lists details of department and co-ordinates. All sites are at low altitude (100–450 m).

First reliable records of seven species for Paraguay

RUSSET-CROWNED CRAKE *Anurolimnas viridis*

Occurs from the Guianas and Venezuela to Brazil, where it is found south to Rio de Janeiro and Mato Grosso states (Sick 1993). Hayes (1995) does not list *A. viridis* for Paraguay. At Aguará Ñu in the RNBm, Dpto. Canindeyú, two calling birds were seen and tape-recorded on 19–20 September 1995, and one on 21 September (K. Zyskowski *et al.*). What were probably the same two birds were recorded at the same site 6–13 December 1995 (BLL). Both individuals were in an area of scrubby secondary growth on a dry substrate, within 20 m of an extensive marsh adjacent to a river. Both responded to playback, calling repeatedly and occasionally emerging from cover. *Anurolimnas viridis* has recently been found in Bolivia (Bates *et al.* 1992); its range may be expanding with the spread of its favoured secondary growth habitat.

OCELLATED CRAKE *Micropygia schomburgkii*

This near-threatened grassland rallid has an extensive range in South America (Collar *et al.* 1994). In Brazil, it occurs locally in Goiás, Mato Grosso, Bahia and São Paulo states (Sick 1993). In Bolivia, it has recently been found to be widespread in a variety of habitats (Parker *et al.* 1991, Pearce-Higgins *et al.* 1995). *M. schomburgkii* was not previously known from Paraguay, although it has been erroneously listed for the country (Hayes 1995).

We recorded the species at two sites in the RNBM, Dpto. Canindeyú. At Lagunita, a minimum of eight calling individuals were present 9–13 September 1995 (MP *et al.*). One individual was tape-recorded and lured into mist-nets with playback. A photograph appears in Lowen *et al.* (1996a). Birds had first been heard, but not identified, on 21 November 1994 (RPC, AMN). At Aguará Ñu, at least two individuals were heard (and tape-recorded) 14–19 September 1995 (JMB *et al.*). All birds were in tall dry grassland (often adjacent to wetter areas or lakes) and dry *campo limpio* type *cerrado*. The nearest known population is in Mato Grosso state, Brazil (Sick 1993). *Micropygia schomburgkii* is likely to be rare in Paraguay, but may well be found in similar habitat further north in Dptos. Amambay and Concepción.

SPOT-TAILED NIGHTJAR *Caprimulgus maculicaudus*

Caprimulgus maculicaudus has a disjunct range from Mexico south to north Bolivia and southeast Brazil (Hilty & Brown 1986, Howell & Webb 1995). In Brazil it is widespread but local, with only a few records from Mato Grosso south to Espírito Santo, Rio de Janeiro, São Paulo and Paraná (Sick 1993). Its presence in São Paulo has recently been reconfirmed (Willis & Oniki 1993). Hayes (1995) does not list it for Paraguay.

At Aguará Ñu in the RNBM, Dpto. Canindeyú, two birds were calling 14–18 September 1995 (AMN *et al.*). A male was mist-netted on 16 September. It was photographed in the field and then recaptured by hand on 17 September. This photograph is published in Lowen *et al.* (1996a). All records were in a wet marshy valley and on adjacent drier hill slopes adjacent to gallery forest.

WHITE-WINGED NIGHTJAR *Caprimulgus candicans*

This poorly known nightjar, considered Critically Endangered by Collar *et al.* (1994), is only known from two old specimens in the grasslands of Mato Grosso and São Paulo in central Brazil, a series of modern records from Emas National Park in Goiás, Brazil, and a specimen from Yucuma province, Bolivia, in 1987 (Collar *et al.* 1992, Sick 1993, Davis & Flores 1994). Hayes (1995) lists it as ‘hypothetical’ for Paraguay. In common with most authors (e.g. Collar *et al.* 1992), Hayes rejects the reports by Azara (1802–5), which lack details of localities and dates.

At Aguará Ñu in the RNBM, Dpto. Canindeyú, we found *Caprimulgus candicans* to be not uncommon in *cerrado*, with records 14–20 September (JMB *et al.*) and 6–13 December 1995 (BLL). At

least seven different males were recorded in the first hour after dusk on 20 September, and a minimum of 14 birds were found during December surveys. On 20 September and 6–13 December seven birds (of two plumage types) were caught by hand. Photographs of one September male are published in Lowen *et al.* (1996a) and Tobias & Lowen (1996). A male was photographed in the field on 19 and 20 September. Males appear to produce mechanical noises during display and these were tape-recorded on 10 December. Birds have again been recorded at Aguará Ñu during 1996, with the first observation on 27 August (EZE).

These are the first documented records for Paraguay. However, Azara's (1802–5) published description is identical to our males, and we consider that his records should be treated as genuine, albeit without locality. There may be as many as 20 males in the 8000 ha of suitable habitat at Aguará Ñu (although only 5500 ha is protected), and the site is evidently of critical importance for the conservation of this species (Lowen *et al.* 1996b). Birds showed a predilection for recently burnt areas; their ecological requirements would repay careful study.

MASKED TITYRA *Tityra semifasciata*

Widespread, occurring from northern Mexico south to Bolivia and Amazonian Brazil (Ridgely & Tudor 1994). Hayes (1995) does not list *T. semifasciata* for Paraguay.

