

AUSTRAL BIRD MIGRANTS IN PARAGUAY¹

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Abstract. In the temperate latitudes of South America, populations of many species of austral bird migrants move northward from their breeding grounds to warmer latitudes during the austral winter. We identify 35 species of birds that presumably nest in Paraguay but are absent or rare during the winter (northern austral migrants), and 45 species with populations that winter in Paraguay but breed in areas farther south (southern austral migrants). We summarize the status of each species and justify its recognition as a long-distance migrant by providing extreme dates of occurrence or other pertinent observations. New distributional records and extreme migration dates are reported for many species. The austral migrant fauna is dominated by flycatchers (Tyrannidae), which account for 40% of the species. Most species of austral migrants are insectivorous.

Key words: *Austral bird migrants; distribution; migration; Paraguay; South America; seasonality.*

Resumen. En las latitudes templadas de Sudamérica, las poblaciones de muchas especies de aves migrantes australes se trasladan desde sus territorios de nidificación hacia el norte a latitudes más calurosas durante el invierno austral. Se identificaron 35 especies de aves que presumiblemente nidifican en el Paraguay pero están ausentes o son escasas durante el invierno (migrantes australes norteros), y 45 especies con poblaciones que son invernantes en el Paraguay pero nidifican en áreas más al sur (migrantes australes sureños). Se resume el estado de cada especie y se justifica su reconocimiento como un migrante de distancias largas en base de fechas extremas de los registros u otras observaciones. Se presentan datos referentes a nuevos registros de distribución y nuevas fechas extremas de migración. La fauna migrante austral es dominada por especies de la familia Tyrannidae, que representan 40% de las especies. La mayoría de las especies de migrantes australes se alimentan de insectos.

Palabras llaves: *Aves migrantes australes; distribución; estacionalidad; migración; Paraguay; sudamérica.*

INTRODUCTION

In the temperate latitudes of South America, populations of many species of birds move northward from their breeding grounds during the colder autumn and winter months (all seasonal references in this paper refer to the austral cycle), and return southward to breed during spring. These species are collectively referred to as "austral migrants." This phenomenon has long been recognized by ornithologists (e.g., Zimmer 1938, Olrog 1963, Sick 1968, Willis 1988), yet remains poorly documented. The major regional references of South America identify species

thought to be austral migrants, but provide scanty information (e.g., Johnson and Goodall 1965, 1967; Haverschmidt 1968; Gore and Gepp 1978; Meyer de Schauensee and Phelps 1978; Parker et al. 1982; Sick 1984; Hilty and Brown 1986; Olrog 1963; Fjeldså and Krabbe 1990). The best regional summary is that of Belton (1984, 1985), who provided extreme dates for species thought to be migrants in the state of Rio Grande do Sul, Brazil. Only a few summaries have been published on the seasonal distribution of individual species (e.g., Lanyon 1978, 1982; Remsen and Hunn 1979; Remsen and Parker 1990; Marantz and Remsen 1991).

In contrast with the situation of austral bird migrants, the migration of North American breeding birds to and from their wintering grounds in South America has been extensively

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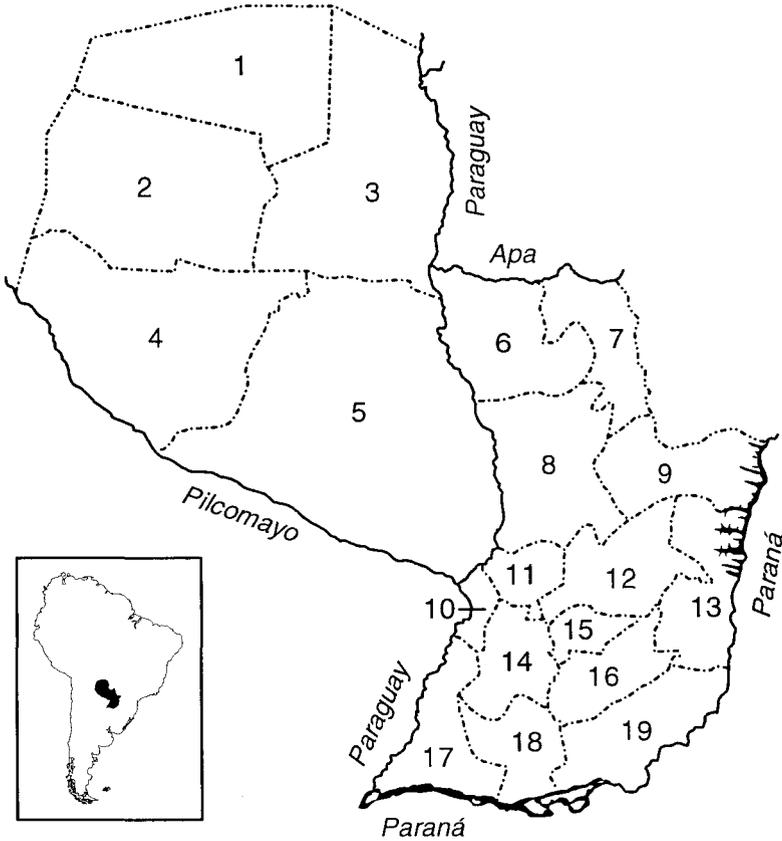


FIGURE 1. Map of Paraguay showing location of 19 departments and major rivers. Departments: 1 = Chaco; 2 = Nueva Asunción; 3 = Alto Paraguay; 4 = Boquerón; 5 = Presidente Hayes; 6 = Concepción; 7 = Amambay; 8 = San Pedro; 9 = Canindeyú (formerly Canendiyú); 10 = Central; 11 = Cordillera; 12 = Caaguazú; 13 = Alto Paraná; 14 = Paraguari; 15 = Guairá; 16 = Caazapá; 17 = Ñeembucú; 18 = Misiones; 19 = Itapúa.

studied (e.g., Keast and Morton 1980, Rappole et al. 1983). This can be attributed to the abundance and distinctiveness of Nearctic migrants in South America, and a long-term interest by North American governments and ornithologists alike in the conservation of Nearctic birds on their wintering grounds. In South America there are fewer trained ornithologists, and the migratory movements of resident birds occur over relatively shorter distances and are less spectacular than those of Nearctic birds. Because of the comparatively smaller land area in the higher latitudes of South America, there is less potential for hosting migrant species, and those which do migrate are generally closer to the tropical latitudes.

The long-distance migratory movements of many species can be inferred by examining the

seasonal occurrence, condition of gonads, and feather molt of a species throughout its range, or by censusing or noting the presence or absence of a species in a specific geographic area, such as a small country, during different seasons. Strategically situated in the interior of South America east of the Andes, the Republic of Paraguay provides a unique perspective on the phenomenon of austral bird migrations in South America.

Slightly larger than California, Paraguay encompasses an area of 406,752 km² between 54°19' and 62°38' west longitude, and between 19°18' and 27°30' south latitude. The southward-flowing Paraguay River divides the country into two distinct regions: the relatively flat and xeric Chaco to the west, and the more humid and topographically diverse Orient to the east (Fig. 1). The climate of Paraguay is subtropical; summers

are relatively hot and humid, and winters are relatively cool and dry, with temperatures occasionally dipping below freezing. Further descriptions of the climate and topography of Paraguay can be found in Gorham (1973) and Anonymous (1985).

