

## BOREAL MIGRANT BIRDS IN SOUTHERN SOUTH AMERICA: DISTRIBUTION, ABUNDANCE, AND ECOLOGICAL IMPACT ON NEOTROPICAL BREEDING SPECIES

François Vuilleumier

Department of Ornithology, American Museum of Natural History, Central Park West  
at 79th Street, New York, NY 10024-5192, USA

**Resumen.** Este artículo presenta una reseña del status, de las preferencias ambientales y de la distribución geográfica de las especies boreales migratorias en Fuego-Patagonia, en el extremo sur del continente sudamericano, aproximadamente 50°-56°S. Las 25 especies migratorias que anidan en Norteamérica, y que son observadas frecuentemente, regularmente, ocasionalmente, o raramente en Fuego-Patagonia, representan el 12% de la riqueza específica de la avifauna total de esa región. Por lo tanto, estas 25 especies migratorias incluyen una proporción importante de la avifauna Fuego-Patagónica y podrían tener una influencia ecológica y evolutiva sobre las especies residentes por medio de competencia interespecífica, pues los migrantes están presentes durante la época de nidificación de las aves que se reproducen localmente. El status de estas 25 especies migratorias norteamericanas (migrantes boreales) que llegan a Fuego-Patagonia es presentado en detalle. El status de otras 21 especies migratorias (17 norteamericanas y 4 especies del viejo mundo) que han sido halladas en otras partes de Patagonia o regiones circundantes, pero que no han llegado todavía a Fuego-Patagonia, es presentado en un Apéndice. Se analizan entonces un total de 46 especies. Se discute la abundancia relativa, la selección ambiental y la posible influencia ecológica y evolutiva de las 25 especies conocidas como migratorias en Fuego-Patagonia sobre las especies de aves que anidan en Fuego-Patagonia en el verano austral. Aunque 5 especies migratorias son comunes o abundantes localmente en la primavera, el verano, y el otoño austral (Septiembre-Abril) en Fuego-Patagonia (*Calidris canutus*, *Calidris bairdii*, *C. fuscicollis*, *C. alba*, *Limosa haemastica*) y 5 otras son regulares pero no abundantes (*Arenaria interpres*, *Tringa flavipes*, *T. melanoleuca*, *Numenius phaeopus*, *Hirundo rustica*). Se concluye que el impacto ecológico de esas 10 especies de aves no-nidificantes sobre las especies nativas o residentes que nidifican es mínimo. Esto es debido en particular al hecho de que los ambientes (habitats o biótotos) donde las especies migratorias se encuentran y se alimentan en Fuego-Patagonia, no son utilizados, o son solamente poco utilizados, por las especies que nidifican. Además, la zona ecológica seleccionada por las especies no-nidificantes más abundantes corresponde a áreas fangosas litorales en la zona intertidal (banco de lodo, mudflats), que no son apropiadas para nidificación. Esta segregación ecológica parece minimizar la competencia entre aves migratorias y aves residentes.

**Abstract.** This paper presents a synthesis of the status, habitat preferences, and geographical distribution of boreal migrants in Fuego-Patagonia, southernmost South America, about 50°-56°S. The 25 species of migratory birds breeding in North America that have been recorded frequently, regularly, occasionally, or as vagrants in Fuego-Patagonia make up 12% of the species richness of the avifauna of this region. These 25 migrant species thus represent a significant component of the Fuego-Patagonian avifauna and could potentially influence the ecology and evolution of the native species through interspecific competition, as the migrants are present during the breeding season of resident birds. The status of the 25 species that are known to reach Fuego-Patagonia is reviewed in detail. The status of 21 additional migrant species (17 from North America, and 4 from the Old World) that have been recorded elsewhere in Patagonia or nearby areas, but have not yet been recorded in Fuego-Patagonia, is discussed in an Appendix. Thus, a total of 46 species are treated in this review. The relative abundance, habitat preferences, and the possible influence of the 25 non-breeding migrant species known to occur in Fuego-Patagonia in the austral spring and summer on the breeding species of that region are discussed. Although 5 migrant species are common to abundant (*Calidris canutus*, *C. bairdii*, *C. fuscicollis*, *C. alba*, *Limosa haemastica*) and an additional 5 species are regular but not common (*Arenaria interpres*, *Tringa flavipes*, *T. melanoleuca*, *Numenius phaeopus*, *Hirundo rustica*) in Fuego-Patagonia during the austral spring, summer, and autumn (September-April), it is concluded that non-breeding migrants have only a minimal ecological impact upon the native or resident species. This is due in part to the fact that the migrant species forage in habitats that are not used, or only little used, by resident birds. Furthermore, the habitats favored by the most abundant migrant species are tidal mudflats, where no breeding can take place. This ecological segregation appears to minimize competition between migrant and resident birds. Accepted 15 September 1995.

**Key words:** Patagonia, Tierra del Fuego, birds, North American migrants, boreal migrants, migrant-resident interactions, biogeography, distribution.

## INTRODUCTION

During the southern hemisphere spring, summer, and autumn months, from September to April and early May, large numbers of birds that breed in North America, especially Arctic shorebirds belonging to several species of Charadriidae and Scolopaciidae, migrate to and remain in South America. Such migrants are called "boreal migrants" according to the terminology proposed by Hayes (1995). Early discussions of these migrants in southern, temperate South America were published in the 1910s-1940s by Cook (1910), Dabene (1920), Naumburg (1926), Wetmore (1927), Murphy (1939: 186-188), Lincoln (1939), Philippi (1940), and Bullock (1949). As interest in the migration phenomenon in southern South America grew, these early studies were followed by many other works since the late 1960s, including Olrog (1967), Johansen (1969), McNeil (1970), Burton & McNeil (1975), Devillers & Terschuren (1976, 1978), Spaans (1978), Antas (1979), Myers (1980), Venegas *et al.* (1983), Rappole *et al.* (1983), Morrison (1984), Harrington *et al.* (1986), Morrison & Ross (1989), Bolster & Robinson (1990), Vooren & Chiaradia (1990), Hayes *et al.* (1990), Hayes & Fox (1991), and Sick (1993: 69-74).

In Fuego-Patagonia (Auer 1956, 1960, Pisano 1977, 1981), at the southernmost tip of the continent between 50°S and 56°S, the timing of the sojourn of "wintering" North American breeding species (the autumn, winter, and early spring of boreal breeders) corresponds to the breeding season of the South American birds (the austral spring, summer, and early autumn of austral breeders). After studying the shorebird community of the pampas area of coastal Buenos Aires Province, Argentina, at 36°S-38°S, Myers (1980) concluded that the ecological and evolutionary impact of northern hemisphere migrants on breeding species there was considerable. Is this also true farther south, in Fuego-Patagonia?

Accounts of the distribution and status of northern hemisphere migrants in Fuego-Patagonia in Hum-

phrey *et al.* (1970), Venegas & Jory (1979), and Clark (1986) suggested that these birds were not very abundant. More recent work, however, especially aerial surveys (Morrison & Ross 1989), have revealed the presence of large concentrations of several species of North American migrant shorebirds in that region, totaling over 120,000 individuals. Does this large influx of non-breeding birds have an impact on the locally breeding species?

During field work in Fuego-Patagonia (mainland in southern Santa Cruz Province, Argentina, and Magallanes, Chile; islands of the Tierra del Fuego, Wollaston or Cape Horn, and Diego Ramírez Archipelagos; Fig. 1), in the austral springs and summers of 1985, 1987, 1988, and 1993, I traveled by truck and boat throughout Fuego-Patagonia, and thus had an opportunity to survey both breeding resident species and non-breeding migrant birds. In the austral springs of 1991, 1992, and 1993, I traveled throughout Patagonia north of Fuego-Patagonia (from La Pampa Province southward to Santa Cruz Province), and in the austral autumn of 1995 I traveled in southern Chile from Puerto Montt (X Región) southward to Puerto Natales (Magallanes, XII Región). Although the primary objective of these expeditions was to study biogeography and speciation of resident landbirds (see Andors & Vuilleumier 1995, 1996; Vuilleumier 1991, 1993, 1994, 1995), daily logs of sightings of all other species were kept in order to better understand the distribution of birds occurring in Patagonia and Fuego-Patagonia. The possibility of interactions between wintering North American species and breeding Fuego-Patagonian ones was especially intriguing, given Myers's (1980) conclusions regarding the importance of these interactions in the pampas of Buenos Aires Province further north.

In view of the fact that there appears to be no recent synthesis of the status, the relative abundance, and the habitat preferences of all species of non-breeding, North American migrants in Fuego-Patagonia, I present in this paper a summary of my observations and a

FIG. 1. Schematic map of southern South America (from Vuilleumier 1994, Fig. 1). Patagonia as defined here includes the Argentine Provinces of Río Negro, Neuquén, Chubut, and Santa Cruz, Chile southward of about 38°S, and, south of the Strait of Magellan, the Archipelagos of Tierra del Fuego (including Isla Hoste and Isla Navarino), Cape Horn, and Diego Ramírez at 56°S. Fuego-Patagonia, south of about 50°S, includes the mainland of Magallanes (Chile) and southern Santa Cruz (Argentina) and the archipelagos south of the Strait of Magellan, including Tierra del Fuego Archipelago, Cape Horn Archipelago, and Diego Ramírez Archipelago, the last in Drake Passage.



review of the literature. Although I have surveyed many literature sources relevant to distribution and status of migrant species in southern South America, I have not attempted an exhaustive review of this extremely scattered literature, and thus have undoubtedly omitted some records, especially perhaps those in locally published journals. Similarly, I have not searched for the information concerning North American migrants in Fuego-Patagonia contained in the specimens deposited in museums. Perhaps these omissions will spur others to carry out more extensive reviews in the future.

A total of 46 species are discussed in this report. Of these 46 species, 25 are known to have been recorded in Fuego-Patagonia and form the main component of this paper. I give details about the status of each of these 25 species in Fuego-Patagonia, as well as elsewhere in Patagonia and in the Falkland (Malvinas) Islands, as this archipelago can be considered, faunistically, floristically, and biogeographically, to be part of southern Patagonia. When appropriate, comments about the status of these migrants in South Georgia and the Antarctic area (South Orkney Islands, South Shetland Islands, Antarctic Peninsula) are also included. The status of an additional 21 species (17 from North America and 4 from the Old World) that have been recorded either further north in Patagonia or elsewhere in this region (e.g., South Georgia, South Shetland Islands), but have apparently not yet been reported from Fuego-Patagonia, is also discussed (Appendix). Thus, all species that are known to occur (25), as well as those that could potentially occur (21), in Fuego-Patagonia, are reviewed.

The main goal of this paper is to provide an overview of the northern hemisphere migrants in southernmost South America that will serve as a baseline for further, quantitative studies. At present, detailed analyses such as those of McNeil (1970) for Venezuela, Myers & Myers (1979) for Buenos Aires Province, Vooren & Chiaradia (1990) for Rio Grande do Sul, or Hayes & Fox (1991) for Paraguay, are lacking for Fuego-Patagonia. More species of migrants from North America spend the austral spring and summer months in southernmost South America, and several of these species occur in much larger numbers, than some ornithologists have suspected so far. This transient avifauna, spending between four and eight months each year in Fuego-Patagonia, is an important component of the Fuego-Patagonian avifauna, and constitutes a rich source of as yet untapped research projects, especially for resident workers.

## ITINERARY

During five field trips to Fuego-Patagonia in 1985-1988 totaling 100 field days (1: November-December 1985, 35 days; 2: February-March 1987, 15 days; 3: October 1987, 20 days; 4: January 1988, 8 days; 5: November 1988, 22 days) I traveled on all the main roads of the region. On the mainland west and north of the Strait of Magellan (Magallanes, Chile) I traveled between San Juan south of Fuerte Bulnes in the Brunswick Peninsula eastward and northeastward all the way to Punta Dungeness at the eastern entrance of the Strait of Magellan and Monte Aymond at the border with Argentina. I traveled northward and northwestward from the Strait of Magellan and Punta Arenas to Cabeza del Mar, Pecker-Harbour, and Río Verde, then to Villa Tehuelches, Río Rubens, Puerto Natales, and the Torres del Paine National Park. Inland from, and north of, the Strait of Magellan, I carried out a transect through the steppes between Morro Chico and the Gallegos Chico-Pali Aike-Monte Aymond region, south of and along the Chile-Argentina border. On Chilean Isla Grande of Tierra del Fuego I traveled from Punta Espora and Bahía Azul via Manantiales southwestward to Gente Grande and Porvenir, and from that town along the northern shore of Bahía Inútil to Onaisín, then southward to Estancia Camerón, and southeastward to Russfin, Pampa Guanaco and Estancia Vicuña. I traveled from Pampa Guanaco and Estancia Vicuña northward to San Sebastián, and, from there, northward through Cullen to Punta Espora and Bahía Azul. I also traveled northward from Onaisín to China Creek, Sombrero, and Bahía Azul. South of Tierra del Fuego I visited Navarino Island (Chile), where I drove along the entire northern coastal road skirting the Beagle Channel.