The first record for Paraguay comes from the Carapá waterfall trail in the northeast of the RNBM, Dpto. Canindeyú, where six birds were watched closely on 6 August 1995 (D. Finch *et al.*). Birds were seen again in this area during 1996 (EZE, AMN). At PN Cerro Corá, Dpto. Amambay, a single male was seen well but briefly on 10 October 1995 (JMB, EZE, BLL). The Cerro Corá bird was easily distinguished from the congeneric Black-crowned Tityra *T. inquisitor* and Black-tailed Tityra *T. cayana* by its strikingly whitish upperparts and crown, broad white terminal tail band, restricted black forehead and facial area, and extensive red bill and bare skin around eyes. Being widespread over much of South America, it is not surprising that *T. semifasciata* should occur in Paraguay.

HELLMAYR'S PIPIT *Anthus hellmayri*

Anthus hellmayri occupies a disjunct range in the Andes of south Peru, west Bolivia, west Argentina and south Chile, with a separate population in southeast Brazil, Uruguay and east Argentina (Ridgely & Tudor 1989). Hayes (1995) lists it as "hypothetical" in Paraguay, treating the two reports by Podtiaguin (1944) from the Chaco as unreliable: they lack plumage description and date.

At RVS Yabebyry, Dpto. Misiones, we found up to ten birds daily 28–31 October 1995 and estimated that six pairs were present (MP *et al.*). Most records were of birds singing from song posts (e.g. fences), a habit noted by Ridgely & Tudor (1989). Two individuals were photographed and two singing birds tape-recorded. These are the first documented records for Paraguay. It is likely to breed at RVS Yabebyry, and may have been overlooked in previous fieldwork in the south of the country.

YELLOW-BELLIED SEEDEATER *Sporophila nigricollis*

Sporophila nigricollis is widespread in the lowlands from Costa Rica to north and east Bolivia, southern Brazil and northeast Argentina, though it is apparently absent from much of central Amazonia (Ridgely & Tudor 1989). Hayes (1995) does not list *S. nigricollis* for Paraguay.

At Puente Remanso, Dpto. Presidente Hayes, two adult males were seen on 3 November 1995 at the start of the Ruta TransChaco (M. Robbins, K. Zyskowski). In the Bahía de Asunción, Dpto. Central, at least one male and a probable female were seen on 3 December 1995 (RPC, EZE). These birds were in an overgrown garden in an area of marshy pools and low shrubs. *Sporophila nigricollis* is common and widespread north of Paraguay, and it is surprising that it has not been previously reported from the country. Further fieldwork will undoubtedly produce additional records.

Eight species not reliably recorded in Paraguay for at least 50 years**GREY-BELLIED GOSHAWK** *Accipiter poliogaster*

Near-threatened (Collar *et al.* 1994). There have been six records in Paraguay, but none since 1938 (F. E. Hayes *in litt.* 1996). At RNP Itabó, Dpto. Canindeyú, pairs were seen on 15 (JCL) and 22 (JMB) October 1995, with singles on 17 and 18 October (BLL). All sightings were within 2 km of each other and presumably refer to the same birds.

TINY HAWK *Accipiter superciliosus*

Hayes (1995) lists three reliable records for Paraguay. All come from the Alto Paraná region, in 1897 and 1934 (two). Hayes considers a recent record from Lago Ypacaraí, Dpto. Central/Cordillera (González Torres & González Romero 1985), to be doubtful. At RNP Ypetí, Dpto. Caazapá, a single male was seen on 6 February 1994 (AMN). At Jejui-mí, RNBM, Dpto. Canindeyú, a female was seen well on 30 September 1995 (RPC). The very small size and comparatively short tail of this forest *Accipiter* are distinctive: both observers are familiar with the species.

PURPLE-WINGED GROUND-DOVE *Claravis godefrida*

Critically Endangered (Collar *et al.* 1994). There are two records in Paraguay, both of pairs in Dpto. Alto Paraná in the early 1890s (Bertoni 1901). The specimens have been lost (Hayes 1995). At RNP Itabó, Dpto. Canindeyú, a female was seen briefly but well on 6 December 1994 (RPC). The bird was distinguished from female Blue Ground-dove *Claravis pretiosa* by its slightly larger size, lack of rufous rump and tail, off-white sides and white tips to splayed tail, and two obvious violaceous-brown wing-bars with darker borders. Additionally, a *Claravis* sp., probably *C. godefrida*, was heard (but not tape-recorded) in flowering *Chusquea* bamboo some 5 km away two days later. No additional records have been obtained during the 800 hours of fieldwork now conducted at the site (Brooks *et al.* 1993, Lowen *et al.* 1996b).

Given the lack of other records from eastern Paraguay (e.g. not being found during bamboo flowerings in 1977; R. S. Ridgely *in litt.* 1991), it seems likely that Paraguay has always been on the edge of the species' range. This record may represent a wandering individual either displaced by the disruption of the bamboo flowering cycle in Brazil or from a remnant population in Misiones province, Argentina (Lowen *et al.* 1996b).

LARGE-TAILED ANTSHRIKE *Mackenziaena leachii*

Hayes (1995) lists three records for Paraguay, all of lost specimens from the Alto Paraná region prior to 1936. At PN Caaguazú, Dpto. Caazapá, two individuals were seen and heard daily in different areas 21–23 July 1995 (TMB, RPC). At PN San Rafael, Dptos. Itapúa/Caazapá, a pair was seen and heard 28–29 July 1995 (RPC *et al.*), with an additional bird heard on 29 July (JMR). All records were in bamboo-dominated secondary scrub on the forest edge. In Misiones province, Argentina, it is fairly common, favouring degraded forest and open forest areas (*per* JMB and MP). It was thus to be expected in southeast Paraguay.