Our current knowledge of bird distribution in Paraguay, both geographical and seasonal, is inadequate to determine precisely which South American species are long-distance migrants. However, data obtained during extensive field observations in Paraguay (1977, 1982 and 1991 by R.S.R.; 1987–1989 by F.E.H.; 1989–1991 by P.A.S.), during visits to several major American museums, and from a review of the literature, indicate that many species exhibit distinct patterns of long-distance migration to and from the country. In this paper we attempt to identify and discuss these patterns, identify the species exhibiting these patterns, and briefly summarize information on the geographical and seasonal distribution of these species within the country.

PATTERNS OF MIGRATION

There are two general patterns of austral bird migration in Paraguay. The first pattern consists of birds that breed in Paraguay during the austral summer, but move northward into tropical latitudes during the colder winter months and return during spring; these species are herein referred to as “northern austral migrants.” Although a few individuals of some species may remain during the winter, the vast majority apparently move northward. The second pattern concerns bird populations that nest to the south or west of Paraguay in more temperate areas, and migrate to Paraguay during the colder winter months; these species are referred to as “southern austral migrants.” Some species appear in Paraguay only during the winter, whereas a few individuals of other species may remain to breed during the summer. These two patterns, which refer to the same phenomenon, result from Paraguay’s location in the middle latitudes of South America. However, these patterns are general and are not always completely applicable because some species, such as the Snail Kite (*Rostrhamus sociabilis*), are probably represented by breeding individuals that winter north of Paraguay and wintering individuals that breed south of Paraguay. Other species, such as the White-crested Elaenia (*Elaenia albiceps*), are probably transient in Paraguay, neither wintering nor breeding in

the country. But because their breeding populations are distributed primarily to the south of Paraguay, we have classified them as “southern austral migrants.”

SPECIES ACCOUNTS

We include only species whose occurrence in Paraguay has been adequately documented. Exact localities are provided only for significant distributional or seasonal records. Geographical coordinates are provided (when possible) for localities not listed in Paynter (1989). The location of each of the 19 political divisions (*departamentos*, hereafter each is abbreviated as Dpto.) is shown in Figure 1. Abundance terms are defined as follows: common, observed daily in appropriate habitat; uncommon, observed once every 2–10 days; rare, observed at intervals of 11 or more days. For species regarded as rare we provide data on the number of specimen and sight records. The taxonomy and sequence of species follow Clements (1991), except for a few English names that follow Ridgely and Tudor (1989 and unpubl.).

Because of a paucity of published information on nesting in Paraguay, birds are assumed to breed when they occur during the summer months (e.g., see Dalglish 1889, Chubb 1910, Steinbacher 1962). “Breeder” refers to individuals that presumably nest within the country; “migrant” refers to individuals that presumably do not nest within the country. Extreme dates of occurrence are given in the order of arrival and departure. Acronyms for museum specimens include: AMNH = American Museum of Natural History, New York; FMNH = Field Museum of Natural History, Chicago; UMMZ = University of Michigan Museum of Zoology, Ann Arbor; USNM = National Museum of Natural History, Washington, D.C. Sight records are indicated by our initials.

Northern Austral Migrants. Swallow-tailed Kite (Elanoides forficatus)—Uncommon breeder in the Orient, usually well east of the Paraguay River. Extreme dates are 24 August (Brooks et al, unpubl.) and 14 March (Contreras et al. 1988).

Rufous-thighed Kite (Harpagus diodon)—Rare migrant in the Chaco and rare breeder in the Orient. Specimen records include single birds taken at Dpto. Alto Paraná in October (Bertoni 1901); east of Yhú, Dpto. Caaguazú, on 5 January (1931, AMNH 320304); at Independencia, Dpto. Guairá, on 15 October (1931, AMNH

320001); and at Horqueta, Dpto. Concepción, on 2 February (1933, UMMZ 72034). P.A.S. and F.E.H. have observed small numbers at Parque Nacional Ybycui, Dpto. Paraguari, between the dates of 9 October (1989) and 25 February (1989). There are no previous records for the Chaco, where R.S.R. observed single adults flying over Parque Nacional Teniente Enciso, Dpto. Nueva Asunción (21°08'S, 61°38'W), on 29 August and 2 September 1982.

Plumbeous Kite (*Ictinia plumbea*)—Common breeder in the southeastern Orient, uncommon elsewhere throughout Paraguay. Extreme dates are 27 August (1937, at Dpto. San Pedro, UMMZ 96134, 105038) and 17 June (1990, at Dpto. Presidente Hayes, by P.A.S.). The latter date may represent a wintering individual.

Paint-billed Crane (*Neocrex erythrops*)—Rare breeder in the Chaco and northern Orient. Extreme dates for nine specimens and three sight records are 24 August (Brooks et al. in prep.) and 12 April (Short 1976).

Spotted Rail (*Pardirallus maculatus*)—Rare breeder throughout Paraguay. Extreme dates for 27 specimens and three sight records are 30 August (1924, at Dpto. Guairá, FMNH 402916) and 13 April (1940, at Dpto. Central, UMMZ 111366).

Purple Gallinule (*Porphyrio martinicus*)—Uncommon breeder in the Chaco, rare in the Orient. Extreme dates are 5 September (1990, at Dpto. Presidente Hayes, by P.A.S.) and 30 May (1991, at Dpto. Presidente Hayes, by P.A.S.).

Azure Gallinule (*Porphyrio flavirostris*)—Rare breeder in the northern Chaco and northern Orient. Extreme dates for nine specimen records are October (Remsen and Parker 1990) and 28 January (1937, at Dpto. Alto Paraguay or Boquerón, UMMZ 92982). On 17 August 1989, F.E.H. observed an individual flush from emergent vegetation on the Brazilian side of the Paraguay River opposite Puerto Ramos (Dpto. Alto Paraguay), in Mato Grosso do Sul, Brazil. This record indicates that birds likely arrive in Paraguay as early as August. Remsen and Parker (1990) reviewed the seasonality of this species in South America.

Dark-billed Cuckoo (*Coccyzus melacoryphus*)—Uncommon breeder throughout Paraguay. During winter it is apparently rare in the Chaco. Single specimens taken in Dpto. Presidente Hayes on 30 May and 5 July (Short 1976) were likely wintering. Single individuals, possibly the same bird, were seen at Fortín Toledo,

Dpto. Boquerón (22°21'S, 60°20'W), throughout June and August (1990, by Brooks pers. comm.). Extreme dates for the Orient are 5 September (1940, at Dpto. Alto Paraná, UMMZ 111017) and 20 January (Laubmann 1939).

Greater Ani (*Crotophaga major*)—Rare breeder throughout Paraguay, except in the north-eastern Chaco where it is uncommon. Virtually all records are from the summer months. The only winter record is of two birds seen west of Salto Guairá, Dpto. Canindeyú, on 13 July (1977, by R.S.R.). This species is apparently absent during winter to the south of Paraguay (e.g., Belton 1984, Chebez 1993).