Ship travel took me from Punta Arenas through the Magdalena, Cockburn and Ballenero Channels, and the Brazo Norte of the Beagle Channel to Puerto Williams on Navarino Island. From Puerto Williams I traveled eastward in the Beagle Channel and southward to the Wollaston (or Cape Horn) Archipelago (Horn, Herschel, Deceit, and Wollaston Islands), to Hoste Island, and back to Navarino Island via the Dumas Channel. I also visited the Diego Ramírez Islands (Chile), about 60 nautical miles SW of Cape Horn, and, at about 56°30'S, the southernmost speck of land between South America and Antarctica. I made 6 ferry crossings of the Strait of Magellan at the Primera Angostura, and 10 ferry crossings of the Strait between Punta Arenas and Porvenir.

In addition to the 1985-1988 expeditions described above, in 1993 I traveled on the Argentine (eastern) side of Isla Grande of Tierra del Fuego (24-27 November), and on the mainland in southern Santa Cruz Province (22-23 November, 29-30 November, 1 December). In the austral springs of 1991 (itinerary in Vuilleumier 1993), 1992, and 1993, I traveled in Patagonia from the northern edge of the region in southern La Pampa Province, southward to Neuquén, Río Negro, Chubut, and northern Santa Cruz Provinces, and made several transects from the Atlantic coast in the east to the Andean foothills in the west. In the austral autumn of 1995 I worked in southern Chile from Puerto Montt and Chiloe Island south to Puerto Natales, from 22 April-17 May. Finally, I briefly visited areas of southern Tierra del Fuego (near Ushuaia) on 29-30 November 1995 and on 15 January 1996, and made observations in the Falkland Islands from 31 January-10 February 1996.

## SPECIES ACCOUNTS

In this section the 25 species of North American migrant species ("boreal migrants," Hayes 1995) of known occurrence in Fuego-Patagonia are listed according to the sequence and nomenclature of Meyer de Schauensee (1966, 1982), used for convenience because it is widely employed by ornithologists working in South America. The 21 additional species of northern hemisphere migrants that have been reported from Patagonia and adjacent regions, but not from Fuego-Patagonia as yet, are discussed in the Appendix.

### 1. *Pluvialis squatarola*. Black-bellied Plover.

Jehl & Rumboll's (1976: 147) observation of one bird at Río Grande, Argentine Tierra del Fuego, on 29 January 1974, was apparently the first record, and may be the only documented occurrence, of this species in Fuego-Patagonia. Thus, the latest publications on the birds of this area (Venegas 1986: 72; Clark 1986: 152) called this species "occasional" and "rare," respectively, but gave no details. *Pluvialis squatarola* was apparently not seen in Fuego-Patagonia by Morrison & Ross (1989). The map in Fjeldså & Krabbe (1990: 62) does not show the presence of the species south of Chiloe Island (Chile) or Chubut (Argentina). Interestingly, Dabbene (1920: 109) stated that this species had not been reported from Argentina, and as late as the late 1930s, Steullet & Deautier (1935-1946: 560) indicated Atacama (Chile) and Buenos Aires Province (Argentina) as the southernmost points of occurrence of

the Black-bellied Plover in southern South America. Hellmayr & Conover (1948: 43) gave Santiago as the southernmost point in Chile. Olog (1979: 89) indicated Buenos Aires and southward to Tierra del Fuego, according to a personal communication from Canevari and Rodríguez Mata. I saw 2-3 *P. squatarola* at Bahía Malaspina near Bustamante, Chubut, on 12 November 1993, at about 45°08'S (Paynter 1985: 25) far to the north of Fuego-Patagonia. The species is common even farther north, in Buenos Aires Province, during the austral summer (Myers & Myers 1979: 191). It has also been recorded from the interior of Argentina, for example Córdoba (Nores & Yzurieta 1979: 46). This species was not reported from the Falkland Islands (Malvinas) by Woods (1988) or Strange (1992).

*Pluvialis squatarola* should be considered an accidental visitor in Fuego-Patagonia.

### 2. *Pluvialis dominica*. American Golden Plover.

Dabbene (1920: 115) cited several records from Buenos Aires Province as far south as Bahía Blanca as the southernmost point in Argentina, as did also Steullet & Deautier (1935-1946: 563), and Olog (1979: 90). Humphrey & Bridge (1970:260) and Humphrey *et al.* (1970: 186), however, mentioned a male collected by P. W. Reynolds on 19 January 1933 at Estancia Via monte, Argentine Tierra del Fuego (specimen at the British Museum, BM 1933.5.21.6). This seems to be the only published specimen record for Fuego-Patagonia. Clark (1986: 152) called the species "rare" in Tierra del Fuego (but without giving any details), and Venegas & Jory (1979: 110) stated: "No se conoce para la parte chilena de Tierra del Fuego" (Unknown from the Chilean part of Tierra del Fuego). Venegas & Jory (1979: 110), however, also wrote that this species "aparentemente arriba en números muy pequeños a la estepa al norte del estrecho de Magallanes" (apparently arrives in very small numbers in the steppe north of the Strait of Magellan), but gave no details. I spent many hours in these steppes during three visits in February 1987, two in November 1988, and one in November 1993, without ever seeing or hearing American Golden Plovers. Fjeldså & Krabbe (1990: 161) wrote that *P. dominica* "regularly reaches Isla Grande" (but on what basis?), and showed a spot across the Strait of Magellan where the species apparently winters. *Pluvialis dominica* was not mentioned from Fuego-Patagonia by Morrison & Ross (1989). Humphrey & Bridge (1970: 260) cited a specimen (in the British Museum) collected 26 December 1901 in western Chubut, north of Fuego-Patagonia. My only observation of *P. dominica*

in Patagonia is of a flock of about 25 birds at Bahía Malspina near Bustamante, Chubut, on 12 November 1993, far north of Fuego-Patagonia. Devillers & Terschuren (1976: 107) saw a total of 40 American Golden Plovers in several small flocks at San Blas, "in the southern panhandle of the province of Buenos Aires...and about 150 km south of the southernmost locality (Bahía Blanca) mentioned by Dabbene (1920)." This species was not reported from the Falkland (Malvinas) Islands by Woods (1988) or Strange (1992). Recently, however, an American Golden Plover *P. dominica* was sighted on Sea Lion Island, Falklands, 4-13 January 1994 (Henry 1994: "possibly a new species for the islands").

*Pluvialis dominica* is probably an accidental visitor in Fuego-Patagonia.

### 3. *Charadrius semipalmatus*. Semipalmated Plover.

Dabbene (1920: 108) called this species "very rare" in Argentina, and cited only two records, one from Patagonia (Puerto Deseado, Santa Cruz). Steullet & Deautier (1935-1946: 564) indicated the southernmost occurrence of this species to be Llanquihué in Chile and Puerto Deseado in Argentina. Meyer de Schauensee (1966: 87) gave similar information, but Olrog (1979: 90) wrote that the Semipalmated Plover regularly reached Tierra del Fuego. In Chile, Philippi (1964: 69) gave a record from Calbuco, Llanquihué. Humphrey & Bridge (1970: 260; using the name *C. semipalmatus*), and Humphrey *et al.* (1970: 187; using the name *C. hiaticula*), cited only one specimen, a male collected 6 May 1928 by P. W. Reynolds at Estancia Viamonte, Argentine Tierra del Fuego (deposited at the British Museum, and catalogued as BM 1929.6.14.22; see also Hayman *et al.* 1986: 283). *Charadrius semipalmatus* was not mentioned by Venegas & Jory (1979) but Venegas (1986: 73) wrote, "Durante el verano austral hasta Santa Cruz, ocasional en Tierra del Fuego por la ruta atlántica (Olrog, 1979)" (to Santa Cruz during the austral summer, occasional in Tierra del Fuego via the Atlantic route). Nores & Yzurieta (1979: 46-47) also cited *C. semipalmatus* from Santa Cruz, and gave inland records from Jujuy and Córdoba. For Tierra del Fuego, Clark (1986: 154) wrote, "Raro. Colectado en Viamonte y registrado en Bahía San Sebastián" (rare, collected at Viamonte and recorded at Bahía San Sebastián). *Charadrius semipalmatus* was not reported by Morrison & Ross (1989) from Fuego-Patagonia. Fjeldså & Krabbe (1990: 162) wrote nothing about the species in Fuego Patagonia, and neither Woods (1988)

nor Strange (1992) mentioned it for the Falkland (Malvinas) Islands.

*Charadrius semipalmatus* can be considered to be an accidental visitor in Fuego-Patagonia.

### 4. *Aphriza virgata*. Surfbird.

Meyer de Schauensee (1966: 89) wrote that the Surfbird "Winters along the Pacific coast south to the Straits of Magellan and western Tierra del Fuego, CHILE." Humphrey & Bridge (1970: 260), however, found "no evidence that supports the assertion of [Meyer] de Schauensee (1966: 89) that this species reaches the Fuegian region or the Strait of Magellan." Although Johansen (1966) did not mention *A. virgata*, he later (Johansen 1969: 184) wrote that this species occurred southward to the Strait of Magellan, and Meyer de Schauensee (1982: 76) indicated that it "winters along Pacific coast s to Strait of Magellan and w Tierra del Fuego, Chile," thus repeating the information he had given in 1966. The evidence that *Aphriza virgata* reaches the Strait of Magellan seems to be as follows. Philippi (1964: 72) wrote in his checklist: "En Chile es visitante de verano desde Arica hasta la isla Van (Lat. 50°S. Magallanes)" (In Chile summer visitor from Arica to Van island). Steullet & Deautier (1935-1946: 595) had earlier stated that "En 1881 Sharpe señaló la presencia de esta especie en las islas Van, pero al determinar la posición geográfica agregó: 'Canal de la Trinidad, Estrecho de Magallanes.'" Steullet & Deautier (1935-1946: 595), however, could not locate any island with the name of Van in the Strait of Magellan, but rather found islands of that name in Canal Trinidad at 49°56'30"S, 75°12'W. Paynter (1988: 265) cites Islas Van as "very small islands on northern side of Canal Trinidad...off southern shore of Isla Mornington" at 49°56 S, 75°09W. Hellmayr (1932: 381) had earlier reported: "During the cruise of the 'Alert,' R. W. Copping, as reported by Sharpe (P. Z. S. Lond., 1881, p. 15), secured a male on February 15, 1879, on Van Island, Trinidad Channel, in the Strait of Magellan." Hellmayr & Conover (1948: 134) reported this record as "Van Islands, Trinidad Channel, Territory of Magallanes." Steullet and Deautier (1935-1946: 595) remarked that "in 1891 Oustalet thought it quite possible that [the Surfbird] could be found in Patagonia; in 1910 Dabbene supported this supposition, but we have no information that confirms it by collection of any specimens. Because of this we include this species [in the Argentine list] with a question mark." It is worth quoting here what Dabbene (1920: 125) wrote in a later work: "Esta especie emigra en invierno sobre

la costa occidental de Sud América, habiendo sido señalada en Chile y en el Estrecho de Magallanes. Chile central (Landbeck); Chile (sin localidad y fecha – T. Bridges – Mus. Brit); Van Islands, Estrecho de Magallanes (Febrero 13, 1879 – Dr. Coppinger; Mus. Brit.).” Olrog (1979) did not include *Aphriza virgata*, and neither did de la Peña (1992), but Narosky & Yzurieta (1987: 113) included it (Tierra del Fuego, Ushuaia). Venegas & Jory (1979: 116) gave somewhat contradictory information on the status of *Aphriza virgata* in Fuego-Patagonia. On the one hand they stated that the species was “migrante de verano raro o accidental en Magallanes” (rare or accidental summer visitor in Magallanes), and on the other that “no existen registros recientes de [*Aphriza virgata*] para ningún sector de la región” (there are no recent records from any sector of the region). Thus the only “records” would appear to be those summarized by Hayman *et al.* (1986: 363, “some [birds] reach Tierra del Fuego”) and by Clark (1986: 158, “Raro. Observado en playas de Ushuaia”), although Humphrey *et al.* (1970) had not cited the Surf-bird from Tierra del Fuego. Fjeldsø & Krabbe (1990) did not mention the species. Morrison & Ross (1989) apparently did not record *A. virgata* in Fuego-Patagonia. I never saw the Surf-bird in Fuego-Patagonia. This species was not reported from the Falkland (Malvinas) Islands by Woods (1988) or Strange (1992).