SPECKLE-BREASTED ANTPITTA *Hylopezus nattereri*

Hylopezus nattereri has recently been re-allocated full specific status (Whitney *et al.* 1995). Hayes (1995) lists just one record for Paraguay, from the Alto Paraná region about 1903 (Bertoni 1904). At PN Caaguazú, Dpto. Caazapá, up to four individuals were calling in three separate areas daily 18–24 July 1995 (JCL *et al.*). One bird was tape-recorded distantly. At PN San Rafael, Dptos. Itapúa/Caazapá, at least six individuals were calling in four areas on five dates 26–31 July 1995. One bird was mist-netted on 31 July and a photograph appears in Lowen *et al.* (1996a). At Estancia Kaa'gua Rory, Dpto. Caaguazú, one or two birds were calling on 30 August, 2 and 7 September 1995 (RPC *et al.*). These latter records may lend credence to local Aché indian reports of the species in the RNBM, Dpto. Canindeyú (AMN).

The species' presence in southeast Paraguay was to be expected; it is locally fairly common in bamboo-dominated forest in the adjacent Misiones province, Argentina (Benstead *et al.* 1993, MP). Whitney *et al.* (1995) note that, in the southern part of its range (including Paraguay), *H. nattereri* occurs at less than 300 m elevation, much lower than in the north. This pattern is reflected in other species with a similar geographical distribution, some of which are discussed in this paper (e.g. Large-tailed Antshrike and Bertoni's Antbird).

LESSER ELAENIA *Elaenia chiriquensis*

Hayes (1995) only lists just one confirmed record in Paraguay (a specimen from the Alto Paraná region in 1909) plus a hypothetical record in 1930. At Aguará Ñu, RNBM, Dpto. Canindeyú, it was fairly common, with up to 12 seen daily in *cerrado* 14–19 September 1995 (JAT *et al.*). One bird was tape-recorded and photographed in the field. At the nearby Estancia Jiménez, Dpto. Canindeyú, two calling birds were seen in a small area of *cerrado* on 27 September 1995 (MP).

E. chiriquensis is probably under-recorded in Paraguay: it is an abundant passage migrant in the *cerrado* of Mato Grosso state, Brazil, during August and September (Sick 1993).

BLACK-MASKED FINCH *Coryphaspiza melanotis*

Vulnerable (Collar *et al.* 1994). Hayes (1995) lists one confirmed and one possible record for Paraguay, both prior to 1930. At Aguará Ñu, RNBM, Dpto. Canindeyú, up to nine birds were encountered on each of six dates 14–21 September 1995 (JAT *et al.*). These included at least five territorial males, all in an area of *cerrado* comprising tussocky grass never taller than 50 cm and small areas of bare ground. Unidentified scattered bushes and dwarf yata'i palms (*Butia* sp.) were used as song perches; birds were otherwise terrestrial (Lowen *et al.* 1996b). One singing male was photographed and two birds tape-recorded. Several males were still singing during 6–13 December 1995 (BLL). Single juveniles were seen in both September and December, indicating breeding at the site.

As Sick (1993) suggests for Brazil, *C. melanotis* is probably overlooked in Paraguay. It is likely to occur in similar *cerrado* habitat in Dptos. Amambay and Concepción.

RED-RUMPED WARBLING-FINCH *Poospiza lateralis*

Hayes (1995) lists one certain record in Paraguay in 1911, plus one undated lost specimen. At PN Caaguazú, a male was watched at close range in scrub on the forest edge on 20 July 1995 (N. I. Etcheverry *et al.*). Renewed reports of this species were to be expected in southeast Paraguay, as it is locally common in a variety of habitats in northeast Argentina (JMB, MP).

Species with five or fewer reliable records in Paraguay

LEAST BITTERN *Ixobrychus exilis*

Hayes (1995) lists five records for Paraguay. In the Chaco, we recorded *Ixobrychus exilis* at RNP La Golondrina, Dpto. Presidente Hayes: a male was seen well on 6 November 1995 (JCL). The first record for the Oriente came from PN Ypacaraí, Dpto. Cordillera, where one was seen on 10 December 1995 (RPC, EZE, K. Zyskowski).

CINEREOUS HARRIER *Circus cinereus*

Hayes (1995) lists three reliable records from the Oriente and one hypothetical report from the Chaco. At Base Aerea, MN Bosque de Arary, Dpto. Itapúa, a pair were watched for a prolonged period on 20 December 1995 (RPC, BLL).

SWAINSON'S HAWK *Buteo swainsoni*

Hayes (1995) lists just three records for Paraguay. At RNP Itabó, Dpto. Canindeyú, a light-phase bird was seen on 8 December 1994 (RPC). At RNP Ypetí, Dpto. Caazapá, two light-phase birds were seen

on 5 December 1995 (RPC). Two of the previous records for Paraguay were also in December (Hayes *et al.* 1990).

GREY-BREASTED CRAKE *Laterallus exilis*

Hayes (1995) lists two records: one in the Chaco in 1979 and one in the Oriente in 1994. At MN Bosque de Arary, Dpto. Itapúa, three birds were calling daily (and one tape-recorded) at Puerto Turi, 3–5 November 1995 (MP *et al.*). These add credence to Hayes' (1995) speculation that it may breed in Paraguay.

SPOT-WINGED PIGEON *Columba maculosa*

There are only three acceptable Paraguayan records, all from the Chaco (Hayes 1995). The species is considered "hypothetical" in the Oriente (Hayes 1995). At RVS Yabebyry, Dpto. Misiones, seven birds were seen on 28 October, and two birds on 29 October 1995 (MP *et al.*). All birds were well seen flying over grassland with islands of forest. These are the first records for the Oriente.