Ashy-tailed Swift (*Chaetura andrei*)—Common breeder in the central Chaco and south-eastern Orient, uncommon elsewhere in Paraguay. During winter it is absent or possibly rare. Numerous winter sight records of *Chaetura* swifts in the Orient may refer to the Gray-rumped Swift (*Chaetura cinereiventris*; Brooks et al. in prep.), which apparently winters as far south as Rio Grande do Sul, Brazil (Belton 1984). Extreme dates of Ashy-tailed Swift for the Chaco, where the Gray-rumped Swift is not resident (Short 1975) and has not been recorded, are 16 August 1989, at Dpto. Alto Paraguay, by F.E.H.) and 22 April (1990, at Dpto. Boquerón, by P.A.S.).

Mouse-colored Tyrannulet (*Phaeomyias murina*)—Rare but probably overlooked breeder in the eastern Chaco and Orient. Extreme dates for six specimens and one sight record are 27 August (1989, at Río Salado, Dpto. Central, by P.A.S.) and 17 April (1931, at 80 km W of Puerto Pinasco, Dpto. Presidente Hayes, AMNH 321120). Further evidence that this species is migratory was provided by Willis and Oniki (1990) for southwestern Mato Grosso, Brazil.

Southern Scrub Flycatcher (*Sublegatus modestus*)—Rare breeder in the Chaco and all but the southeastern Orient. Extreme dates for 34 specimens and seven sight records are 5 August (1989, at Dpto. Misiones, by P.A.S.) and 18 April (1931, at Dpto. Presidente Hayes, AMNH 321132). There are, however, a few winter records from northern Argentina (e.g., Wetmore 1926).

Greenish Elaenia (*Myiopagis viridicata*)—Rare breeder in extreme southeastern Chaco and throughout the Orient. Extreme dates for 38 specimens and 12 sight records are 3 September (1940, at Dpto. Alto Paraná, UMMZ 111106) and 5 May (1990, at Dpto. Canindeyú, by P.A.S.). Reports of this species in the Chaco at Río Negro

(Cory and Hellmayr 1927, Naumburg 1930) are based on two specimens collected at Riacho Negro, Dpto. Presidente Hayes, on 14 and 15 November (1913, AMNH 127020, 127019).

Large Elaenia (*Elaenia spectabilis*)—Uncommon breeder in the Chaco, rare in the Orient. Extreme dates for 28 specimens and 18 sight records are 24 August (Brooks et al. in prep.) and 16 April (1988, at Dpto. Paraguari, by F.E.H.).

Plain Tyrannulet (*Inezia inornata*)—Rare resident of the Chaco and northern Orient. Extreme dates for ten specimen records are 11 August (1930, at Dpto. Concepción, AMNH 319783) and 24 March (1931, at Dpto. Presidente Hayes, AMNH 320912).

Bran-colored Flycatcher (*Myiophobus fasciatus*)—Uncommon breeder in the eastern Orient. During winter it appears to be rare. Sight records in the eastern Orient during June (P.A.S.), July and August (Brooks et al. in prep.) indicate that a few individuals winter in Paraguay. It is a common resident in Rio Grande do Sul, Brazil, but has been recorded only twice during winter (Belton 1985). Further evidence that this species is migratory comes from the provinces of Misiones and Corrientes, Argentina, where all 9 specimens in the AMNH were recorded between 29 September and 9 April. By contrast, nine of 43 (21%) specimens in the AMNH of the nonmigratory Southern Beardless-Tyrannulet (*Camptostoma obsoletum*) from Arroyo Urugua-í, Misiones, Argentina, were recorded during June–August.

Fuscous Flycatcher (*Cnemotriccus fuscatus*)—Rare breeder throughout Paraguay. Of 25 specimens and 22 sight records, 42 (89%) were recorded during September–March. The only mid-winter records include a specimen taken at Estancia San Ignacio, Dpto. Caaguazú (24°57'S, 56°33'W; coordinates from specimen, possibly in southern Dpto. San Pedro), on 2 July (1979, UMMZ 202626), and a single bird seen at Parque Nacional Cerro Corá, Dpto. Amambay, on 22 July (1988, by F.E.H.).

Euler's Flycatcher (*Lathrotriccus euleri*)—Rare breeder in the Chaco, uncommon in the Orient. During winter it is apparently rare. Only one of 27 specimens was collected during the winter; it was obtained 20 km E of Rosario, Dpto. San Pedro, on 20 June (1937, UMMZ 96096). Several sight records from the eastern Orient during June (P.A.S.), July (Brooks et al. in prep.) and August (R.S.R., Brooks et al. in prep.) suggest that some individuals winter regularly. There are no winter records from Rio Grande do Sul, Brazil

(Belton 1985). Further evidence that this species is migratory comes from Misiones and Corrientes, Argentina, where all 114 specimens in the AMNH were recorded between 14 August and 27 March.

Swainson's Flycatcher (*Myiarchus swainsoni*)—Rare (but probably overlooked) breeder throughout Paraguay. Extreme dates for 22 specimens and 16 sight records are 28 August (1940, at Dpto. Alto Paraná, UMMZ 111090) and 1 March (1991, at Dpto. Presidente Hayes, by P.A.S.); 8 April would be the latest date if *M. ferox* of Steinbacher (1968) refers to this species, as argued by Short (1976) and Lanyon (1978) on the basis of published measurements. Lanyon (1978, 1982) reviewed the seasonality of this species in South America, but did not examine UMMZ specimens.

Tropical Kingbird (*Tyrannus melancholicus*)—Common breeder throughout Paraguay. During winter, it is rare. Winter records include a specimen taken at Puerto Gibaja, Dpto. Alto Paraná, on 27 July (1940, UMMZ 108858), and two birds seen throughout July and August at Fortín Toledo, Dpto. Boquerón (1990, by D. Brooks, pers. comm.).

Fork-tailed Flycatcher (*Tyrannus savanna*)—Locally common breeder throughout Paraguay. Brooks et al. (unpubl.) recorded a wintering individual at Estancia La Golondrina, Dpto. Caazapá (25°33'S, 55°30'W), on 5 and 12 July 1992. Otherwise the extreme dates are 24 August (1939, at Dpto. Presidente Hayes, UMMZ 105407) and 31 March (1991, at Dpto. Canindeyú, by P.A.S.).

Variegated Flycatcher (*Empidonomus varius*)—Common breeder in the southeastern Orient, uncommon elsewhere in the Orient, and rare in the Chaco. During winter it is rare. A wintering bird was noted by P.A.S. at proposed Reserva Natural del Bosque Mbaracayú, Dpto. Canindeyú (24°07'S, 55°32'W), on 26 June 1990. There are no previously published records from the Chaco. At Estancia La Golondrina, Dpto. Presidente Hayes, two birds were seen by F.E.H. on 17 December 1988, two by P.A.S. on 21 October 1990, and one by P.A.S. on 10 November 1990. Two birds, which may have been wintering, were seen by P.A.S. at Mariscal Estigarribia, Dpto. Boquerón, on 10 August 1989. Along the Ruta Trans Chaco, Dpto. Presidente Hayes, P.A.S. saw two on 25 February 1990 and one on 24 February 1991. These records indicate that this species is resident in the Chaco.