*Aphriza virgata* can be considered to be an accidental visitor in Fuego-Patagonia.

##### 5. *Arenaria interpres*. Ruddy Turnstone.

Meyer de Schauensee (1966: 89) gave Llanquihué, Chile, on the Pacific coast, and Cabo San Antonio, Buenos Aires, on the Atlantic coast, as the southernmost wintering areas of this species. The Ruddy Turnstone was not mentioned by Humphrey *et al.* (1970) for Tierra del Fuego. The first two records for Fuego-Patagonia were (1) a flock observed by Venegas & Jory (1974: 128) at Puerto Percy, Chilean Tierra del Fuego, on 1 November 1973, thus extending the austral summer distribution of the species in Chile from Maullín at 41°S (see Philippi 1964: 73) to nearly 53°S, and (2) “a lone turnstone on the beach of Isla Contramaestre [in the Strait of Magellan] on 13 January [1973],” reported by Parmelee & MacDonald (1975: 219). Venegas & Jory (1979: 115-116) later called the Ruddy Turnstone a “visitante ocasional de verano” (occasional summer visitor), and gave 5 records for the area, including one unpublished observation by Venegas of a flock of 12 birds on an island of the Vorposten group

(49°23'S, 75°41'W, Paynter 1988: 270), and two published by Jehl & Rumboll (1976: 149). Actually, Jehl & Rumboll (1976: 149, 153) had reported having sighted Turnstones on Tierra del Fuego on three occasions, on 25 October (10 birds), 17 January (4), and 28 January (1), and on the mainland on one occasion, on 27 August (2 birds). Morrison & Ross (1989) listed only 3 birds from Fuego-Patagonia. Fjeldsø & Krabbe (1990) did not say anything about its occurrence in Fuego-Patagonia. North of Fuego-Patagonia, Salvador & Narosky (1987: 9) observed 8-10 birds at Punta Tombo, Chubut, on 18 November 1983, remarking that the species had previously been recorded, in Argentina, from Buenos Aires, Córdoba, and Tierra del Fuego. This information appears to have come originally from Olrog (1979: 92) who had earlier stated: “llega regularmente a la costa de Buenos Aires y Tierra del Fuego (Canevari y Rodríguez Mata, comunicación verbal, 1974) y por el interior a Córdoba (Mar Chiquita, Nores y Yzurieta, comunicación verbal, 1976)” (see Nores & Yzurieta 1979: 47). In the Falkland (Malvinas) Islands, Woods (1988: 178) called the Ruddy Turnstone “an unconfirmed vagrant from southern end of non-breeding range,” but Strange (1992) did not list it.

*Arenaria interpres* can be considered a regular visitor to Fuego-Patagonia from August to January.

##### 6. *Tringa flavipes*. Lesser Yellowlegs.

Venegas & Jory (1979: 114) summarized the status of this species in Fuego-Patagonia as follows: “visitante del hemisferio norte que no nidifica, existen registros solamente para algunos de los meses de verano, febrero, abril, noviembre y diciembre” (...there are records only for some of the summer months, February, April, November, and December). Johansen (1966: 239) wrote that the “Bridges brothers reported to me, that [*T. flavipes*] was observed regularly at Viamonte.” Clark (1986: 60), however, called this species “rare,” and Humphrey *et al.* (1970: 195-196) listed only a few records. Olrog (1948: 487) saw “Ejemplares aislados desde Magallanes hasta la Isla Chiloé,” and (Olrog 1950: 523) collected one bird (but saw no other) at Río Douglas, Navarino Island, 31 December 1948. Philippi *et al.* (1954: 16) did not see *T. flavipes* in Tierra del Fuego. Bernath (1965: 99) saw a single individual at three localities, two in northwestern Tierra del Fuego and one on the mainland, between 20 and 30 April (southern hemisphere autumn). Morrison & Ross (1989) mentioned only 14 unidentified yellowlegs in Fuego-Patagonia. The map in Fjeldsø & Krabbe (1990:

172) indicates only northern Isla Grande. I did not see *Tringa flavipes* in Tierra del Fuego, but on the mainland I saw 1 bird on 30 November 1993 near Estancia La Vanguardia, toward the Fuentes del Coyle, southern Santa Cruz. Outside Fuego-Patagonia, I observed 1 bird in marshes near Lago Colhué Huapí, southern Chubut, on 8 December 1993. Durnford (1877: 43) found the species "common" along the Chubut River, and (Durnford 1878: 404) occasionally along the Senguel River, Chubut (=Río Senguerr; see Paynter 1985: 380). Parera (1972) saw 1 Lesser Yellowleg at Comodoro Rivadavia, Chubut, on 1 October 1985. Peters (1923: 296) noted *T. flavipes* at Huanuluan, Río Negro: "The Yellowlegs arrived at Huanuluan on Sept. 19, a solitary bird at the edge of the *arroyo*, the following day four more appeared, and on the 27th a flock of thirty or forty; they were generally common from that time on." In Chile, I saw 1 bird on 6 May 1995 in a small tidal estuary at Hornopirén, south of Puerto Montt along the Carretera Austral. Morrison (1940: 255) saw "a few [yellowlegs] on the tidal mud-flats at Maullín [southern Chile, between 24 October and 11 November 1938], the smaller bird [*flavipes*] being the commoner species." In the Falkland Islands (Malvinas), the species is a "Vagrant, recorded three times" (Woods 1988: 178); it is also listed as a vagrant by Strange (1992). A recent Falklands record, of one bird from 31 October-1 November, was published by Henry (1994, "possibly only the 5th record of this species for the Falklands").

*Tringa flavipes* is a regular visitor in Fuego-Patagonia from October to April.

#### 7. *Tringa melanoleuca*. Greater Yellowlegs.

Dabbene (1920: 110) gave records from Buenos Aires, Río Colorado (northern Patagonia), Chubut (near Península Valdés), Magallanes (Almirantazgo Inglés, Bahía Orange, Tierra del Fuego: 18 November 1882, 7 March 1883, 22 October 1883). Olrog (1979: 92) wrote that in Argentina the Greater Yellowlegs reached southward to southern Tierra del Fuego. In Chile, Philippi (1964: 80) called this species a regular summer visitor in the entire territory. Humphrey *et al.* (1970: 196) listed less than 10 records from Tierra del Fuego (Isla Grande). Venegas & Jory (1979: 114-115), however, called the Greater Yellowlegs "visitante regular," and so did Clark (1986: 160), who nevertheless added, "pero escaso" (but scarce). Keith (1970: 362) saw 2 individuals at Lake Fagnano and 14 near Río Grande, Argentine Tierra del Fuego, on 29 and 30 January 1967. Olrog (1948: 487) collected 1 at Estancia Viamonte

on 7 April, and cited the species from "Costa oriental de Tierra del Fuego y a lo largo de la costa patagónica argentina," but gave no details about relative abundance. Philippi *et al.* (1954: 15-16) found only a few isolated birds near Estancia Nueva and Estancia Gente Grande, Chilean Tierra del Fuego. The map in Fjeldså & Krabbe (1990: 172) shows a wintering area in Fuego-Patagonia, but not, however, in the southern half of Tierra del Fuego, whereas Clark (1986: 160) had written that it occurs "en toda la Isla Grande" (in all of Tierra del Fuego). Morrison & Ross (1989) reported only 14 unidentified yellowlegs in Fuego-Patagonia. I observed this species only once in Fuego-Patagonia, on 14 November 1985, a single bird on the beach of a small lake about 16 km north of Porvenir, Chilean Tierra del Fuego. Elsewhere in Patagonia, I saw *T. melanoleuca* in Chubut, Argentina (1 bird on 8 December, and 2 on 9 December 1993 near Lago Colhué Huapí), and Chiloé Island, Chile (1 bird on 9 May 1995 at Península Lacuy; southern hemisphere autumn). Morrison (1940: 255) saw a few birds of this species at Maullín, southern Chile, between 24 October and 11 November 1938, where I heard at least one bird on 15 May 1995 (southern hemisphere autumn). Peters (1923: 297) saw a few *T. melanoleuca* daily during his stay at Huanuluan, Río Negro, from the 6th of October on. The Greater Yellowleg was not reported from the Falkland (Malvinas) Islands by Woods (1988) or by Strange (1992), but Gregory (1994: 18) recorded "One at the Frying Pan near Mt. Pleasant from 11 Nov to at least 5 Dec 1989. The first for the Falklands."

Wetmore (1926b: 427) reported a bird collected on 21 May 1911 at Valcheta Creek, Río Negro: "The presence of this bird at the date mentioned may be explained only on the basis that it was a crippled individual unable to migrate, or a non-breeder without the necessary impulse for its return journey to the northward. It is in worn winter plumage." McNeil (1970: 243) discussed the presence of Greater Yellowlegs in South America during the northern summer months. McNeil (1970: 243) wrote that "*Totanus melanoleucus* summers over almost the entire range of its winter quarters, except the Far-South, south of Central Argentina." McNeil (1970: 243) wrote further: "It would seem also that some Yellowlegs that winter in the Far-South (Tierra del Fuego) undertake a partial migration, going to summer to Central Argentina, 6000 miles south of their breeding zones," basing his remarks on earlier comments made by Dabbene (1920: 110), and which McNeil quoted in full. It is worth citing this paragraph



again. Dabbene (1920: 110) had written: "Ambos naturalistas [E. Gibson and W. H. Hudson] han comprobado que los individuos que nos han visitado durante el verano [austral summer, northern winter], al emigrar en Marzo [early autumn], vienen reemplazados aunque en menor número, por otros que llegan del sur y vienen a invernar en las pampas, en donde se quedan desde Abril hasta Agosto [northern spring and summer, austral autumn and winter]." The crucial part of this passage is as follows: "when the individuals that have visited us during the [austral] summer [=northern winter] migrate out in March, they are being replaced, although in smaller numbers, by others that arrive from the south and come to winter [i.e., spend the austral winter, northern summer] on the pampas, where they remain from April [austral autumn] until August [austral winter]." McNeil (1970: 244) believed that some physiological imbalance, due to parasites, diseases, or wounds, might be the main factor responsible for the birds to spend the austral winter [their summer] in southern South America.

*Tringa melanoleuca* is a regular visitor to Fuego-Patagonia from October to April.

#### 8. *Catoptrophorus semipalmatus*. Willet.

This species was not mentioned by Humphrey *et al.* (1970) for Tierra del Fuego, or by Venegas & Jory (1979) for Magallanes. However, Clark (1986: 162) wrote, "Raro. Observado en Río Grande y San Sebastián" (Rare. Observed at Río Grande and San Sebastián [Tierra del Fuego]), but gave no details of these sightings. Olrog (1979: 93) only mentioned the Willet in a footnote, stating that "Un ejemplar fue observado en Río Grande, Tierra del Fuego (Rumboll, 1977, comunicación verbal)." Morrison & Ross (1989) did not report the Willet from Fuego-Patagonia. I saw the Willet only once, in northern Patagonia, a flock of about 10 birds, several of which were in breeding plumage, on 9 May 1995 (austral autumn) at Península Lacuy, Chiloé Island, Chile. Howell & Webb (1995: 61) saw one bird "at Las Cruces, San Antonio province [near Valparaíso, central Chile], 6 December 1993." The Willet is a regular but uncommon northern hemisphere migrant in northern and central Chile, but at the time of Philippi's (1964:80) checklist, the species was considered extremely rare in Chile, where he cited 4 records, 2 from Arica, 1 from Iquique, and 1 from Valparaíso. I saw 4 Willets in Arica on 24 September 1967. For some recent records in Chile, see Devillers & Terschuren (1976: 110; 35 birds at Arica) and Howell & Webb (1995: 61). It is uncommon but wide-

spread along the coast of Peru (e.g., Plenge 1974: 327; Hughes 1979: 51-52; Graves 1981: 76). This species was not reported from the Falkland (Malvinas) Islands by Woods (1988) or Strange (1992).