RED-SPECTACLED AMAZON *Amazona pretrei*

Endangered (Collar *et al.* 1994). This Atlantic Forest endemic is virtually restricted to *Araucaria angustifolia* forest in Rio Grande do Sul state, Brazil, with a few recent records from Misiones province, Argentina (Collar *et al.* 1994). Hayes (1995) lists *Amazona pretrei* as "hypothetical" in Paraguay despite three reports which include a well-described bird at RNP Itabó, Dpto. Canindeyú, on 15 August 1992 (Brooks *et al.* 1993, 1995). At this site, which is a stronghold for the threatened Vinaceous Amazon *A. vinacea*, a pair were seen at close range on 2 August 1995 (DL). They were flushed several times from the subcanopy of open marshy woodland, always landing in dense vegetation. When seen at close range in flight, both birds showed a large red patch on the carpal joint, extensive red on the head, a clean green breast, and yellower vent. This combination of characters appears to eliminate all other *Amazona* species.

Hayes (1995) treats *A. pretrei* as "hypothetical" in Paraguay in view of the lack of formal documentation for existing reports and the lack of records from the adjacent Brazilian state of Paraná. However, continuing to consider the species "hypothetical" in Paraguay may not be helpful for its conservation. *Amazona pretrei* moves northwards from Rio Grande do Sul during the austral winter (Collar *et al.* 1992), breeds in lowland riverine forest and utilizes several non-araucaria food sources (Varty *et al.* 1994). It is thus not inconceivable that stragglers reach Paraguay (where *Araucaria angustifolia* is now all but absent) fairly regularly in winter.

TAWNY-BROWED OWL *Pulsatrix koeniswaldiana*

There are three records for Paraguay (Hayes 1995). These comprise an undated, historical specimen (Bertoni 1901), now lost (Hayes 1995), and 1992 records at sites in Dptos. Canindeyú and Caazapá (Brooks *et al.* 1993). We recorded *P. koeniswaldiana* at one of the 1992 sites: RNP Itabó, Dpto. Canindeyú. Up to four individuals were heard and

seen on six dates 17–23 October 1995 (DL *et al.*). Calls of at least three individuals were tape-recorded. This species is apparently rare in Paraguay, and may be restricted to humid forests of the extreme east.

BLACK-BANDED OWL *Strix huhula*

Hayes (1995) treats *S. huhula* as “hypothetical” in Paraguay, considering the 1992 aural records published by Brooks *et al.* (1993, 1995) for RNP Itabó, Dpto. Canindeyú, to be insufficiently documented. Ericson & Amarilla (1997) subsequently described the first confirmed record for Paraguay: a female collected on 30 September 1993 at PN Caaguazú, Dpto. Caazapá. We have recorded *S. huhula* during subsequent fieldwork at RNP Itabó. On 20 August 1993, a bird was calling repeatedly, but not tape-recorded (AMN). In 1995, up to two pairs were seen and heard in separate areas 20–22 October (MP *et al.*). All four individuals were tape-recorded and one photographed. The species has now been recorded in four distinct areas at RNP Itabó; it is probably a rare resident of forests in easternmost Paraguay.

RUSTY-BARRED OWL *Strix hylophila*

There are only three acceptable (and two very questionable) records in Paraguay, all from the Oriente (Hayes 1995). We found *S. hylophila* at two sites. At PN Caaguazú, Dpto. Caazapá, up to three birds were calling on six dates 15–23 July 1995, and a single bird was watched at close range on 16 July (JCL *et al.*). At PN San Rafael, Dptos. Itapúa/Caazapá, single birds were heard calling on 26 and 30 July 1995.

SICKLE-WINGED NIGHTJAR *Eleothreptus anomalus*

Near-threatened (Collar *et al.* 1994). Hayes (1995) lists two confirmed records for Paraguay and a further three unconfirmed reports. There is a previously unpublished record of a female collected at a now flooded area of Isla Yacyretá (MNHNP 000566) on 14 March 1992 (L. Amarilla *in litt.* 1996). We recorded the poorly known *Eleothreptus anomalus* at RNP Sombrero, Dpto. Cordillera. On 25 August 1995, a male was seen and photographed in the field, then trapped (JCL *et al.*); a photograph appears in Lowen *et al.* (1996a). It was found in tall, dry grassland within 500 m of an extensive seasonally inundated marsh, and within 2 km of dry, open woodland. Available evidence suggests that this species is a rare but regular inhabitant of marshy grasslands of eastern Paraguay. The paucity of reports presumably stems from a patchy distribution and the generally silent, inconspicuous nature of the species.

BLACK JACOBIN *Melanotrochilus fuscus*

Hayes (1995) lists two previous Paraguayan records in 1987 and 1994. The species has been recorded subsequently at the 1994 site (N. Pérez verbally 1995). At PN Caaguazú, Dpto. Caazapá, one bird was watched at close range on 16 July 1995 (RPC). There are no confusion species for this distinctive hummingbird.

RUFOUS-THROATED SAPPHIRE *Hylocharis sapphirina*

Brooks *et al.* (1993, 1995) detail two single observer sight records from the Oriente in 1992, but Hayes (1995) preferred to list it as

“hypothetical” in Paraguay. He considered that the “species is almost certainly present . . . [but] further documentation is needed before it can be accepted”. We observed it at three localities during 1995 fieldwork. At PN Caaguazú, Dpto. Canindeyú, a male was watched at close range on 16 July 1995 (R. Barnes). At RNP Sombrero, Dpto. Cordillera, a male and a probable female were seen well on 28 August 1995 (JCL). At PN Cerro Corá, Dpto. Amambay, a male gave close views on 10 October 1995 (JMB, BLL).