Crowned Slaty Flycatcher (*Griseotyrannus au-*

rantioatrocristatus)—Common breeder in the Chaco, uncommon in the southwestern Orient, and rare elsewhere in the Orient. During winter it is apparently rare. The earliest date is 16 August (1940, Dpto. Alto Paraná, UMMZ 109810); the latest date is 4 July (1934, at Dpto. San Pedro, UMMZ 131284). The latter record presumably represents a wintering bird.

Streaked Flycatcher (*Myiodynastes maculatus*)—Common breeder in the Chaco, except in the northeastern Chaco where it is uncommon, and uncommon in the Orient. Extreme dates are 27 August (1937, at Dpto. San Pedro, UMMZ 96094) and 7 April (Steinbacher 1962).

Piratic Flycatcher (*Legatus leucophaius*)—Rare breeder in the Orient. Extreme dates for 22 specimens and one sight record are 5 October (1937, at Dpto. Concepción, UMMZ 93697) and 6 May (1991, at Dpto. Paraguari, by P.A.S.).

White-winged Becard (*Pachyramphus polychopterus*)—Rare breeder throughout Paraguay. The only winter record is of a female (possibly misidentified) recorded by Brooks et al. (in prep.) at Estancia La Golondrina, Dpto. Caazapá, on 8 July 1992. Otherwise the extreme dates for 37 specimens and 13 sight records are 10 August (1939, at Dpto. Presidente Hayes, UMMZ 105401) and 24 April (1940, at Dpto. Central, UMMZ 111058).

Red-eyed Vireo (*Vireo olivaceus*)—Common breeder throughout the Chaco and western Orient, uncommon in eastern Orient. During winter it is apparently rare. P.A.S. observed six birds that may have been early migrants at Fortín Teniente Ochoa, Dpto. Nueva Asunción (21°42'S, 61°02'W), on 11 August 1989, and two wintering birds north of Curuguay, Dpto. Canindeyú, on 25 June 1990.

Yellow-legged Thrush (*Platycichla flavipes*)—Rare resident of extreme eastern Paraguay. Bertoni (1901) reported two specimens taken at Dpto. Alto Paraná, in October and November 1894, and later (Bertoni 1926) reported that the species arrived nearly every summer. However, there are no recent records. Chebez (1992) reported that there are only 12 specimen records from adjacent Misiones Province, Argentina, all between the dates of 6 September and 1 November.

Brown-chested Martin (*Phaeoprogne tapera*)—Common breeder in the eastern Chaco and western Orient, uncommon in the western Chaco and western Orient. Extreme dates are 18 August

(1988, at Dpto. Alto Paraguay, by F.E.H.) and 25 May (1988, at Dpto. Central, by F.E.H.).

Gray-breasted Martin (*Progne chalybea*)—Locally common breeder throughout Paraguay, except in the drier portions of the Chaco where it is rare. A few individuals apparently remain during the winter. Midwinter records include birds seen at Dpto. Presidente Hayes on 27 July (Kerr 1892), at Dpto. Central during late July (1977, by R.S.R.), at Dpto. Paraguari on 22 June (1990, by P.A.S.), and at Dpto. Canindeyú on 4 August (1992, Brooks et al. in prep.).

Southern Rough-winged Swallow (*Stelgidopteryx ruficollis*)—Rare breeder in the Chaco, uncommon in the western Orient, and common in the eastern Orient. Extreme dates are 2 August (1977, at Dpto. Concepción, by R.S.R.) and 16 April (1988, at Dpto. Paraguari, by F.E.H.).

Swallow Tanager (*Tersina viridis*)—Rare migrant in the Chaco and uncommon breeder in the eastern Orient. The only Chaco record is from Lichtenau, Dpto. Presidente Hayes, where two birds were collected on 2 May (1970; Short 1972, 1976). Extreme dates are 26 July (1989, at Dpto. Canindeyú, by F.E.H.) and 2 May (Short 1972, 1976). The July record may represent a wintering bird rather than an early migrant.

Lined Seedeater (*Sporophila lineola*)—Uncommon breeder in the Chaco, rare in the western Orient. Extreme dates are 2 August (1977, at Dpto. Concepción, by R.S.R.) and 5 May (1991, at Dpto. Presidente Hayes, by P.A.S.). The August record may represent a wintering individual.

Dark-throated Seedeater (*Sporophila ruficollis*)—Rare breeder in the central Chaco and southern Orient. Ten specimens and two sight records from the Chaco range from 21 September (1992, at Dpto. Presidente Hayes, by R. P. Clay and R. Barnes, pers. comm.) to 7 April (Steinbacher 1968, UMMZ). The only published record from the Orient is an immature collected at Sapucái, Dpto. Paraguari, on 21 March (1904, Chubb 1910). Our sightings include a male 5 km SSE of Villeta, Dpto. Central, on 23 October (1989, by F.E.H.), and ten birds west of San Juan Bautista, Dpto. Misiones (26°42'S, 57°05'W), on 2 March (1991, by P.A.S.).

Rufous-rumped Seedeater (*Sporophila hypochroma*)—Rare breeder in the southern Chaco and southwestern Orient. Bertoni's (1930) overlooked description and photograph of *Sporophila plumbeiceps posneri* (p. 256, "throat bright chest-

nut as is the abdomen and rump and the back . . . wing with white speculum”), based on a male collected at Villa Hayes, Dpto. Presidente Hayes, on 13 October 1922, apparently refers to this species. The only other published record for Paraguay is a specimen taken between Santiago (27°10'S, 56°44'W) and Ayolas, Dpto. Misiones (Contreras et al. 1989, pers. comm.), but no further details were published. On 23 October 1989, F.E.H. and J. Escobar Argaña viewed a male *S. hypochroma* beside a male Tawny-bellied Seed-eater (*S. hypoxantha*) and an unidentified female at 5 km SSE of Villeta, Dpto. Central. About 200 m away, a second singing male *S. hypochroma* was seen with an unidentified female. About 20 singing male *S. hypoxantha* were seen nearby. On 24 February 1991, P.A.S. viewed two male *S. hypochroma* and an associating female amongst a flock of *S. hypoxantha* along the Ruta Trans Chaco near km 100, Dpto. Presidente Hayes (coordinates unknown). All records south of Bolivia range from October to April (Collar et al. 1992), suggesting that it is a long-distance migrant.

Southern Austral Migrants. Silvery Grebe (*Podiceps occipitalis*)—Rare migrant in the southeastern Orient. Colmán and Pérez (1991, pers. comm.) reported the species for southeastern Paraguay on the basis of a specimen (examined by F.E.H.) collected during the winter and deposited at the museum of Itaipú Binacional in Hernandarias, Dpto. Alto Paraguay. No further details have been published. This species breeds far to the south of Paraguay (Narosky and Yzurieta 1987).

Chilean Flamingo (*Phoenicopterus chilensis*)—Rare irruptive migrant, sometimes in large flocks (up to 62 seen by P.A.S.), throughout the Chaco. The only record from the Orient is a specimen taken from a small flock along the Riacho San Francisco at Urumburú, Dpto. Central (not located on map, but stated to be across the Paraguay River from Villa Hayes, Dpto. Presidente Hayes), on 6 June 1940 (Podtiaguín 1944). Extreme dates range from February (1939, exact date and locality unknown, USNM 399449) to 18 November (Brooks 1991, pers. comm.). Most records are from the winter months, but the November and February records suggest that some birds may summer in Paraguay. Nesting is unlikely.