*Catoptrophorus semipalmatus* can be considered to be an accidental visitor to Fuego-Patagonia.

#### 9. *Calidris canutus*. Red Knot.

Dabbene (1920: 108) considered the Red Knot as scarce in Argentina, and mentioned (Dabbene 1920: 121) localities in Buenos Aires Province and at Cabo Espíritu Santo, Tierra del Fuego. This last record was also cited by Philippi (1964: 75). Steuller & Deautier (1935-1946: 606) recorded the Red Knot along the Pacific coast of Chile south to Chiloé and along the Atlantic coast of Argentina from Buenos Aires southward to Tierra del Fuego. Olrog (1979: 93) also indicated the occurrence of the Knot from Buenos Aires southward along the Patagonian coast to Tierra del Fuego. Johansen (1966: 240) stated that "According to the Bridges brothers in Viamonte [Tierra del Fuego] this species is not at all as rare as usually believed." Johansen (1966: 240) saw the Knot in the center of the island (Río Martín), together with *Calidris fuscicollis* and *C. bairdii*. Humphrey *et al.* (1970: 196-197) wrote that "One gets the impression from the little information [available] that when the species shows up on Isla Grande it may do so in flocks and occur locally quite abundantly." This view was confirmed by Jehl & Rumboll's (1976: 149) observations of 500 knots at Río Grande. Venegas & Jory (1979: 189-190), summarizing the published information until that date, only came up with a small number of records, however, thus justifying instead Humphrey *et al.*'s (1970: 196) remark that this species is only an "irregular nonbreeding visitor" in Tierra del Fuego. Clark (1984: 215) saw one adult in the Mitre Península, Tierra del Fuego, on 6 February 1984, and (Clark: 1986: 164) called it "poco común in Tierra del Fuego." Fjeldså & Krabbe (1990: 168) only stated that the Red Knot "migrates along the coasts of S. Am. to winter in s Arg. and Chile."

In contrast to the previous accounts suggesting that the Red Knot is not very abundant in Fuego-Patagonia, Devillers & Terschuren (1976: 112) reported that "The most spectacular feature of the tidal flats near Río Grande, Tierra del Fuego, was a very large, tight flock of Knots, comparable to those that can be seen in western Europe or New Zealand, estimated on 2 January 1976 at 3 000 to 5 000 birds. A possibly distinct flock, of only slightly smaller size, was noted on 3 January at

a different location." Harrington & Twichell (1984: 5) wrote that "After three years of following long cinnamon-colored trails of knots, we believe that the main group [of North American Red Knot *Calidris canutus rufa*] of about 150,000 knots winters in southern Argentina in a zone starting 800 miles south of Buenos Aires and stretching to Tierra del Fuego, which is only 600 miles from the edge of Antarctica... All told, the North American red knot world population may be less than 200,000." Hence, about 75% of that population winters in Patagonia, including Fuego-Patagonia. Morrison & Ross (1989) reported large numbers of *C. canutus* from Fuego-Patagonia and wrote that "The major wintering grounds of the Red Knot were in Tierra del Fuego and along the coastlines of Patagonia in Argentina." They reported a grand total of 53,782 birds counted in Fuego-Patagonia. This number would represent about 25% of the world population of North American Red Knots. Morrison & Ross (1989: 40) wrote: "By far the most important individual site discovered was Bahía Lomas, situated near the eastern mouth of the Strait of Magellan on the north coast of the Chilean sector of Tierra del Fuego. The bay contains a vast area of both smooth and channelled mudflats backed by flat grasslands, and in late January 1987 it held 41 700 knots or 54.6% of the South American total. Other important concentrations involved 5100 birds near Rio Grande and 4400 in the vicinity of Bahía San Sebastian on the Argentinian coast of Tierra del Fuego." Bahía Lomas alone would thus hold about 20% of the total North American population. Clearly, Fuego-Patagonia constitutes a major wintering area for the North American Red Knot in South America (Morrison & Ross 1989). My only observation of the Red Knot in Patagonia is of a flock of about 60 birds at Bahía Malaspina near Bustamante, Chubut, on 12 November 1993. Jehl *et al.* (1973: 63) found small numbers of *C. canutus* in Golfo San José, Chubut, in the northern summer months (June-July 1971, August 1972). McNeil (1970: 249) cited several instances of summering Red Knots in the southern United States. A record from Córdoba, in the interior of Argentina (November 1976), is worth mentioning (Nores & Yzurrieta 1979: 47). There is "one probable record" from the Falkland (Malvinas) Islands (Woods 1988: 181), but Strange (1992) did not list the Knot from these islands.

*Calidris canutus* is an abundant migrant and boreal winter visitor in Fuego-Patagonia from October to February.

#### 10. *Calidris bairdii*. Baird's Sandpiper.

This species is widespread as a migrant and a winter bird in western and southern South America (Jehl 1979; pers. obs.). This was the most widespread and the most common northern hemisphere migrant I saw in 1985-1988, being sighted on a total of 40 out of 100 field-days: 14 of 35 days in November-December 1985, 3 of 15 days in February-March 1987, 8 of 20 days in October 1987, 1 of 8 days in January 1988, and 14 of 22 days in November 1988. *Calidris bairdii* was also the most common migrant in Fuego-Patagonia in 1993, when I saw it on 10 days. I never saw large concentrations of *C. bairdii*, but usually observed isolated birds or small flocks, the latter numbering from 3-4 birds up to a maximum of about 50 birds per flock.

Often, these flocks included the congeneric *Calidris fuscicollis*. In most such mixed flocks *C. bairdii* outnumbered *C. fuscicollis* in proportions varying from about 3:1 to about 15:1. On some occasions, however, *C. fuscicollis* was more abundant than *C. bairdii*, for example on 25 November 1988, when a mixed flock I saw along a shingle beach south of Porvenir, Chilean Tierra del Fuego, included about 30 *fuscicollis* and only 2-4 *bairdii*. I observed other interspecific associations involving *C. bairdii* and other shorebird species. Three of these were with local resident species of plovers and one with a resident species of seedsnipe. *Calidris bairdii* was seen (1) with *Charadrius falklandicus* (breeding at the time) and *Zonibyx* (*Charadrius*) *modestus* on the mainland north of the Strait of Magellan; (2) with *Zonibyx* (*Charadrius*) *modestus* along the shore of the Strait of Magellan and in pastures on Tierra del Fuego; (3) with *Charadrius falklandicus* in grassy steppe of southern Santa Cruz; and (4) with *Thimocorus runcivorus* in a wet meadow (*vega*) on the mainland north of the Strait of Magellan.

On the mainland, *Calidris bairdii* was seen along the shores of the Strait of Magellan from Punta Arenas southward to San Juan (Brunswick Peninsula), in mainland steppes along pools or along the shores of small lagoons from Punta Arenas northwestward to Puerto Natales, and from Punta Arenas northeastward to the Kimiri Aike-Punta Delgada area, including the grassy steppes of the extensive plateau above O'Higgins. On Isla Grande of Tierra del Fuego, *C. bairdii* was seen along the shores of freshwater lagoons (Fig. 2) near Bahía Inútil, along the road from Punta Espora and Manantiales southwestward to Porvenir, and, south of Porvenir, along the road to Puerto Nuevo and Caleta Josefina at the head of Bahía Inútil, as well as inland from Bahía Inútil at Estancia Los Tchuélches, and

FIG. 2. Shallow freshwater lagoon in northwestern Tierra del Fuego south of Porvenir, Chile. The shores of such lagoons are a regular winter habitat for *Calidris bairdii*. November 1985. Photograph François Vuilleumier.



in the Bahía Azul-San Sebastián area. Many sightings were made along roads, especially the stretch of road between Los Canelos and Estancia Caleta Josefina (Onaisín) along the shore of Bahía Inútil, Tierra del Fuego, where flocks of *C. bairdii* were found wherever there were small temporary roadside pools. Away from roads, the species was seen along lake shores, in wet meadows or depressions of the shrubsteppe (as at Estancia Los Tehuelches, Fig. 3), and in open grassy steppes. It was also seen along the shingle beaches of Bahía Inútil, for example near Puerto Nuevo, or the sand beaches near San Sebastián. Finally, *C. bairdii* was common in the moorland vegetation of the summit of the Boquerón range at 550 m (Fig. 4). I did not observe the species on Navarino Island or in the Cape Horn or Wollaston Archipelago but Olrog (1950: 521) re-

ported it from that archipelago on Amarilla, Grevy, and Bayly Islands.

Two specimens of *Calidris bairdii* were collected. One (AMNH 8967, spirit specimen) was collected on 6 November 1985 about 5 km south of Bahía Felipe along the road from Bahía Azul to Porvenir, Tierra del Fuego, altitude about sealevel. The habitat was gently sloping grassland near a small river. The bird had a broken right leg, and its body mass was 36.5 g. Its iris was dark brown; its legs and bill were blackish; and it had some subcutaneous fat. Its stomach contained grit, 1 unidentified larva (or worm?), an intact 8 mm-long beetle, and remains of 2-3 other beetles. Its sexual organs were so small that they could not be identified with certainty (1 very small testis?), and its skull was entirely unossified.

FIG. 3. Wet meadow (*lago*) at Estancia Los Tehuelches, Tierra del Fuego, Chile, winter habitat of *Calidris bairdii* and *C. fuscicollis*. October 1987. Photograph François Vuilleumier.





FIG. 4. Mountaintop moorland with cushion plants at about 550 m, Boquerón Range, northwestern Tierra del Fuego, Chile, winter habitat of boreal migrant *Calidris bairdii* and breeding habitat of resident *Zonibyx (Charadrius) modestus*. February 1987. Photograph François Vuilleumier.

The second specimen (AMNH 826096) was collected on 17 November 1988 at Estancia Los Tehuelches, about 4 km NE of Puerto Nuevo, altitude about 50 m. The habitat was a grassy meadow within the *Chilodactylus diffusum-Festuca gracillima* matorral or shrubsteppe (Pisano 1977). It was a , with left testis measuring 2.5 x 1 mm and right testis 1.5 x 1 mm, with a partially ossified skull, and light subcutaneous fat throughout the body. Its body mass was 40 g; its iris was dark brown; its bill, legs and feet were black. The bird showed heavy molt of the head, neck and wing coverts, and moderate body molt.

*Calidris bairdii* has been reported as common in Fuego-Patagonia (e.g. Olrog 1948: 489; Philippi *et al.* 1954: 15; Sick 1968: 277; Johansen 1966: 240; Johansen 1969: 186; Humphrey *et al.* 1970: 197-198; Jehl & Rumboll 1976: 149; Venegas & Jory 1979: 117; Clark 1984: 215; and Clark 1986: 166). Johansen (1966: 240) stated that it was the most abundant wintering sandpiper in Tierra del Fuego, occurring along all lagoons and inland lakes. He saw it together with *Oreopholus ruficollis*, *Calidris fuscicollis*, and *C. alba*. Jehl (1979: 63) wrote as follows: "Adults begin to arrive [in South America] in late July (earliest 29 July, Perú) and by mid- to late August are fairly common along the Atlantic coast as far south as Rio Gallegos, Argentina. Presumably they reach Tierra del Fuego by early September but critical observations for this period are lacking." Venegas & Jory (1979: 117) stated that the species "Empieza a arribar a mediados de septiembre y desde esa fecha en adelante se observan con frecuencia en grandes bandadas hasta abril, fecha en que regresan al hemisferio norte para nidificar" (Starts to

arrive in mid-September and from that date on they are observed frequently in large flocks until April, date when they return to the northern hemisphere to breed). They added that *Calidris bairdii* and *C. fuscicollis* are the "two most common northern hemisphere migrants that are observed in the region," and that "usually they arrive in large flocks and apparently the relative abundance of each species shows variations from year to year." Interestingly, given how widespread (distribution map in Fjeldsø & Krabbe 1990: 169) and abundant *C. bairdii* is in Fuego-Patagonia, it is only a "vagrant visitor" in the Falkland (Malvinas) Islands (Woods 1988: 182-183). Strange (1992: 46) also listed Baird's Sandpiper as a vagrant from these islands. Gregory (1994: 18) recorded small numbers of *C. bairdii* in the Falklands in January, February, October, and November 1989, noting that this species "May be much overlooked amongst the flocks of White-rumped Sandpipers *C. fuscicollis*." Prince & Croxall (1996) gave one record from South Georgia, one bird, 26 October-2 November 1994. There is one previous record of Baird's Sandpiper from Antarctica (South Orkney Islands, Rootes 1988).