The following plumage characters were common to all males seen: bill predominantly dark, but with varying amount of red; throat and centre of breast iridescent pale greenish-blue, grading to iridescent green on remainder of underparts; upperparts slightly darker green; tail and upper tail coverts bronze, tinged rufous. The Sombrero and Caaguazú males appeared to have a darker blue throat and more iridescent chestnut tail. Female *Hylocharis* sp.—probably *H. sapphirina*—with a slightly forked bluish tail, obvious white tips to the rectrices and more extensive rufous chin, were seen at Sombrero (as above), in the RNBM at Jejui-mí on 7 November 1994 (AMN) and at RNP Itabó, Dpto. Canindeyú, on 7 December 1994 (RPC). *Hylocharis sapphirina* has now been recorded over a wide area of the Oriente, and it is unfortunate that no documentation has been obtained.

PYGMY KINGFISHER *Chloroceryle aenea*

Hayes (1995) lists only two records for Paraguay, both from the Chaco. There are three subsequent records from the Oriente: at the RNBM, Dpto. Canindeyú in 1994 and 1995 (Madroño & Esquivel 1997). We recorded it at Estancia Jiménez, Dpto. Canindeyú. Two birds were seen on 28 and 30 September 1995, with a female mist-netted on 29 September (JCL *et al.*). This site lies 20 km downstream of the RNBM. All reports of *C. aenea* in Paraguay come from the north, but given the two recent records of it in Misiones province, Argentina (Castelino 1990, MP), it may also occur further south in Paraguay.

CANEBRAKE GROUND Creeper *Clibanornis dendrocolaptoides*

Near-threatened (Collar *et al.* 1994). There are two records for Paraguay (Hayes 1995), including one in 1992 (Brooks *et al.* 1993, 1995). At PN Caaguazú, Dpto. Caazapá, a single bird was seen in streamside bamboo on 18 July 1995 (JCL). Despite mist-netting in suitable habitat at several sites, and extensive voice playback (especially at RNBM), there were no further records of this Atlantic Forest endemic. This suggests it is very rare and probably restricted to the Paraná basin of southeast Paraguay.

WHITE-BROWED FOLIAGE-GLEANER *Anabacerthia amaurotis*

Near-threatened (Collar *et al.* 1994). This Atlantic Forest endemic occurs in montane southeast Brazil (Parker *et al.* 1996, Stattersfield *et al.* 1997) and Misiones province, Argentina, where it is rare, but probably under-recorded (JMB). Hayes (1995) considered it “hypothetical” in Paraguay, listing eight sight records from three localities

since 1992 (e.g. Brooks *et al.* 1993), but believing that "further documentation is needed". An additional sight record from the RNBM, Dpto. Canindeyú, in June 1995 (Madroño & Esquivel 1995) is best considered hypothetical (AMN).

At PN Caaguazú, Dpto. Caazapá, we had seven sight records in different areas. Single birds were seen on 16 (R. Barnes), 17 (JAT), 18 (RPC), 20 (JAT), 21 (JCL, DL) and 23 July 1995 (R. Johnson), and two on 22 July (R. Barnes). At PN San Rafael, Dptos. Itapúa/Caazapá, a single was seen on 26 July (JAT) and two on 30 July 1995 (RPC).

We consider that the likelihood of confusion with Buff-browed Foliage-gleaner *Syndactyla rufosuperciliata* (e.g. Hayes 1995) has been exaggerated. *Anabacerthia amaurotis* is considerably bulkier, with a far broader and whiter supercilium contrasting with thick dark eyestripe and crown. Its bright rufous tail contrasts with the brownish upperparts, while the straight bill is pale with a dark culmen. Additionally its vocalisations and behaviour differ from *S. rufosuperciliata*.

There is an evident pattern to the 1992/1995 records, all occurring in the Paraná basin forest of southeast Paraguay. This pattern is reflected in other species of montane southeast Brazil that are now being (re-)discovered in the lowland forests of southeast Paraguay (e.g. Large-tailed Antshrike, Bertoni's Antbird and Diademed Tanager: see also Whitney *et al.* 1995). We suggest that *A. amaurotis* is a rare resident of the remaining forests of southeast Paraguay.

BLACK-BILLED SCYTHEBILL *Campylorhamphus falcularius*

Hayes (1995) lists three records, all from the Oriente, in 1893 (two) and 1977. At PN San Rafael, Dptos. Itapúa/Caazapá, six individuals were seen on 26 July 1995, singles on 27, 29 and 30 July, and a bird mist-netted on 29 July (RPC *et al.*).

RUFIOUS-CAPPED ANTSHRIKE *Thamnophilus ruficapillus*

Hayes (1995) lists only one reliable record (and three unconfirmed reports) from the Oriente. We recorded *Thamnophilus ruficapillus* at two sites. At Estancia Kaa'gua Rory, Dpto. Caaguazú, a pair (with the male singing) was seen in scrub on 29 August 1995 (JAT). A *Thamnophilus* sp. at Aguará Nu, RNBM, Dpto. Canindeyú, on 16 and 18 September 1995 was initially identified as *T. ruficapillus* (see Lowen *et al.* 1996b). However, this individual is best left unidentified, now being thought to be closest to Rufous-winged Antshrike *T. torquatus*; further details will be published in due course. The paucity of Paraguayan records of *T. ruficapillus* is inexplicable. In northern Argentina, it is common in a variety of habitats including secondary growth (MP).