Snail Kite (*Rostrhamus sociabilis*)—Common breeder throughout Paraguay, except in the west-

ern Chaco and southeastern Orient where it is uncommon. It is most common during spring and fall, when it apparently migrates. Large flocks (up to 200 birds) have been observed moving northward along the Paraguay River in March and southward during August–October (e.g., Hayes 1991).

Peregrine Falcon (*Falco peregrinus*)—The austral race (*F. p. cassini*) is a rare migrant in the Chaco, and perhaps along the Paraguay River. There are at least four specimen records from the central Chaco, in Dptos. Boquerón and Presidente Hayes, between 27 December and 1 June (Steinbacher 1962, Storer 1989). Although breeding is doubtful, these dates suggest that some individuals may summer in Paraguay. A specimen record (now lost) from Puerto Bertoni, Dpto. Alto Paraná (Bertoni 1914), and recent sightings (1987–1989) along the Paraguay River may include individuals of *F. p. cassini*, but individuals of the Nearctic races (at least one confirmed record) are difficult to distinguish from *F. p. cassini* in the field (Hayes et al. 1990a).

Gray-hooded Gull (*Larus cirrocephalus*)—Rare migrant in the Paraguay River basin. Schlegel (1863) reported a specimen from an unknown locality in Paraguay (*vide* Storer 1989) at a time when Paraguay was much larger. Two specimens were obtained 120 km E of Orloff, in Dpto. Presidente Hayes, on 1 September (1940, Storer 1989). López (1985) reported ten observed along the Paraguay River in Dpto. Alto Paraguay during October and November 1984; however, extensive waterbird surveys along the Paraguay River during 1987–1989 failed to find any (Hayes, in press). Contreras et al. (1989) reported this species without further information in Dpto. Misiones.

Brown-hooded Gull (*Larus maculipennis*)—Rare migrant in the southern Orient. Schlegel (1863) reported three specimens obtained from unknown localities (*vide* Storer 1989) at a time when Paraguay was larger. Bertoni (1919) reported a specimen (now lost) taken at Dpto. Alto Paraná, in July 1916, and Storer (1989) reported another specimen taken at Dpto. Paraguari, on 17 August 1901. The few available dates for this species and *L. cirrocephalus* (see above) suggest that gulls sporadically move northward up the Paraná and Paraguay Rivers during the austral winter. There is no evidence that either species breeds in Paraguay (Hayes, in press).

Picazuro Pigeon (*Columba picazuro*)—Common breeder in the southern and western Chaco and western Orient, uncommon in the north-eastern Chaco and eastern Orient. During winter it is especially numerous, often occurring in large flocks in the central Chaco. In Dpto. Boquerón, F.E.H. found flock sizes to be significantly larger (and more numerous) during 31 March and 1 April 1988 (\bar{x} = 11.5 birds, SD = 46.9, range = 1–400, n = 100) than during 17–30 January 1988 (\bar{x} = 1.4 birds, SD = 0.9, range = 1–5, n = 39; Mann-Whitney U test, U = 1248, P = 0.001). However, the species is apparently less common in the taller forests of the northeastern Chaco: in Dpto. Alto Paraguay, F.E.H. found flock sizes to average 1.3 birds (SD = 0.7, range = 1–3, n = 9) during 34 days of field work during June–August 1988 and August 1989. Large flocks of migrants have also been seen in the southwestern Orient (P.A.S.), but are apparently absent in more forested areas in the Orient. For example, at Choré, Dpto. San Pedro, Hayes and Areco de Medina (1988) found flock sizes to average 1.4 birds (SD = 0.7, range = 1–4, n = 30) during 20 days of field work during July–October 1987. Farther north, Willis and Oniki (1990) found the species to be common during winter and rare during summer in southwestern Mato Grosso, Brazil, thus supporting its status as a presumed austral migrant.

Band-winged Nightjar (*Caprimulgus longirostris*)—Uncommon migrant in the central Chaco. Extreme dates are 29 May (1991, at Dpto. Boquerón, by R.S.R. and P.A.S.) and 30 August (Storer 1989).

Common Miner (*Geositta cunicularia*)—Apparently a rare migrant in the southern Orient. Vaurie (1980) specifically stated that he examined a specimen from Villarrica, Dpto. Guairá, but did not provide further details. The breeding range of this species is situated to the south of Paraguay (e.g., Narosky and Yzurieta 1987).

Bar-winged Cinclodes (*Cinclodes fuscus*)—Rare migrant in the southwestern Orient. The only previous report of this species in Paraguay was by Azara (1802–1805), at a time when Paraguay was much larger. On 6 June 1991, R.S.R., P.A.S., T. Burke, and L. Bevier carefully studied two birds near San Juan de Ñeembucú, Dpto. Ñeembucú (26°41'S, 57°52'W).

Sharp-billed Canastero (*Asthenes pyrrholeuca*)—Rare migrant in the Chaco and southwestern Orient. In the Chaco, Steinbacher (1962) re-

ported a specimen taken at Laguna Escalante, Dpto. Presidente Hayes, on 3 August 1962. P.A.S. observed two birds to the north of Filadelfia, Dpto. Boquerón, on 17 June 1990. In the Orient, Grant (1911) reported a specimen taken at Dpto. Ñeembucú, on 11 August 1909.

Wren-like Rushbird (*Phleocryptes melanops*)—Rare migrant in the Chaco, and possibly in the southeastern Orient, where Bertoni (1914) reported it without details from Dpto. Alto Paraná. Extreme dates for 11 specimen records in the Chaco are 26 March (1945, at Dpto. Boquerón, FMNH 152476, 152477) and 1 October (Steinbacher 1962).

White-tipped Plantcutter (*Phytotoma rutila*)—Uncommon migrant in the Chaco, rare in the Orient. Extreme dates for 28 specimens and 13 sight records are 3 June (1945, at Dpto. Alto Paraguay or Presidente Hayes, FMNH 152720) and 20 October (1989, at Dpto. Presidente Hayes, by P.A.S. and F.E.H.). The only records for the Orient include a specimen collected by R. W. Storer at Río Salado, Dpto. Central (25°12'S, 57°22'W), on 8 August (1978, UMMZ 200889), another specimen collected by S. M. Goodman on the east bank of the Paraguay River 10 km NW of Rosario, Dpto. San Pedro, on 13 September (1988, UMMZ 226411), and a sight record by Brooks et al. (unpubl.) at Estancia La Golondrina, Dpto. Caazapá, on 7 July 1992.