It is difficult to estimate the total population size of *C. bairdii* in Fuego-Patagonia on the basis of my observations and those of other workers. Along some roads, for example the road skirting the shore of Bahía Inútil in Chilean Tierra del Fuego, *C. bairdii* was present on some days at the edge of roadside pools all the way from Porvenir to Estancia Caleta Josefina (Onaisín), in flocks of 3-30 birds. If a total of about 40-50 such flocks, numbering on average 10 birds, were met during such a transect, then about 400-500 birds

would be sighted on a given day. This sort of observation is similar to those of Jehl & Rumboll (1976: 149), who wrote that in early November in Argentine Tierra del Fuego, "several hundred could be seen in a day." Morrison & Ross (1989) counted a total of 36,144 "unidentified small shorebird species" in Fuego-Patagonia, but indicated that the majority of these "peeps" were *Calidris fuscicollis*, not *C. bairdii*.

North of Fuego-Patagonia, I have seen *C. bairdii* in small numbers on 7-9 November 1991 at Península Valdés, and on 17 November 1991 at Cabo dos Bahías, both in coastal Chubut. Inland, I saw the species in Chubut (75 birds near Gangan on 11 November 1991, the largest flock I ever saw in Patagonia; 3-4 birds on 15 November 1991 near Paso de Indios; and 2 on 16 November 1991 between Las Plumas and Laguna Grande), and in Río Negro (one on 3 November 1992 near Pilcaniyeu; and one on 7 November 1992 at Laguna Ñeluán, south of Maquinchao). At Huanuluan, Río Negro (not far from Maquinchao), Peters (1923: 297) found *C. bairdii* to be fairly common from 12 September "until well into January." In November-December 1993, I observed *C. bairdii* at several sites in Chubut (Cabo dos Bahías, Lago Colhué Huapi) and Santa Cruz (Lago Cardiel, Fuentes del Coyle). Parera (1992) saw Baird's Sandpiper "frequently" in flocks in September-November at Comodoro Rivadavia, Chubut. I did not see any *C. bairdii* in southern Chile in May 1995, in the southern hemisphere autumn, at localities like Maullín, where Morrison (1940: 255) had found the species to be common from 24 October-11 November 1938 and from 3-12 January 1939. On Isla Guafo, southwest of Chiloé Island, Clark *et al.* (1984a: 229) saw only 3 birds from 26 September-20 October 1983. Jehl *et al.* (1973: 63) found small numbers of Baird's Sandpipers in Golfo San José, Chubut, in the northern summer months (June-July 1971, August 1972).

*Calidris bairdii* is an abundant visitor in Fuego-Patagonia, arriving in late August and early September and remaining there until mid to late April.

#### 11. *Calidris fuscicollis*. White-rumped Sandpiper.

I found this species to be the second most common boreal migrant in Fuego-Patagonia in 1985-1988 and in 1993, after Baird's Sandpiper. I observed *Calidris fuscicollis* on 22 out of 100 field-days in 1985-1988: 6 of 35 days in November-December 1985, 3 of 15 days in February-March 1987, 8 of 20 days in October 1987, and 5 of 22 days in November 1988. I saw *C. fuscicollis* on 6 days in 1993. The White-rumped Sand-

piper occupied the same range of habitats as Baird's Sandpiper, except that only the latter was observed in the mountaintop moorland of the Sierra Boquerón, Tierra del Fuego. White-rumped Sandpipers were sighted along beaches and roadside pools on the mainland north of the Strait of Magellan (Seno Otway), between San Juan and Punta Arenas (Brunswick Peninsula), and between Punta Arenas and Punta Delgada. On Isla Grande of Tierra del Fuego, *C. fuscicollis* was seen along roadside pools from Manantiales to Porvenir, and from Porvenir to Estancia Caleta Josefina (Onaisín), inland from Bahía Intútil in wet meadows at Estancia Los Tehuelches and along the sandy beach at San Sebastián. A small flock of 4-7 birds was seen on 27 November 1985 along the shore of the Beagle Channel near Eugenia, Navarino Island. On 19 October 1987 a flock of 3 birds was seen flying northward over the sea in the middle of the Strait of Magellan, during the ferry crossing from Punta Arenas to Porvenir. *Calidris fuscicollis* was often seen together with, but usually in smaller numbers than, *C. bairdii*. On two occasions along the Strait of Magellan south of Punta Arenas *C. fuscicollis* was seen with *Zonibyx* (*Charadrius*) *modestus* along a pebbly beach: (1) 20 *C. fuscicollis* with 10 *Zonibyx* (*Charadrius*) *modestus* on 7 February 1987, and (2) 2-3 *Calidris fuscicollis* with 20 *Zonibyx* (*Charadrius*) *modestus* on 21 February 1987. Three other interspecific associations I noted were as follows: (1) one *C. fuscicollis* accompanying a pair of *Charadrius falklandicus* with two downy chicks at Bahía Malaspina near Bustamante, Chubut, 12 November 1993, (2) a mixed flock with 6 *C. fuscicollis*, 60 *Calidris canutus*, 25 *Pluvialis dominica*, and 2-3 *P. squatarola*, same day and place, and (3) one *C. fuscicollis* following an adult *Zonibyx* (*Charadrius*) *modestus* with chick on 31 January 1996 on Bleaker Island, Falkland Islands. Crawshaw (1907: 129) saw *C. fuscicollis* together with *Charadrius falklandicus*.

Fjeldsø & Krabbe (1990: 169) mapped the distribution of *C. fuscicollis* in Fuego-Patagonia. Venegas & Jory (1979: 118) wrote that *C. fuscicollis* "Parece llegar en cantidades algo más grandes que *C. bairdii* pero las cantidades relativas cambian de un año a otro" (Seems to arrive in somewhat larger numbers than *C. bairdii* but the relative abundance changes from one year to another).

My experience in Chilean Fuego-Patagonia suggests, however, that *C. bairdii*, not *C. fuscicollis*, was the more abundant of the two species in 1985, 1987, 1988, and 1993, because it was seen, not only on more field days, but also usually in larger flocks. Similar-



ly, Philippi *et al.* (1954: 15) wrote that "of the summer visitors from the arctic zone [*Calidris bairdii*] is probably the bird that is seen most [often] in the Magellanic zone," and added that *C. fuscicollis* was "less abundant than *E.* [= *Calidris*] *bairdii*." Later, Johansen (1966: 240) also indicated that *C. bairdii* was more abundant than *C. fuscicollis*. Venegas & Jory (1979: 118) were perhaps influenced in their report by the observations of Crawshaw (1907: 129), who wrote that "Large flocks of these birds frequented the mudflats at low tide in San Sebastian Bay" in September and October, or of Jehl & Rumboll (1976: 149), who saw large numbers of *C. fuscicollis* on the Argentine side of Tierra del Fuego, for example "1000 feeding on kelp-covered beaches at Rio Grande" and "5000 at Laguna de los Cisnes." Johansen (1966: 240) saw *C. fuscicollis* along Bahía Inútil, near San Sebastián, and along the Beagle Channel ("in flocks"). Johansen (1969: 186) had earlier written that *C. fuscicollis* occurs on Tierra del Fuego "in grosser Menge" (in large numbers). Devillers & Terschuren (1976: 107-108) stated that "At Rio Grande (Tierra del Fuego) a very broad *restinga* and immense tidal mud flats harbour very large numbers of shorebirds, mostly White-rumped Sandpipers, *Calidris fuscicollis*." Clark (1984: 215) found the species to be common in the Mitre Peninsula of Tierra del Fuego in February 1984. Olrog (1948: 489) reported that *C. fuscicollis* was "frecuente a lo largo de las costas del Canal Beagle, del Estrecho de Magallanes y de la parte oriental de Tierra del Fuego. En Chile no fué encontrado más al norte" (frequent along the coasts of the Beagle Channel, of the Strait of Magellan, and the eastern part of Tierra del Fuego. In Chile it was not met with further north). Olrog (1950: 523-524) also observed "frequently small flocks of this sandpiper on Grevy and Bayly Islands [Cape Horn Archipelago]" as well as "near Ushuaia [Tierra del Fuego] and Navarino [Island]." Venegas (1981: 217) reported 10 *C. fuscicollis* from Bayly Island, Cape Horn Archipelago. Interestingly, *C. fuscicollis* has been reported from the Diego Ramírez Islands in Drake Passage, about 60 nautical miles southwest of Cape Horn (Venegas 1982: 195), from South Georgia (at least 7 records, Prince & Croxall 1983: 24; *C. fuscicollis* "is the commonest wader visiting South Georgia;" Prince & Croxall 1996, report 10 subsequent records), and from as far south as King George Island, Half Moon, and Deception Islands, South Shetland Islands, Antarctica (Trivelpiece *et al.* 1987: 63). "A flock of about 25 White-rumped Sandpipers was first observed on 22 October 1985

near the Point Thomas penguin colony. They remained all summer, and were still present when we left on 13 February 1986" (Trivelpiece *et al.* 1987: 63).

The surveys carried out by Morrison & Ross (1989: 249) revealed the presence of large numbers of *Calidris fuscicollis* in Fuego-Patagonia: "[Chilean] Tierra del Fuego also supported large numbers of small species [of shorebirds], the total of 11 200 consisting principally (99.8%) of small sandpipers, or peeps, mostly White-rumped Sandpipers *Calidris fuscicollis*." Elsewhere Morrison & Ross (1989: 223) wrote, "The largest concentrations were found in Tierra del Fuego, especially near Bahía San Sebastian and along the Atlantic coast, with the Tierra del Fuego eco-unit total of 23 300 [small sandpipers] representing 32.9% of the Argentinian total or 28.2% of the Atlantic Coast total." The majority of these peeps were *C. fuscicollis*. Jehl *et al.* (1973: 63) found small numbers of *C. fuscicollis* in Golfo San José, Chubut, in the northern summer months (June-July 1971, August 1972). McNeil (1970: 254) mentioned summering in the White-rumped Sandpiper in Argentina, Uruguay, Panamá, Mexico, Texas, and Florida. In the Falkland (Malvinas) Islands, whereas *C. bairdii* is only a "vagrant visitor from South American wintering areas," *C. fuscicollis* is a "common non-breeding visitor," and "usually occurs in parties and flocks of up to 100" (Woods 1988: 182). I sighted a small flock of 5 birds at Bleaker Island, Falklands, on 31 January 1996. Hayman *et al.* (1986: 373) stated that "In some years large flocks reach the Falklands." Strange (1992: 45) listed the White-rumped Sandpiper as an annual visitor to these islands. Woods (1988: 182) also indicated that *C. fuscicollis* is "Often seen with Two-banded Plover [*Charadrius falklandicus*] and Rufous-chested Darterel [*Zonibyx* (*Charadrius*) *modestus*] in autumn." On 31 January 1996 on Bleaker Island I observed a single individual *Calidris fuscicollis* closely following one adult *Zonibyx* (*Charadrius*) *modestus* with one chick in heath vegetation for a couple of minutes before flying off. Whereas it was clear that the sandpiper was interested in the plovers, the latter showed no apparent interest in their pursuer.

*Calidris fuscicollis* is an abundant visitor in Fuego-Patagonia from September to April.