BERTONI'S ANT BIRD *Drymophila rubricollis*

Hayes (1995) lists just one record from Paraguay (in 1894: Bertoni 1901), but Ridgely (1991) has also observed it at RNP Itabó, Dpto. Canindeyú, in June 1991. At PN Caaguazú, Dpto. Caazapá, a bird was seen and heard on 19 July 1995, and two were heard on 20 July (JAT

et al.). At PN San Rafael, Dptos. Itapúa/Caazapá, a bird was heard on 30 July 1995 (JAT). At RNP Itabó, a bird was heard on 3 August 1995 (JAT). All records were in dense scrub and forest islands on the forest edge. *Drymophila rubricollis* is common in northern Misiones province, Argentina, where it favours dense understorey growth, usually with *Chusquea* bamboo (JMB, MP). It was to be expected in eastern Paraguay, but is still only known from the extreme east. Although all recent records have been in the austral winter, this probably reflects the timing of fieldwork, rather than a genuine absence during the austral summer.

COLLARED CRESCENT-CHEST *Melanopareia torquata*

Hayes (1995) lists just one record for Paraguay, a 1938 specimen from Dpto. Amambay. Madroño & Esquivel (1997) provide the first recent record, with a bird seen in February 1995 at Aguará Ñu in the RNBM, Dpto. Canindeyú. We found it in dwarf palm (*Butia* sp.) *cerrado* at the same site 14–20 September 1995 (JAT *et al.*). At least six pairs were present, and observed daily. Four males were singing and at least one pair were holding territory in a small group of palms. The species was still present in 1996, with many birds singing on 15 September (AMN). *Melanopareia torquata* is presumably a breeding resident here, and is likely to be found in other areas of similar habitat further north in Paraguay. We noted much variation in the colour and extent of nape collars, with at least one bird apparently lacking any collar. Such variation has not been reported in the identification literature (e.g. Ridgely & Tudor 1989).

OCHRE-BREASTED PIPIT *Anthus nattereri*

Endangered (Collar *et al.* 1994). Hayes (1995) lists up to four records for Paraguay. There are two records from the Chaco, which Hayes considers to be considerably out of range. There are two records in the Oriente, the most recent in 1977 (Ridgely & Tudor 1989). We found *A. nattereri* common at RVS Yabebyry, Dpto. Misiones, with 14 singing birds in well-defined territories 27 October to 1 November 1995 (BLL *et al.*). At the nearby MN Bosque del Arary, Dpto. Itapúa, we found *A. nattereri* in two areas. At Base Aerea, it was common, with up to ten singing birds 1–3 November 1995 (MP *et al.*). At least four birds were still singing, and several other birds seen, on 20 December 1995 (RPC, BLL). At Puerto Turi, a singing bird was seen and heard on 5 November 1995 (BLL).

Different pairs were photographed in the field at RVS Yabebyry on 28 and 30 October, and an additional singing bird was trapped on 1 November. The songs of at least two different birds were tape-recorded at this site, and two singing birds were tape-recorded at Base Aerea, MN Bosque de Arary, on 20 December 1995. The large populations of this very rare pipit at both sites are of very high conservation significance. It is fortunate that both sites receive at least nominal protection, covering a combined, and near-contiguous protected grassland area of over 40,000 ha (Lowen *et al.* 1996b).

GREEN-CHINNED EUPHONIA *Euphonia chalybea*

Near-threatened (Collar *et al.* 1994). Hayes (1995) lists five certain and two possible records in the Oriente; one of these possible records (at the RNBM, Dpto. Canindeyú, in September 1992) should be considered certain (Brooks *et al.* 1993). There exists an additional specimen record (MNHNP 000323), previously labelled as a Palm Tanager *Thraupis palmarum*, taken at Puerto Triunfo, Dpto. Itapúa, on 6 November 1985 (RPC, JCL, JAT).

At PN Caaguazú, Dpto. Caazapá, we recorded a singing immature male or female on 18 July 1995 (RPC), an adult male on 20 July (JCL) and a presumed pair on 24 July (RPC). At PN San Rafael, Dptos. Itapúa/Caazapá, *E. chalybea* was fairly common, with 28 records 26–31 July 1995; up to eleven birds were recorded daily in seven distinct areas (JAT *et al.*). Most records were of pairs or singing males; one pair was photographed. At RNP Itabó, Dpto. Canindeyú, two female/immatures were seen on 2 August 1995 (RB). The species is evidently fairly widespread, but rare, in eastern Paraguay, appearing most frequent in the southeast.

DIADEMED TANAGER *Stephanophorus diadematus*

Hayes (1995) lists five records, the four known localities lying in extreme eastern Paraguay. The only recent record is from 1992 (Brooks *et al.* 1993). At PN Caaguazú, Dpto. Caazapá, up to eight individuals were seen daily 16–22 July 1995, mostly in mixed flocks on the forest edge (RPC *et al.*). At PN San Rafael, Dptos. Itapúa/Caazapá, we recorded one bird on 27 July 1995 (JAT), and four on 29 July (R. Barnes, TMB, JCL), one of which was photographed. All birds were in scrub on the forest edge. This appears to be another member of the group of species (including Large-tailed Antshrike and Bertoni's Antbird) that inhabit montane forest in southeast Brazil, but occur in scrubbiest low-altitude habitat at the edge of their range in southeast Paraguay (see also Whitney *et al.* 1995).