White-crested Elaenia (*Elaenia albiceps*)—The southern race (*E. a. chilensis*) is a rare migrant (transient) in the Orient. Fifteen skin specimens at the UMMZ and AMNH were all collected during the austral spring in Dptos. Concepción, Amambay, Guairá, and Alto Paraná, between the dates of 26 September (1940, at Dpto. Alto Paraná, UMMZ 108893, 108895) and 1 November (1935, at Dpto. Concepción, UMMZ 90837, 90838). Another specimen was collected during spring at Capitán Meza, Dpto. Itapúa, on 28 November (Partridge 1953, 1954). The only fall record is a specimen collected at Villarrica, Dpto. Guairá, on 5 April 1915 (FMNH 65617). The proportionately higher number of spring records in eastern Paraguay is unusual; however, of 21 specimens in the AMNH from Arroyo Uruguái, Misiones Province, Argentina (across the Paraná River from Dpto. Alto Paraná, Paraguay), 14 were collected between 7 March and 8 April, and seven between 14 October and 13 November.

White-crested Tyrannulet (*Serpophaga sub-*

cristata)—Common migrant in the Chaco, uncommon in scrub forests and humid forests in the Orient. During summer it apparently is a rare breeder in the Chaco (e.g., Short 1976; pers. obs.), and possibly in the Orient, where Laubmann (1940) reported a specimen as late as 25 November.

White-bellied Tyrannulet (*Serpophaga munda*)—Uncommon migrant and rare breeder in the Chaco, and rare migrant in the western Orient. This species is best distinguished from pale-bellied White-crested Tyrannulets (*S. subcristata*) by its song, which is a relatively monotone trill (Remsen and Traylor 1989, pers. obs.). Previously published dates of *S. munda* for Paraguay range from 16 April (Steinbacher 1962) to 20 September (Wetmore 1926). However, F.E.H. has observed singing individuals along the Ruta Trans Chaco near the border of Dpto. Boquerón and Presidente Hayes (22°36'S, 59°48'W), on 8 and 9 December 1988, and at Puerto Bahía Negra, Dpto. Alto Paraguay, on 31 January 1989, suggesting that a few individuals remain to breed in the Chaco. There are no previously published records for the Orient. On 22 May 1989, F.E.H. observed a singing bird at Estancia Fonciere, Dpto. Concepción (22°28'S, 57°47'W). On 27 August 1989, P.A.S. observed a bird which was not singing along the Río Salado, Dpto. Central.

Dinelli's Doradito (*Pseudocolopteryx dinellianus*)—Rare migrant in the Chaco. Steinbacher (1962) reported a specimen obtained at Laguna Escalante, Dpto. Presidente Hayes, on 3 August 1960. Another specimen was obtained at Laguna General Díaz, Dpto. Alto Paraguay or Presidente Hayes, on 20 July (1945, FMNH 152593). P.A.S. identified two birds as this species at Ruta Trans Chaco km 79, Dpto. Presidente Hayes (coordinates unknown), on 9 May 1990, and another (seen with D. Engleman) at Ruta Trans Chaco km 100, Dpto. Presidente Hayes, on 16 June 1990.

Warbling Doradito (*Pseudocolopteryx flaviventris*)—Rare migrant in the Chaco and Orient. Extreme dates for 20 specimens and 12 sight records are 23 March (1989, at Dpto. Itapúa, by F.E.H.) and 20 October (1916, at Dpto. Presidente Hayes, AMNH 149599). A specimen taken by Kerr (1901) at Dpto. Presidente Hayes, on 28 November 1896, was apparently misidentified (P. Colston, pers. comm.).

Vermilion Flycatcher (*Pyrocephalus rubinus*)—Common migrant throughout Paraguay,

and rare resident in the southern Chaco and western Orient. There are only eight records during November (P.A.S.), two during December (F.E.H.), 11 during January (Kerr 1901, P.A.S., FMNH, UMMZ), and one during February (AMNH), all south of 22°40'S and west of 26°55'W in Dptos. Presidente Hayes, San Pedro, Central, Ñeembucú and Misiones.

Black-crowned Monjita (*Xolmis coronata*)—Rare migrant in the Chaco and western Orient. The only record from the Orient is from Lago Ypacarai, Dpto. Central or Cordillera (Bertoni 1939), but no details were provided. Extreme dates for 14 specimens and ten sight records are 28 January (1948, at Dpto. Boquerón, FMNH 190469) and 4 October (1940, at Dpto. Boquerón, USNM 476031); 20 (71%) of the records are from May–August. The late January specimen (a female) may have been summering; the next earliest record is 19 March (1989, at Dpto. Presidente Hayes, by A. Madroño Nieto).

Gray-bellied Shrike-Tyrant (*Agriornis micropetera*)—Rare migrant in the central Chaco. Extreme dates for ten specimens are 17 June (1937, at Dpto. Alto Paraguay or Boquerón, UMMZ 98134) and 14 October (1940, at Dpto. Presidente Hayes, UMMZ 110993).

Lesser Shrike-Tyrant (*Agriornis murina*)—Rare migrant in the central Chaco. Extreme dates for 15 specimen records are 25 April (1940, at Dpto. Boquerón, USNM 476033) and 8 September (1945, at Dpto. Boquerón, FMNH 152979).

Austral Negrito (*Lessonia rufa*)—Rare migrant in the western Chaco and central and southern Orient. In the Chaco, Steinbacher (1968) reported a specimen from Dpto. Boquerón, taken on 22 August 1962. There are no previously published records for the Orient. P.A.S. noted a male at Curuguaty, Dpto. Canindeyú, on 5 May 1990, and R.S.R. and P.A.S. saw six near San Juan de Ñeembucú, Dpto. Ñeembucú, on 6 June 1991.

Cinereous Tyrant (*Knipolegus striaticeps*)—Rare breeder and uncommon migrant in the Chaco, and rare migrant in the western Orient. Of 35 specimens and about 50 sight records from the Chaco, only 14 (about 16%) were recorded during November–February. The only published records from the Orient are a specimen taken at Dpto. Paraguari, on 25 April (1903, Chubb 1910) and a report for Dpto. Central (Bertoni 1939). Three additional specimens were taken at Horqueta, Dpto. Concepción, from 18–28 August (1935, UMMZ 90404-90406).

Hudson's Black-Tyrant (*Knipolegus hudsoni*)—Rare migrant in the Chaco. Single specimens were taken at Dpto. Alto Paraguay, on 2 September (1931, Laubmann 1933, 1940), at Dpto. Presidente Hayes, on 30 September (1960, Steinbacher 1962), and at Dpto. Presidente Hayes, on 1 October (1973, Short 1976). The late dates for these records suggest that they are southbound migrants.

White-winged Black-Tyrant (*Knipolegus aterrimus*)—Rare migrant in the Chaco. The only published record for Paraguay is a report without details at Las Delicias, Dpto. Presidente Hayes (coordinates unknown; Peris et al., 1987). On 13 July 1945, J. Unger collected an immature male at Laguna General Diaz, Dpto. Alto Paraguay or Presidente Hayes (FMNH 152530). On 1 September 1982, R.S.R. observed a male west of Fortín Teniente Agripino Enciso, Dpto. Nueva Asunción (21°14'S, 61°35'W).

Blue-billed Black-Tyrant (*Knipolegus cyanostris*)—Rare migrant in the Orient. Extreme dates for 24 specimens and two sight records are 4 April (1900, at Dpto. Paraguari, AMNH 49528) and 1 September (Chubb 1910). A nest, which may have belonged to another species, was reported to have been parasitized (by an unknown species) at Sapucaí, Dpto. Paraguari (Chubb 1910). The northernmost record is a specimen taken at Ñu-Porá, Dpto. Concepción, on 25 July 1930 (AMNH 319762).