## 12. *Calidris melanotos*. Pectoral Sandpiper.

Although this species was not mentioned from Fuego-Patagonia by Olrog (1948), Humphrey *et al.* (1970), Venegas & Jory (1979), or Morrison & Ross (1989), Clark (1986: 164) called it "Raro," adding that it had

been "observed at Río Grande and Viamonte," and Venegas (1986: 73) wrote, "Durante el verano austral, por Argentina hasta Tierra del Fuego (Jehl & Rumboll 1976). En Chile no alcanza hasta Chiloé" (during the austral summer, in Argentina to Tierra del Fuego... In Chile does not reach Chiloé). Philippi (1964: 75) previously had given Osorno as the southern range limit in Chile, where the species was considered an occasional visitor. Jehl & Rumboll's (1976: 149) observations of 25 birds and of 4 birds at Viamonte, and of 2 birds at Río Grande, are probably be the source of Clark's (1986) and Venegas (1986) remarks. Earlier, Johansen (1969: 186) had written that *C. melanotos* winters in South America "bis über 50° hinaus, doch nicht auf Feuerland" (southward of 50°S, but not in Tierra del Fuego). The map in Fjeldsâ & Krabbe (1990: 168) does not show the presence of the species south of the Río Santa Cruz in Santa Cruz Province, Argentine Patagonia. Fjeldsâ & Krabbe (1990: 168) wrote that the Pectoral Sandpiper was "Fairly common on upland plateaus of Patagonia." My only Patagonian observations of the Pectoral Sandpiper are of a single individual in the rocky intertidal zone at Cabo dos Bahías near Camarones, Chubut, on 17 November 1991, and 2-3 birds in marshes near Lago Colhué-Huapi, Chubut, on 8 November 1993. Piers (1923: 297) saw the Pectoral Sandpiper only twice (1 bird on 6 October, and 1 bird on 23 October) during his stay at Huanuluán, Río Negro, in 1920-1921. Contrasting with these reports of only a few birds, Durnford (1877: 43) had noted that the Pectoral Sandpiper was "abundant in large flocks" in the Chubut Valley. Woods (1988: 183) stated that in the Falkland (Malvinas) Islands *C. melanotos* was a "vagrant, recorded three times." It was listed as a vagrant in these islands by Stränge (1992: 46). Prince & Croxall (1983: 24) reported 2 records from South Georgia, in 1971 and 1982, and one from "Rothera Point, Antarctic Peninsula at 63°34'S, 68°08'W (T. W. Salmon, pers. comm.)." Most recently, Prince & Croxall (1996) mentioned 4 additional records from South Georgia.

*Calidris melanotos* can be considered to be a rare visitor in Fuego-Patagonia.

### 13. *Calidris alba*. Sanderling.

Dabbene (1920: 108, 122) called this species "scarce," although he added, "En ciertos años es relativamente común," and gave records from Buenos Aires and Chubut. Steuller & Deautier (1935-1946: 607) gave the range south to Chiloé Island along the Pacific coast, and to Chubut along the Atlantic coast. Humphrey *et*

*al.* (1970: 199) called the Sanderling an "irregular non-breeding visitor" to the Argentine side of Tierra del Fuego, "where, for example, Jehl & Rumboll (1976: 149) had reported 3 sightings, on 25 October (30 birds), 10 November (1), and 17 January (4). Venegas & Jory (1979: 118-119) confirmed the lack of records from the Chilean side of Tierra del Fuego, and added: "Esta ave se ha registrado una sola vez para Magallanes (Markham, 1970)...en la Península de Brunswick en el mes de junio" (this bird has been recorded only once in Magallanes...in the Brunswick Peninsula in June). This record is based on a specimen collected on 18 June 1967 at Leña Dura, "a short distance south of Punta Arenas" (Markham 1970: 68). Clark (1986: 164) indicated that *C. alba* also occurred "ocasionalmente hacia el sur [de Tierra del Fuego] hasta Canal Beagle." Olrog (1948: 488) collected 1 and 2 at Puerto Río Grande on 13 April, and mentioned the species without indication of numbers from the "costa oriental de Tierra del Fuego" (east coast of Tierra del Fuego); he added, "Nunca fué registrada en el Canal Beagle, ni en el Estrecho de Magallanes" (It was never recorded in the Beagle Channel or in the Strait of Magellan). Johansen (1966: 240), however, saw it once in January 1967 to the west of Ushuaia along the Beagle Channel, as well as twice (flocks) in December 1963 in San Sebastián Bay. Keith (1970: 362) saw 4 near Río Grande, Argentine Tierra del Fuego, on 30 January 1967. Clark (1984: 215) saw a flock of 10 birds on 6 February 1984 on the Mitre Peninsula of Tierra del Fuego. Fjeldsâ & Krabbe's (1990: 170) map indicates the absence of the species on Chilean Tierra del Fuego, but its presence along the channels of extreme southwestern Fuego-Patagonia. Devillers & Terschuren (1976: 112) saw Sanderlings "evenly distributed along the beaches between Río Grande and Cabo Santo Domingo [Tierra del Fuego]" and observed "two large, pure flocks of Sanderlings...one of 600 at Río Grande on 29 December, and another of 300 north of Río Grande on 2 January [1976]." Morrison & Ross (1989: 241) counted a total of 529 individuals in Fuego-Patagonia: "Sanderlings were found principally in two locations - along the ocean beach at Peninsula El Paramo at Bahía San Sebastian..., and at Río Grande...; the eco-unit total of 500 represented 27.3% of the Argentinian total and 5.4% of the Atlantic coast total." Jehl *et al.* (1973: 63) saw small numbers of Sanderlings in Golfo San José, Chubut, in the northern summer months (June-July 1971, August 1972). McNeil (1970: 277) reported summering in this species in Chile, islands off the



FIG. 5. Narrow beach at the foot of coastal cliff along the Strait of Magellan near San Gregorio, Magallanes, Chile, winter habitat of *Numenius phaeopus*. February 1987. Photograph François Vuilleumier.

Venezuelan coast, West Indies, and southern United States, as well as in the Old World. Woods (1988: 181) called *C. alba* an "uncommon non-breeding visitor from the Northern Hemisphere" in the Falkland (Malvinas) Islands, and Strange (1992: 45) listed it as an annual visitor to these islands. Gregory (1994: 18) reported 81 Sanderlings "on Bertha's Beach 14 Nov 1989 (DO), the maximum recorded for the [Falkland] islands." The overall migration routes of the Sanderling were described by Myers *et al.* (1990).

*Calidris alba* is an abundant visitor to Fuego-Patagonia, where it has been recorded from October to February and in April-June.

#### 14. *Numenius phaeopus*. Whimbrel.

Dabbene (1920: 108, 124) called this species very rare in Argentina, and mentioned a record from Cabo San

Sebastián, eastern Tierra del Fuego, on 5 February 1896 (see also Steullet & Deautier 1935-1946: 581). Philippi (1964: 78) wrote that "In Chile, es visitante regular y abundante en verano desde Arica al istmo de Ofqui (Aysén)," but that it is "Muy casual en Magallanes." I observed this species on only 4 out of 100 field-days in Fuego-Patagonia in 1985-1988, and did not see it in 1993. All 4 sightings were on the mainland: (1) 1 bird on 5 November 1985 along the shore of the Strait of Magellan about 80 km SW of Punta Delgada, (2) 3 birds on 16 November 1985 near La Mina, near the head of Seno Otway, (3) about 6 isolated birds and 2 together, total about 8 birds, on 8 February 1987 along the shore of the Strait of Magellan between Punta Arenas and San Gregorio (Fig. 5), and (4) 1 bird along the beach of the Strait of Magellan near San Gregorio on 1 March 1987. I did not see the species in Novem-



FIG. 6. Rocky stretch of shore along the Beagle Channel near Puerto Williams, Navarino Island, Chile, inhabited by resident *Hacmatopus ater* but not by North American migrants. November 1985. Photograph François Vuilleumier.



ber 1987, in January 1988, or in October-November 1988. My observations of isolated birds or up to 3 together confirm the status given for Tierra del Fuego by Humphrey *et al.* (1970: 200) as "uncommon," or by Clark (1986: 160) as "poco común." Surprisingly, Olrog (1948) did not mention *Numenius phaeopus*. Johansen (1966: 238) saw a flock of 6 birds in December 1963 along the Strait of Magellan near Punta Arenas. Philippi *et al.* (1954: 16) saw 4 birds at Estancia Gente Grande, Tierra del Fuego, thus, at that time, extending the distribution of *N. phaeopus* to the northern coast of Isla Grande. In contrast with the relative rarity of this species in Tierra del Fuego, Venegas & Jory (1979: 119-120) wrote that *Numenius phaeopus* was "común en las playas rocosas en el sector central y oriental del sector continental" (common in the rocky beaches of the central and eastern sectors) and mentioned seven localities on the mainland. Venegas & Jory (1979: 119) also stated that "en ocasiones invernan en grupos grandes" (occasionally they winter in large flocks) perhaps alluding to the flocks of 300 and 250 seen near Viamonte by Devillers & Terschuren (1976: 109) and Jehl & Rumboll (1979: 147), respectively. Morrison & Ross (1989) counted 123 *N. phaeopus* in Fuego-Paragonia, 119 of which were in Chilean Tierra del Fuego. Clark *et al.* (1984: 229) found the Whimbrel to be common on Isla Guafo, southwest of Chiloé Island, between 26 September and 20 October 1983. Morrison & Ross (1989) showed that a major wintering area for the Whimbrel was near Puerto Montt, in the Reloncaví area of the mainland, and in the Ancud area of Chiloé Island.

*Numenius phaeopus* regularly remains in southern South America until the austral autumn and early winter. Thus, Sick (1968: 228) reported that "On 8 April 1968 KASTL and I met [*Numenius phaeopus*] *hudsonicus* still in large numbers [in Mengen] near Mehuin, southern Chile." Bernath (1965: 99) saw 2 birds at 2 locations in northwestern Tierra del Fuego on 20 and 24 April. At an even later date, in May 1995, I saw *N. phaeopus* on 4 occasions in southern Chile: a flock of about 50 birds at Piedra Azul south of Puerto Montt, 4 May; 3 birds at Hornopirén, south of Puerto Montt, 6 May; 3 isolated birds at Península Lacuy, Chiloé Island, 9 May; and 1 bird at Playa Brava, Carelmapu, 15 May. Rollo H. Beck collected several specimens of Whimbrel at Ancud, Chiloé, in late spring-early winter (AMNH specimens). Belton (1959) reported 2 Whimbrels on 29 June 1958 near the Strait of Magellan about 20 km north of Punta Arenas, a record that

was omitted by Humphrey *et al.* (1970.) McNeil (1970: 226) showed that "summering" in the Whimbrel was of frequent occurrence in many parts of the world.

The Whimbrel is an annual visitor to the Falkland (Malvinas) Islands (Strange 1992: 45). Woods (1988: 175) called it a "vagrant or non-breeding visitor" and added, "Increased records since 1970 suggest that it winters regularly in the Falklands and that individuals may be present in all months" (see also Gregory 1944: 17). The same may be true in Fuego-Paragonia (Venegas & Jory 1979).

*Numenius phaeopus* is a regular visitor to Fuego-Paragonia from October to May.

#### 15. *Limosa haemastica*. Hudsonian Godwit.

Information in the literature until 1989 gives somewhat conflicting evidence about the status of this species in Fuego-Paragonia. Thus, whereas Venegas & Jory (1979: 120-121), Humphrey *et al.* (1970: 201-202), and Clark (1986: 162) called it "poco común" or "uncommon," Olrog (1948: 487) found it to be "common along the east coast of Tierra del Fuego in April." Philippi *et al.* (1954: 16) saw a flock of 6 at Estancia Gente Grande, northwestern Tierra del Fuego, and remarked that "since this species has a tendency to follow an eastern route during its migration from arctic lands, it is much better known in Argentina than in Chile." Philippi (1964: 77) wrote that, in Chile, "Es visitante regular solo en Magallanes y Tierra del Fuego." Johansen (1966: 239) stated that it was "most common along the east coast" of Tierra del Fuego but gave no details. Keith (1979: 362) saw one bird at the edge of San Sebastián Bay on 31 January 1967. On 24 November 1993 I saw a one-legged bird near San Sebastián, and on 25 November 1993, a flock of about 50 Hudsonian Godwits were sighted on mudflats near San Sebastián. Jehl & Rumboll (1976: 147) saw it on four occasions in Argentine Tierra del Fuego (4 flocks of from 10 to 20 birds) between 23 October and 27 January. Johansen (1966: 239) stated that "it occurs regularly at Viamonte, as the Bridges brothers told me." Devillers & Terschuren (1976: 109) saw "two flocks of respectively 12 and 14 Hudsonian Godwits [in tidal mudflats at Rio Grande]...on 29 December 1975...and a lone godwit was seen [there] with a large flock of Knots *Calidris canutus* on 2 January 1976." Many years ago, Crawshaw (1907: 130) saw small flocks in Tierra del Fuego south of Bahía Inútil: "They were not plentiful. Two lots of less than a dozen were all I saw, and these were very wild."