TEMMINCK'S SEEDEATER *Sporophila falcirostris*

This bamboo specialist is considered Endangered by Collar *et al.* (1994). Hayes (1995) lists just one Paraguayan record, in 1977. Madroño & Esquivel (1995) found three males at the RNBM, Dpto. Canindeyú, in June 1995. We recorded it in bamboo (*Merostachys* sp.) at PN Caaguazú, Dpto. Caazapá, where males were seen on 18 July (RPC) and 19 July 1995 (JCL). Both observers had recent experience of *Sporophila falcirostris* in southeast Brazil. This rare species probably survives in low numbers in eastern Paraguay, perhaps being locally nomadic and moving between areas of bamboo. None of the 1995 birds was associated with bamboo flowerings, but it is possible that birds were lingering following such an episode in 1994 (RPC). Given the widespread deforestation of the adjacent Brazilian states, it would seem likely that any populations of *S. falcirostris* in eastern Paraguay and northeast Argentina are isolated from southeast Brazil (Lowen *et al.* 1996b).

SOOTY GRASSQUIT *Tiaris fuliginosa*

Hayes (1995) lists one record for Paraguay, a bird at the RNBM, Dpto. Canindeyú, in 1992 (Brooks *et al.* 1993). Madroño & Esquivel (1997) detail additional records for the RNBM in September and November 1994. At Estancia Kaa'gua Rory, Dpto. Caaguazú, a female was mist-netted on 31 August 1995 (DL *et al.*). We recorded *Tiaris fuliginosa* in two areas at the RNBM. At Jejui-mí, a male was seen on 8 September 1995 (JCL). At Lagunita, two males were found on 11 (RPC), one male on 12 (RJ, JR) and a pair on 13 September 1995 (BLL, JMB). Prior to 1992, the nearest known populations to Paraguay were in central Mato Grosso and in eastern São Paulo states, Brazil (Ridgely & Tudor 1989, Sibley & Monroe 1990). Subsequently, however, it has also been found in Misiones province, Argentina (Mazar Barnett & Herrera 1996). It would seem likely that *T. fuliginosa* occurs in low numbers throughout eastern Paraguay and northeast Argentina, but has—until recently—been overlooked.

First reliable records for the Oriente or Chaco regions**LEAST BITTERN** *Ixobrychus exilis*

See above.

SPOT-FLANKED GALLINULE *Gallinula melanops*

There are many records from the Chaco, but it is considered “hypothetical” in the Oriente (Hayes 1995), with just one old unconfirmed report lacking site and date details (Podtiaguin 1945). We recorded *Gallinula melanops* on the main lagoon at Lagunita, RNBM, Dpto. Canindeyú, where one was seen and photographed 10–13 September 1995 (JMB *et al.*). This is the first documented record for the Oriente.

SPOT-WINGED PIGEON *Columba maculosa*

See above.

MARSH SEEDEATER *Sporophila palustris*

Endangered (Collar *et al.* 1994). Hayes (1995) only lists it for the Oriente. At RNP Golondrina, Dpto. Presidente Hayes, an adult male was present with a male Rufous-rumped Seedeater *S. hypochroma* on 7 November 1995 (JCL). This is the first record for the Chaco. The date is that of a migrant, and a Chaco record is not surprising. *Sporophila palustris* usually arrives on breeding grounds in Corrientes province, Argentina, in the first week of November (Pearman & Abadie in press).

CHESTNUT SEEDEATER *Sporophila cinnamomea*

Near-threatened (Collar *et al.* 1994). Hayes (1995) gives a total of five records for Paraguay; additionally, a bird was recorded at RNBM, Dpto. Canindeyú, in October 1994 (Madroño & Esquivel 1995). At RNP Golondrina, Dpto. Presidente Hayes, a single male was seen in a

mixed *Sporophila* flock on 8 November 1995 (BLL). This is the first record for the Chaco, and presumably refers to a bird moving south to breed in northern Argentina.

LESSER GRASS-FINCH *Emberizoides ypiranganus*

Near-threatened (Collar *et al.* 1994). Hayes (1995) lists just six records for Paraguay, all from the Oriente. The species was fairly common at RNP Golondrina, Dpto. Presidente Hayes, with up to ten individuals daily 7–9 November 1995 in wet grassland. These are the first records for the Chaco. The species probably occurs in similar habitat at other sites in the area. With few previous records in Paraguay, *E. ypiranganus* has now been found over a wide area of the country (Lowen *et al.* 1996b).

Discussion

In this paper we discuss the occurrence of 43 bird species which previous evidence indicated to be exceptionally scarce in, or absent from, Paraguay.

Three species—*Anurolimnas viridis*, *Caprimulgus candicans*, *Caprimulgus maculicaudus*—were unexpected additions to the Paraguayan avifauna. Their nearest known populations lie several hundred kilometres from Paraguay. Our records probably represent previously overlooked populations rather than recent range extensions. Future fieldwork may help to clarify the situation.

Two other species new to Paraguay—*Tityra semifasciata*, *Sporophila nigricollis*—are relatively common throughout their extensive distribution. Our records may represent recent range extensions or indicate that the species occur in very low numbers at the edge of their range. Alternatively they may simply reflect the paucity of fieldwork in the country. Further surveys will doubtless find both species, and the resulting pattern of records may enable adjudication. Other species could be extending their ranges into Paraguay, but the available data are too few to justify firm conclusions. Such range extensions could represent open country birds extending into newly deforested zones or birds displaced by habitat destruction in adjacent areas (as suggested for the recent arrival of Curl-crested Jay *Cyanocorax cristatellus* at RNBM: see Madroño & Esquivel 1997).