Spectacled Tyrant (*Hymenops perspicillatus*)—Uncommon migrant throughout Paraguay, and rare resident in southern Paraguay; especially common in the southwestern Orient. Several midsummer records suggest that breeding may occur. These include single specimens at Nueva Italia, Dpto. Central, on 17 January 1941 (AMNH 748800), at Makthlawaiya, Dpto. Presidente Hayes, on 24 November 1931 (AMNH 320904), and eight birds seen by P.A.S. in Dptos. Ñeembucú and Misiones during 10–11 January 1990.

Rufous-tailed Attila (*Attila phoenicurus*)—Rare migrant to the Chaco, and probably to eastern Paraguay as well. The only bona fide record is a specimen taken at Fortín Conchitas, Dpto. Boquerón, on 2 April (1962, Steinbacher 1968). A recent sighting from Estancia San Antonio, Dpto. Alto Paraná (25°18'S, 55°20'W), on 30 July 1992 (Brooks et al., unpubl.), and a few possible sightings elsewhere should be viewed with caution because the species is nearly indistinguishable in

the field from the female Crested Becard (*Pachyrampus validus*), which is resident throughout Paraguay.

White-banded Mockingbird (*Mimus triurus*)—Uncommon migrant in the Chaco and northern Orient, rare in the southern Orient. Extreme dates are 1 March (1991, at Dpto. Boquerón, by P.A.S.) and 17 November (1989, at Dpto. Boquerón, by D. Brooks). At Guarambaré, Dpto. Central (25°30'S, 57°26'W), F.E.H. observed a single bird on two occasions in November and/or December 1987, but did not record the exact dates. Breeding is unlikely.

White-rumped Swallow (*Tachycineta leucorhoa*)—Common migrant and uncommon breeder throughout Paraguay. Large flocks occur during the winter, and are replaced by flocks of Nearctic swallow migrants, with which the few remaining *T. leucorhoa* residents associate, during the summer.

Chilean Swallow (*Tachycineta meyeni*)—Rare migrant, although perhaps uncommon or even common, possibly throughout Paraguay. The only published records thus far are from Dptos. Central (Bertoni 1907) and Alto Paraguay (Hayes et al. 1990b). Small numbers apparently mix with *T. albiventer*; however, the two species are difficult to distinguish in the field, and may be conspecific. On 14 September 1989, P.A.S. and F.E.H. observed four apparent *T. meyeni* perched on a fence with *T. albiventer* near Carayaó, Dpto. Caaguazú. During 6 and 7 June 1991, R.S.R., P.A.S., T. Burke, and L. Bevier photographed many *T. meyeni* mixed with *T. albiventer* in Dptos. Misiones and Ñeembucú. These last two records represent the extreme dates.

Blue-and-white Swallow (*Notiochelidon cyanoleuca*)—Rare migrant (transient) in the Chaco and rare breeder in the Orient. Chaco records include single specimens taken at Dpto. Boquerón or Presidente Hayes, on 24 September (1920, Wetmore 1926), and 120 km SE of Orloff, in Dpto. Presidente Hayes, on 2 September (1940, USNM 370522). Extreme dates for the Orient are 16 September (Brooks et al., unpubl.) and 13 December (1989, at border of Dptos. Alto Paraná and Caazapá, by F.E.H.). This species is not resident in the Chaco (e.g., Short 1975), hence the Chaco records likely represent migrants from farther south.

Correndera Pipit (*Anthus correndera*)—Rare migrant in southern Paraguay. Bertoni (1913) described a specimen from "S. Paraguay," but did

not provide a date. Two specimens were collected at Villarrica, Dpto. Guairá, on 31 May (1924, UMMZ 88462, 88463).

Short-billed Pipit (*Anthus furcatus*)—Rare migrant in southern Paraguay. Bertoni (1913) reported a specimen (now lost) taken in 1906 at Puerto Bertoni, Dpto. Alto Paraná; no details were provided, but in the same paper Bertoni adequately described the other species occurring in Paraguay, thus his identification was probably correct. On 6 June 1991, R.S.R., P.A.S., T. Burke, and L. Bevier observed three birds near San Juan de Ñembucú, Dpto. Ñembucú.

Hepatic Tanager (*Piranga flava*)—Uncommon migrant and rare breeder in the Chaco and northern Orient, rare in the southern Orient. Of 107 records, 65 (61%) occurred during May–August, suggesting an influx of *P.p. flava* migrants from farther south. In contrast, there are only 16 records (15%) during November–February, scattered throughout the country.

Blue-and-yellow Tanager (*Thraupis bonariensis*)—Uncommon migrant and possible breeder in the Chaco, rare migrant in the Orient. The published extreme dates are 29 March (Steinbacher 1968) and 2 October (Brodkorb 1938). However, two birds were present at Fortín Toledo, Dpto. Boquerón, during October and November 1989, and at least one bird lingered through January 1990 (Brooks, pers. comm.). The only previous record for the Orient is a specimen taken at Dpto. Alto Paraná, in June (1897, Bertoni 1904). On 24 June 1990, P.A.S. observed a female between Ygatimí and Curuguaty, Dpto. Canindeyú.

Black-crested Finch (*Lophospingus pusillus*)—Rare migrant and possible breeder in the western Chaco. Of 19 specimens and two sight records, 16 (76%) are from June and July. However, a specimen taken at Orloff on 17 November (Steinbacher 1962) and a single bird seen by P.A.S. at Laguna Capitán, Dpto. Presidente Hayes, on 28 January 1990, may represent breeding birds. Nores et al. (1983) regarded it as a permanent resident in Córdoba, Argentina, at the southern end of its range. Wintering birds may arrive from the east slopes of the Andes.

Black-and-rufous Warbling-Finch (*Poospiza nigrorufa*)—Rare migrant in the southern Orient. Bertoni (1901, 1914) recorded the species at Dpto. Alto Paraná, but no date was provided. Three specimens from Sapucái, Dpto. Paraguari, were collected in June and on 18 August (1904, Chubb

1910). P. Willim collected a specimen at Nueva Italia, Dpto. Central, on 27 July (1940, AMNH 388285). The only recent record is a sighting at Estancia San Antonio, Dpto. Alto Paraná, on 29 July 1992 (Brooks et al., unpubl.).

Ringed Warbling-Finch (*Poospiza torquata*)—Uncommon migrant in the central Chaco. Extreme dates are 7 April (1938, at Dpto. Alto Paraguay or Boquerón, UMMZ 96189) and 25 September (Wetmore 1926).

Grassland Yellow-Finch (*Sicalis luteola*)—Rare, but sometimes common (probably overlooked), irruptive migrant throughout Paraguay. Extreme dates for seven specimens range from 25 March (Steinbacher 1968) to 23 October (1945, at Dpto. Boquerón, FMNH 152776). F.E.H. observed 30 birds 10 km W of San Cosme y Damián, Dpto. Itapúa, on 23 March 1989, and P.A.S. observed ten birds southwest of San Juan Bautista, Dpto. Misiones, on 24 February 1990. P.A.S. and R.S.R. found this species to be common throughout the Chaco during 28–31 May 1991, in areas where we have not seen any on numerous other occasions. The larger numbers observed during February–May may represent transient individuals. The only records after May are single specimens taken in June (Dabbene 1912), July (FMNH) and October (cited above).