FIG. 7. Top and bottom. Two views of tidal mudflats of Bahía San Sebastián near San Sebastián, Argentine Tierra del Fuego, winter habitat of *Calidris bairdii* and *C. fuscicollis* and *Limosa haemastica*. November 1993. Photographs Allison V. Andors.

Fjeldsø & Krabbe's (1990: 173) map shows a main wintering area in Fuego-Patagonia on both shores of the Strait of Magellan; they stated that *Limosa haemastica* "mainly [winters] on ne Isla Grande, and on Chiloe Isl. Chile," and that it "visits upland plateaus of the Patagonian steppe in small numbers." Hayman *et al.* (1986: 312) stated that "over 7,000 winter in Bahía San Sebastian, Tierra del Fuego." This information probably comes from the surveys by Morrison & Ross (1989: 44) who counted 31,292 individuals in Fuego-Patagonia: "The most important concentration of Hudsonian Godwits occurred in Tierra del Fuego - nearly 19 500 (42.8%) in Argentina and almost 11 700 (25.6%) in Chile. The single most important site was the Bahía San Sebastian, Argentina, on the Atlantic coast of Tierra del Fuego, where 19 400 godwits were found on the vast, channelled mudflats protected by the 18-km long shingle spit, Peninsula El Paramo."

Morrison & Ross (1989: 44) added: "The second most important individual site was Bahía Lomas, the major wintering ground of the Red Knot, some 60 km to the north at the eastern mouth of the Strait of Magellan. The vast, smooth, and channelled flats of this bay held a further 10 500 birds." Clearly, tidal mudflats of northern Tierra del Fuego are the Hudsonian Godwit's austral summer habitat in Fuego-Patagonia. Elsewhere in Patagonia, I have seen the Hudsonian Godwit only on Chiloe Island, Chile (2 birds on a beach near Faro Corona, Peninsula Lacuy, 9 May 1995, austral autumn). Olrog (1948: 487) saw several birds at Ancud, Chiloe, in October. Rasmussen & López (1988: 156) found the Hudsonian Godwit to be common at Abtao, near Puerto Montt, "where a flock of c. 50 was usually present," and also saw it on Isla Quinchao, off Chiloe Island, and at Quellón on Chiloe. Durnford (1877: 43) saw "a small party" during his stay in the Chubut

Valley. In the Falkland (Malvinas) Islands, the species is a "vagrant from wintering grounds in South America" (Woods 1988: 174). Strange (1992: 46) listed the Hudsonian Godwit as a vagrant to these islands. Nores & Yzurietta (1979: 47) reported sightings of Hudsonian Godwits in Córdoba, interior Argentina, in 1973 (1 bird in May), 1974 (about 70 on 25 April, about 200 on 16 October, and 5 on 28 December), and 1977 (2 in June, and 4 in November).

*Limosa haemastica* is an abundant visitor in Fuego-Patagonia from October to March.

#### 16. *Phalaropus fulicarius*. Red Phalarope.

According to Murphy (1936: 996), this species "Winters at sea, chiefly in the southern hemisphere, and southward to the latitude of the Falkland Islands, Patagonia, and New Zealand." Olrog (1979: 98) mentioned a record from Neuquén, northern Patagonia. Venegas & Jory (1979) did not mention this species for Fuego-Patagonia, but Venegas (1986: 73) wrote that it reached Tierra del Fuego, Johansen (1969: 187) that it was occasional in Argentine Patagonia, and Clark (1986: 170) that it was rare in the Tierra del Fuego area (reported from the Strait of Le Maire). Humphrey *et al.* (1970: 206) cited only a single sight record from Tierra del Fuego, where "a flock of 12 birds, probably of this species, was seen flying northeast over the ocean about 30 mi. SE of New Island on 27 January [1967]" (see Keith 1970: 363). The only specimen record for Fuego-Patagonia appears to be a bird collected in the San Blas Channel, Jorge Montt Island, on 22 April 1982 (Venegas 1982b: 185). Brown *et al.* (1975: 348) saw one bird, "possibly *Phalaropus fulicarius*", in the Cockburn Channel on 13 March 1972. Morrison (1940: 255) wrote that "On 4 November [1938] I saw one of these Phalaropes at Maullin," but unfortunately gave no details. This locality is in southern Chile near Puerto Montt. I saw no phalaropes there in May 1995. Devillers & Terschuren (1978: 584) wrote that "a total of 48 individuals, mostly in small flocks, in the Golfo de Peñas, were more likely Greys, *P. fulicarius*, (uniform, rather pale backs)." Clark *et al.* (1984a: 229) reported that they saw the Red Phalarope at Isla Guafo, southwest of Chiloé Island, "at very close range" and "often 100-200 in disturbed water around Punta Norte, and a flock of over 5000 was counted between Punta Norte and Caleta Samuel on 20 October [1983]." In a later paper, Clark *et al.* (1984b: 324) reported "other large concentrations:" 300 birds on Isla Byron, about 1000 "In the channels between the Yungfrauen Islands," about 690 in Canal Picton, and about

3000 "in south Canal Concepcion." Clark *et al.* (1984b: 324) added, "The southernmost positive record was offshore in 51°03'W on 31 January. On 24 February, 7 phalaropes observed south of Isla Noir in 54°40'S, 72°24'W could have been of this species." Data on the occurrence of this species in Chile were summarized by Philippi (1964: 82) as follows: "En Chile se encuentra en altamar desde Arica a Chiloé, incluyendo las islas de Juan Fernández. Es raro en el litoral, pero hay años que ha llegado en inmenso número, como sucedió en 1955, año en que abundó desde Coquimbo a Concepción. Este fenómeno se ha repetido en menor escala en 1961." Neither Woods (1988) nor Strange (1992) mentioned *P. fulicarius* from the Falkland (Malvinas) Islands, although Murphy (1936: 996) had cited these islands as a locality where *P. fulicarius* had been taken. Watson (1975: 200-201) reported that "An adult male in chestnut breeding plumage with bright yellow bill was collected on Anvers Island, Antarctic Peninsula, in mid-January 1970 (specimen in the National Museum of Natural History, Smithsonian Institution)." This bird was mentioned by Hayman *et al.* (1986: 343). The bird actually came from Humble Island near Palmer Station, as reported by Risebrough *et al.* (1976), Parmelee *et al.* (1977: 18), and Parmelee (1992: 127).

*Phalaropus fulicarius* appears to be a rare visitor in Fuego-Patagonia in January-March, but probably occurs in large numbers in offshore Pacific waters of Magallanes and Aysén.

#### 17. *Lobipes lobatus*. Northern Phalarope.

Murphy (1936: 997) stated that this species "Winters in all oceans of the southern hemisphere, southward to the latitude of Patagonia." The Northern Phalarope was not cited from Fuego-Patagonia by Humphrey *et al.* (1970), Venegas & Jory (1979), or Clark (1986). However, Johansen (1969: 187) wrote about its occurrence "in Argentina to Patagonia", Olrog (1979: 98) said that it had been collected in Patagonia, Meyer de Schauensee (1982: 81) gave "Patagonia" in its range, and Venegas (1986: 73) stated that it occasionally reaches Magallanes. Brown *et al.* (1975: 348) wrote: "Two or three birds were seen at close range at the western end of the Magellan Strait on 8 March 1970; Johnson recorded the species as a rare straggler to Chile, but the bill shape left no doubt of the identification" as *Lobipes lobatus*. Devillers & Terschuren (1978: 584) stated that "A flock of 15 phalaropes [they saw] in the western end of the Strait of Magellan was thought to be of Red-necked, *P. [=Lobipes] lobatus* (dark, streaked backs)."

Philippi (1964: 83) had considered the Northern Phalarope "un rarísimo visitante," with a capture in Arica in 1851 and another in Aconcagua in 1963. *Lobipes lobatus* was not cited from the Falkland (Malvinas) Islands by Woods (1988) or Strange (1992).

*Lobipes lobatus* can be considered to be an accidental visitor in Fuego-Patagonia.

#### 18. *Steganopus tricolor*. Wilson's Phalarope.

According to Murphy (1936: 999), Wilson's Phalarope is "A purely American species, breeding in central and western North America, and migrating to southern South America, where it is found inland to a greater extent than on salt water." I recorded this species only twice in 1985-1988, and did not see it in 1993 or 1995. (1) Two birds were seen and collected from a small roadside pool in grassy *Festuca* steppe (Pisano 1977) on 26 November 1988, about 7 km northwest of O'Higgins along the road to Pali-Aike, altitude about 170 m, eastern Magallanes. The first, AMNH 826097, a ♂, had an ovary 7 x 5 mm, oviduct 1 mm, ova minute; skull incompletely ossified; body mass 64 g; light subcutaneous fat; iris brown, bill, legs and feet black. This bird had heavy neck and head molt, and moderate wing molt. The second bird, AMNH 826098, also a female, had a 10 x 3 mm ovary with minute ova; skull incompletely ossified; body mass 66 g; moderate subcutaneous body fat; iris dark brown, bill, legs, and feet black; head, neck, and body molt; stomach content: grit. (2) A third bird was seen at the same locality (but not collected) on 28 November 1988.

*Steganopus tricolor* seems to be uncommon in Fuego-Patagonia. Venegas & Jory (1979: 122-123) mentioned 7 localities for the continental area and 1 for Tierra del Fuego. Humphrey *et al.* (1970: 206) and Johansen (1969: 187) both cited what is apparently the same Tierra del Fuego record, from Philippi *et al.* (1954: 16-17), who wrote that they saw a flock on 9 November at Estancia Gente Grande, northwestern Tierra del Fuego. Unfortunately Philippi *et al.* (1954: 16-17) did not indicate how many birds were present in the flock. Johansen (1966: 240) did not mention any personal observations of this species, and called the observation of Philippi *et al.* (1954: 16-17) "sensational." In addition, Jehl & Rumboll (1978: 149) saw the species twice on Tierra del Fuego near Río Grande, and Clark (1986: 170) mentioned it from Lake Yehuín. Philippi (1964: 83) stated that "En Chile es un raro visitante de verano," with captures in Arica, Pisagua, Antofagasta, Valparaíso, O'Higgins, and observations in

Tierra del Fuego (reported above). Fuego-Patagonian records are few enough to justify Clark's (1986: 170) view that this species is "Poco común," and do not back up the assertion of Venegas & Jory (1979: 123) that this species occurs "siempre en grupos de 10-12 individuos" (always in flocks of 10-12 individuals). Olrog (1979: 99) wrote that Wilson's Phalarope "llega regularmente por el interior hasta Chubut." Fjeldså & Krabbe (1990: 171) stated: "Also numerous at times in the chaco/pampa transition of Arg. (100,000 in Mar Chiquita in Córdoba), and on uplands of the Patagonian steppe, s Arg." According to Jehl (1981), the principal wintering grounds of *S. tricolor* are "the high altitude lakes of the Central Andes" [in Perú and Bolivia]. My only other Patagonian records of *S. tricolor* are of a flock of 10 seen on a lake near Gangan, central Chubut, on 11 November 1991, and about 50 birds on Laguna Los Escarchados, Santa Cruz, Argentina, on 1 December 1993. In the Falkland (Malvinas) Islands, the species is a "vagrant, probably recorded at least twice" (Woods, 1988: 184; also listed as a vagrant by Strange 1992). Prince & Croxall (1996) cited one record from South Georgia, one bird on 13 October 1983. There is one record from the South Orkney Islands (Rootes 1988). Hayman *et al.* (1986: 341) wrote that "In mid-Oct 1968, one [*Steganopus tricolor*] was found dead on Alexander I., 71° S; this is the most southerly record of any wader ever." The original record was published by Conroy (1971); see also Parmelee (1992: 127).

*Steganopus tricolor* can be considered to be a rare visitor to Fuego-Patagonia.