Most other noteworthy records refer to species previously overlooked (due either to their secretive behaviour or perceived identification difficulties) or to species dependent on habitats with a limited distribution in Paraguay. Such habitats include *cerrados*, restricted to the extreme north of eastern Paraguay (with isolated patches, such as Aguará Ñu, RNBM, extending further south), and the grasslands of southern Paraguay. Until our 1994 and 1995 fieldwork, there had been very few comprehensive ornithological surveys of these areas, with most records attributable to occasional fortuitous observations. Our records of species such as *Micropygia schomburgkii*, *Elaenia chiriquensis*, *Melanopareia torquata*, *Anthus hellmayri*, *Anthus nattereri* and

Coryphaspiza melanotis, which occur in similar habitat in adjacent Brazil and Argentina, were thus not unexpected.

Similarly, although the humid forest originally covered 55% of the Oriente (Bozzano & Weik 1992), there is a subset of Atlantic Forest endemics whose distribution in Paraguay appears restricted to the southeast, adjacent to Misiones province, Argentina (Lowen *et al.* 1996b). Such species include *Mackenziaena leachii*, *Clibanornis dendrocolaptoides*, *Anabacerthia amaurotis*, *Campylorhamphus falcularius* and *Stephanophorus diadematus*. Since recent ornithological fieldwork in the Paraguayan Atlantic Forest has concentrated on forests further north and west (e.g. Brooks *et al.* 1993, Madroño & Esquivel 1997, Hayes & Scharf 1995), it is unsurprising that there have been few or no recent records of these species until renewed fieldwork at sites within their Paraguayan range.

A number of the species are secretive and unlikely to be recorded if their vocalizations are not known. These include crakes, owls, *Caprimulgus maculicaudus*, *Mackenziaena leachii*, *Drymophila rubricollis* and *Hylopezus nattereri*. Inadequate identification literature (e.g. for *Anthus* spp., *Euphonia chalybea* and *Emberizoides ypiranganus*) has a similar effect. Further fieldwork in appropriate habitat will probably reveal these species as more widespread than current records suggest.

Several migratory species may have been under-recorded due to a lack of fieldwork at the appropriate season. *Buteo swainsoni*, a North American breeder that spends the austral summer in Argentina, is likely to pass through Paraguay in reasonable numbers each year. Likewise, migrant *Sporophila* species such as *S. palustris* and *S. cinnamomea* probably pass through the Paraguayan Chaco each year en route between Brazil/Bolivia and Argentina. A few records may refer to vagrant individuals. This is perhaps the case for *Gallinula melanops* at RNBM, the single record of *Poospiza lateralis*, and both the 1992 (Brooks *et al.* 1995) and 1995 records of *Amazona pretrei*.

New distributional information was gathered for seven globally threatened species, including the Critically Endangered *Claravis godefrida* and *Caprimulgus candicans* (Collar *et al.* 1994). All are primarily threatened by habitat loss (Collar *et al.* 1992, 1994). They are—by definition—likely to be genuinely rare in Paraguay, although at sites which preserve pristine areas of their habitat they could be locally common (e.g. *Anthus nattereri* at two southern grassland sites and *Coryphaspiza melanotis* at Aguará Ñu, RNBM).

Most of our records reflect the paucity of knowledge about the distribution of birds in Paraguay rather than genuine rarity of the species concerned. However, given the continuing destruction and degradation of Paraguay's natural resources, it is likely that many are declining. Recent fieldwork (e.g. Brooks *et al.* 1993, 1995, Lowen *et al.* 1995, 1996a, 1996b, Madroño & Esquivel 1997) has highlighted the urgent need for more biological fieldwork. The rate at which Paraguay's ecosystems are being destroyed will otherwise result in the loss of the country's avifauna before much of it has even been documented.

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Appendix

A summary of the location of sites mentioned in the text

Region	Site	Department	Coordinates
Oriente	RVS Yabebyry	Misiones	27°10'S, 57°00'W
	MN Bosque de Arary	Itapúa	27°27'S, 56°48'W
	/Base Aerea		27°25'S, 57°11'W
	/Puerto Turi		27°24'S, 57°14'W
	RNP Ypetí	Caazapá	25°33'S, 55°30'W
	RNP Itabó	Canindeyú	24°20'S, 54°35'W
	PN Caaguazú	Caazapá	26°04'S, 55°45'W
	PN San Rafael	Itapúa	26°25'S, 55°40'W
	RNB Mbaracayú	Canindeyú	24°07'S, 55°23'W
	/Jejuí-mí		24°08'S, 55°31'W
	/Lagunita		24°08'S, 55°25'W
	/Aguará Ñu		24°09'S, 55°16'W
	/Carapá waterfall		24°00'S, 55°20'W
	PN Ypacaraí	Central/Cordillera	25°15'S, 55°19'W
	RNP Sombrero	Cordillera	25°00'S, 56°38'W
	Estancia Kaa'gua Rory	Caaguazú	24°46'S, 55°26'W
	Bahia de Asunción	Central	25°18'S, 57°40'W
Chaco	Estancia Jiménez	Canindeyú	24°13'S, 55°38'W
	PN Cerro Corá	Amambay	22°39'S, 56°00'W
	RNP Golondrina	Presidente Hayes	24°59'S, 57°43'W
	Puerto Remanso	Presidente Hayes	25°12'S, 57°33'W