Marsh Seedeater (*Sporophila palustris*)—Rare migrant in the Orient. Kerr (1901) reported this species from Dpto. Concepción, but this record is erroneous (Collar et al. 1992, P. Colston, pers. comm.). Contreras et al. (1989, pers. comm.) reported without details a specimen taken between Santiago and Ayolas, Dpto. Misiones. On 13 July 1977, R.S.R. observed five males with Double-collared Seedeaters (*S. caerulescens*) near Carayaó, Dpto. Caaguazú. On 24 March 1989, F.E.H. noted two males at Estancia Ñu Porá, Dpto. Misiones (coordinates unknown). P.A.S. observed a single male at Estancia La Fortuna, Dpto. Canindeyú, on 17 October 1990. Another male was seen by B. Treiterer and A. Stone (pers. comm.) southwest of San Juan Bautista, Dpto. Misiones, on 2 March 1991.

Chestnut Seedeater (*Sporophila cinnamomea*)—Rare migrant in the Orient. The only published account of this species for Paraguay is a statement that it has been taken from Villarrica, Dpto. Guairá (Short 1975). Two males and an apparent female were collected east of Caaguazú, Dpto. Caaguazú, on 13 and 14 November 1930 (AMNH 320652-320654). Our sightings include

TABLE 1. Taxonomic composition (number of species for each family) of austral bird migrants in Paraguay. Only families with austral migrants are included.

Family	Recorded in Paraguay ¹	Northern austral migrants	Southern austral migrants	Total austral migrants
Podicipedidae	5	—	1	1
Phoenicopteridae	1	—	1	1
Accipitridae	33	3	—	3
Falconidae	12	—	2	2
Rallidae	20	4	—	4
Laridae	5	—	2	2
Columbidae	16	—	1	1
Coccyzidae	5	1	—	1
Crotophagidae	3	1	—	1
Caprimulgidae	11	—	1	1
Apodidae	4	1	—	1
Furnariidae	40	—	4	4
Cotingidae	4	—	1	1
Tyrannidae	101	16	16	32
Vireonidae	3	1	—	1
Turdidae	6	1	—	1
Mimidae	2	—	1	1
Hirundinidae	13	3	2	5
Motacillidae	5	—	2	2
Emberizidae	78	4	9	13
Icteridae	19	—	1	1
Total	641	35	45	80

¹ Based on Hayes (1993).

single males observed at Estancia Ñu Porá, Dpto. Misiones, on 24 March (1989, by F.E.H.), and at Estancia La Fortuna, Dpto. Canindeyú, on 2 October (1990, by P.A.S.). The November specimens may have been breeding.

Glaucous-Blue Grosbeak (*Cyanoloxia glaucocaeerulea*)—Rare migrant in the Orient. Extreme dates for 29 specimens and 11 sight records are 26 March (Chubb 1910) and 4 October (1938, at Dpto. Amambay, UMMZ 100457).

Yellow-winged Blackbird (*Agelaius thilius*)—Rare migrant in the southern and eastern Orient. Bertoni (1939) reported it from the Río Paraguay, but provided no details. On 12 August 1977, R.S.R. saw a flock of ten or more birds north of Yabebyry, Dpto. Misiones (27°23'S, 57°08'W). On 24 July 1989, F.E.H. and T. Granizo Tamayo observed five birds along the Río Carapá, 5 km E of Catueté, Dpto. Canindeyú (24°11'S, 54°41'W). Brooks et al. (in prep.) saw three birds at Estancia San Antonio, Dpto. Alto Paraná, on 29 July 1992, and two birds at the same locality the following day. This species was regarded as a migrant by Zimmer (1938). All Paraguayan records are from the austral winter.

DISCUSSION

We have identified 35 species of northern austral migrants and 45 species of southern austral migrants in Paraguay, giving a combined total of 80 species. These totals are conservative because they include only those species for which a reasonable amount of evidence suggests their status as long-distance migrants. A taxonomic comparison of these species reveals that two families of birds account for more than half of the austral migrant species: 32 species (40%) belong to the family Tyrannidae, and 13 species (16%) belong to the family Emberizidae (Table 1). Austral bird migrants comprise more than a tenth of all species recorded thus far from Paraguay (Table 1).

Most species of austral bird migrants feed primarily on terrestrial or aquatic invertebrates. Species which feed primarily on fruits/seeds or a mixture of fruits/seeds and invertebrates include Picazuro Pigeon, White-tipped Plantcutter, White-banded Mockingbird, and the 13 species of emberizids. The Silvery Grebe and Peregrine Falcon feed primarily on small vertebrates. The Gray-hooded Gull and Brown-hooded Gull feed on a variety of aquatic invertebrates and vertebrates.

We note that many species of waterfowl in Paraguay are often considered to represent austral migrants (e.g., Olrog 1963, 1974; Short 1975; Narosky and Yzurieta 1987). However, every species adequately documented thus far has been recorded during the summer months, sometimes in large numbers, whereas several species often cited as occurring in Paraguay have not been adequately documented (Hayes, in press; unpubl.). Nesting has been documented for several species at or near the northern limit of their distribution, such as the Coscoroba Swan (*Coscoroba coscoroba*; Steinbacher 1962, chicks in FMNH and UMMZ, photos by P.A.S.), Ringed Teal (*Callonetta leucophrys*; chicks seen by F.E.H. and A. Madroño Nieto), and Black-headed Duck (*Heteronetta atricapilla*; Weller 1967). Although some summer records may refer to non-breeding birds, no species has been recorded in larger numbers during the winter months (Hayes, in press; unpubl. data).

We suspect that many additional species of birds in Paraguay will eventually prove to be long-distance migrants. Many species appear in fair numbers during both winter and summer, but may be long-distance migrants with southern populations (nesting south of Paraguay) replac-

ing northern populations (nesting in Paraguay) during the winter. For example, the Double-colored Seedeater (*Sporophila caerulescens*) occurs in northern South America only during the austral winter and is obviously a long-distance migrant (Remsen and Hunn 1979, Ridgely and Tudor 1989), yet large numbers are present throughout the year in Paraguay. Several species of nocturnal birds (e.g., nightjars and potoos) may represent austral migrants (e.g., Belton 1984), but because they are generally detected by their vocalizations during the breeding season, it is difficult to ascertain whether or not they are present during the winter months. We do note, however, that the Nacunda Nighthawk (*Podager nacunda*) and Little Nightjar (*Caprimulgus parvulus*), both regarded as migrants by Belton (1984), are present year-round in Paraguay.

Another problem concerns several species of resident waterbirds whose populations are highly seasonal along the Paraguay River. Although latitudinal migration is possible (e.g., Olrog 1974, 1975), the abundance of these species is inversely correlated with water levels, thus seasonality may represent movements between nearby wetland areas in response to local hydrological conditions (Hayes and Fox 1991, Hayes, in press). Band recoveries are needed to determine whether these species are indeed austral migrants. Clearly more research is needed to better understand the long-distance migratory movements of resident birds in South America.

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