#### 19. *Stercorarius parasiticus*. Parasitic Jaeger. Murphy (1936: 1037) reported Parasitic Jaegers from Corral (November, March), Chiloé Island (June), and "Strait of Magellan, in pursuit of South American Terns (*Sterna hirundinacea*), March." Meyer de Schauensee (1966: 102) summarized the distribution of this species as follows: "winters off the Pacific coast south to Magallanes, CHILE and off the Atlantic coast south to Tierra del Fuego." Araya *et al.* (1986: 212) stated that in Chile, the Parasitic Jaeger was "visitante regular de verano desde Arica hasta Tierra del Fuego." More specific records have been provided by other authors. Brown *et al.* (1975: 348) wrote that the Parasitic Jaeger "was regularly seen on the Patagonian Shelf in January 1970, but was scarce south of Magellan Strait; there were two in Beagle Channel on 27 January, and a few off eastern Tierra del Fuego on 21 February." Brown *et al.* (1975: 348) also stated that "The only jaegers seen

in the Pacific north of Beagle Channel were three *S. parasiticus* near Puerto Montt in late March 1971." Devillers & Terschuren (1978: 585) "saw the species regularly (25 individuals)...near Puerto Montt." Philipp *et al.* (1954: 20) saw one in Golfo de Penas in December 1945. In Atlantic waters, Jehl (1974: 223) sighted only one bird near Golfo Nuevo on 18 June 1971. Further south, in Fuego-Patagonia, Humphrey *et al.* (1970: 219-220) wrote that the Parasitic Jaeger was a "regular nonbreeding visitor," but Venegas & Jory (1979: 129-130) called it "Poco común en las aguas del estrecho de Magallanes, Tierra del Fuego y los canales" (uncommon in waters of the Strait of Magellan, Tierra del Fuego, and the canals), and Clark (1986: 182) called it "rare" and a "summer visitor in open marine waters and the Strait of Magellan." Olrog (1948: 491) saw "two birds in the Whiteside Channel, Strait of Magellan, in February." I spent considerable time in offshore waters of the Strait of Magellan, in the Beagle Channel, and in coastal and offshore waters from Tierra del Fuego to the Cape Horn and Diego Ramírez Archipelagos, and also watched seabirds from various land points in the area, but I never saw a single jaeger (of any species) there in 1985-1988, 1993 or 1995-1996. A juvenile Parasitic Jaeger was recorded in Córdoba, interior Argentina, on 6 February 1975 (Nores & Yzurieta 1979: 48). Woods (1988: 190) called *S. parasiticus* a "vagrant in Falkland [Malvinas] inshore waters, at southern limit of pelagic winter range, recorded three times," but Strange (1992) did not list the species from these islands. Bourne & Curtis (1985: 27) reported "an adult in Port Stanley in the Falklands\* on 15 Nov 82 (WFC)" (the asterisk "\*" indicates a "New occurrence within the recently-recognised 200 mile economic zone offshore (which we suggest can also be applied to bird records".) Watson (1975: 214) summarized the few records of Parasitic Jaeger from Signy Island, South Orkney Islands, Antarctica. Parmelee (1992: 40) called the Parasitic Jaeger in the Palmer Archipelago, "Possibly a rare vagrant. DFP and SDM noted one far from land at 60°S, 92°W, on 8 January 1973."

*Stercorarius parasiticus* can be considered to be an uncommon visitor in Fuego-Patagonian waters from January to March.

## 20. *Larus pipixcan*. Franklin's Gull.

According to Johnson (1967: 38), "From the north of Peru to central Chile [Franklin's Gull] is present in very large numbers...in Chile its arrival may be expected in early October and its departure in the last days of April." This species is common in northern Patagonia

off the Chilean coast of Valdivia, south to the latitude of Chiloé Island, for instance (see Devillers & Terschuren 1976: 116, 1978: 585, who saw the species in Canal Moraleda as far south as 44°30'S, "but saw none as far south as Punta Arenas", Devillers & Terschuren 1976: 116; see also Brown *et al.* 1975). The only record of this species for Fuego-Patagonia seems to be the observation reported by Peterson & Watson (1971: 670). On 10 January 1969, "Peterson studied at least 12 Franklin's Gulls with Brown-hooded Gulls (*Larus maculipennis*) and other gulls around the pier at Punta Arenas. Several more were identified the next morning, 11 January...and also on 29 January. On the latter date an additional bird was seen at Fuerte Bulnes about 30 miles south of Punta Arenas" (Peterson & Watson 1970: 670). Fjeldsø & Krabbe (1990: 185) wrote, "In recent years rec. to the Magellanic [sic] Strait." Fjeldsø & Krabbe (1986: 118) reported 3 birds at Comodoro Rivadavia, Chubut, Argentina, on 22 February 1984, where earlier Devillers & Terschuren (1976: 116) had observed 3 individuals associated with *Larus maculipennis*, and had noted: "This appears to be the first record of Franklin's Gull in Argentina and on the east coast of South America." In Córdoba, interior Argentina, Nores & Yzurieta (1979: 48) recorded Franklin's Gull on four occasions: 9 January 1976 (3 birds), 25 February 1976 (100), 15 June 1976 (1), 30 November 1976 (4), and 28 March 1977 (5). Fjeldsø & Krabbe (1990: 185) reported "many in Mar Chiquita in Córdoba." De la Peña (1992: 150-151) said that in Argentina, Franklin's Gull had been recorded in Córdoba, Mendoza, Chubut, and Santa Cruz. In the Falkland (Malvinas) Islands, *L. pipixcan* has been recorded once (Woods 1988: 195), but Strange (1992) did not list it.

*Larus pipixcan* can be considered to be accidental in Fuego-Patagonia.

## 21. *Sterna hirundo*. Common Tern.

Di Costanzo's (1978) records for interior South America did not include Chile or Argentina. Nores & Yzurieta (1979: 48) sighted about 5 birds on 25 February 1976 and 1 on 30 March 1977 in Córdoba, "the first Argentine records from inland waters." Later, Nores & Yzurieta (1981: 35) reported one bird in Córdoba in January 1981. Along the coasts of southern South America, according to Murphy (1936: 1099), the Common Tern "Winters...along the Atlantic coast of South America to the latitude of the Falkland Islands and the Strait of Magellan." Johansen (1966: 243) stated that he could find nothing in the South American literature about the occurrence of *S. hirundo* in Tierra

del Fuego, and that "he himself had not seen this tern there." Later, however, Johansen (1969: 188) wrote that "nach Olrog (1963) [*S. hirundo*] ist in Argentinien bis Santa Cruz beobachtet." Olrog (1979: 106) wrote later: "Ilega regularmente a la costa atlántica hasta Tierra del Fuego," a statement repeated by de la Peña (1992: 157). *S. hirundo* was not mentioned by Venegas & Jory (1979). More recently, Clark (1986: 192) wrote: "Aunque no confirmado, es posible que visite ocasionalmente la región" (although not confirmed, it is possible that it occasionally visits the region), and Venegas (1986: 74) stated, "alcanzando ocasionalmente hasta Tierra del Fuego" (reaching occasionally Tierra del Fuego). Meyer de Schauensee (1982: 87) mentioned that *S. hirundo* occurred south to "Santa Cruz, Argentina." Olrog (1967: 298) wrote the following: "Evidentemente, este gavotín [*S. hirundo*] se encuentra mucho más al sur [que la Provincia de Buenos Aires] entre los meses de octubre-marzo" (evidently this tern is found much farther south [than Buenos Aires Province] between October and March). And further: "Es muy posible que las dos especies, *Sterna hirundo*, del hemisferio norte, y *Sterna hirundinacea*, del hemisferio sur, pasan los meses de octubre a febrero juntas en la Patagonia y Tierra del Fuego, la primera en carácter de migratoria, la otra nidificando" (it is quite possible that the two species, *Sterna hirundo*, from the northern hemisphere, and *Sterna hirundinacea*, from the southern hemisphere, spend the months from October to February together in Patagonia and Tierra del Fuego, the first as a migrant, the other breeding). I am not sure what the basis of Olrog's comments about the occurrence of *S. hirundo* in Fuego-Patagonia might have been. Nores & Yzurieta (1979: 48) stated that *S. hirundo* "Ilega a la Argentina por la costa atlántica hasta Santa Cruz" (reaches Argentina through the Atlantic coast to Santa Cruz), but again, they did not give details. Some details are provided by Murphy (1936: 1099) on the basis of Rollo Beck's specimens: at 51°S, 68°W (10 September 1915); 48°27'S, 65°36'W (15 September 1915); and 51°37'S, 66°20'W (1 October 1915). These were "Birds of the year, with dusky bills and reddish legs and feet." Rasmussen & López (1988: 156-157) saw "flocks of hundreds of non-breeding terns...daily at Abtao [from 21 December 1986 to 9 January 1987] and Calbuco [from 27-29 January 1987]," near Puerto Montt, southern Chile. Five birds with red bills were collected and proved to be *S. hirundinacea*. Three other birds, with black bills, were collected and were identified as *S. hirundo*. In May

1995 I spent some time on Chiloé Island and adjacent mainland and coastal areas of southern Chile near Puerto Montt, and only saw *Sterna hirundinacea* (common) and *S. trudeaui* (uncommon), but no North American terns. *Sterna hirundo* was recorded once in the Falkland (Malvinas) Islands (Woods 1988: 198). Strange (1992: 46) listed the Common Tern as a vagrant in these islands. Gregory (1994: 18) reported "One in non-breeding dress at Bertha's Beach on 4 Nov 1989 (DO). The second record for the [Falkland] islands." Pearfield (1981: 18) considered the Common Tern "an accidental visitor, probably at the extreme end of the species wintering range."

*Sterna hirundo* can be considered to be an accidental visitor in Fuego-Patagonia.

## 22. *Sterna paradisaea*. Arctic Tern.

Johnson (1967: 47) summarized the status of the Arctic Tern in the following terms: "This tern is a somewhat irregular [austral] summer visitor to the Chilean littoral, but there is reason to believe that quite large numbers pass southwards well out to sea and that a similar southward migration takes place in the Atlantic with occasional birds appearing in coastal waters of Argentine Patagonia." In his checklist of Chilean birds, however, Philippi (1964: 93) had said that this species was very rare, and mentioned captures only at the Bio-Bio, at Angol, and in Valdivia. I observed this species only three times in Chilean Fuego-Patagonia, on each occasion while crossing the Strait of Magellan by ferry boat at the Primera Angostura between Punta Delgada and Punta Espora: (1) 1 adult in winter plumage and 1 immature on 26 October 1987, (2) 1 adult in winter plumage on 26 November 1988, and (3) 1 immature on 27 November 1993. Humphrey *et al.* (1970: 230) wrote that "There is but a single sight record for this species on Isla Grande," an observation of 3 birds by Keith & Gabrielson on 14 January in the Beagle Channel near Ushuaia. The details were given by Keith (1970: 363), who wrote that "both observers, on the basis of their previous experience with [*Sterna paradisaea*] in life and their subsequent experience with *vitata* in Antarctica felt certain that the birds seen were *paradisaea*." Humphrey *et al.* (1970: 230) added, "There are no other records for the species in the Fuegian region." Venegas & Jory (1979) did not mention the species, and Clark (1986: 192) wrote: "Aunque no confirmado, probablemente visita la región" (although not confirmed, it probably visit the region). Venegas (1982a: 192) gave the most complete status report concerning *Sterna paradisaea* in Fuego-Patagonia: "so-

lo en diciembre de 1979 se colectó el primer ejemplar de la especie para la región en la isla Hornos (Venegas, 1982b). Otros ejemplares fueron observados por la misma época en las islas Hornos, Freycinet y Wollaston, del archipiélago del Cabo de Hornos. Keith (1970), observó tres ejemplares en el canal Beagle en enero de 1967, aunque no asegura su identificación. Posteriormente Brown *et al.* (1975) registraron algunos ejemplares en un fiordo de Aisén (47° 30'S) cerca del límite norte de Magallanes y Schlatter & Riveros (1981, *comm. pers.*) la registraron en las islas Diego Ramírez." [Only in December 1979 was the first specimen of the species collected for the region on Horn Island (Venegas 1982b). Other birds were observed at the same time at Horn, Freycinet, and Wollaston Islands, of the Cape Horn Archipelago. Keith (1970) observed three individuals in the Beagle Channel in January 1967, although he was not certain of the identification [which is not what Keith actually wrote, see above]. Later Brown *et al.* (1975) recorded a few birds in a fjord in Aisén (47°30'S) near the northern border of Magallanes and Schlatter and Riveros (1981, *pers. comm.*) recorded it in the Diego Ramírez Islands.] My observations thus appear to be the first for the Strait of Magellan. Fjeldså & Krabbe (1990: 187) only wrote that "the Arctic and Antarctic [terns] *Sterna paradisaea* and *vittata* [are] seen at southern coasts of S Am." Clark *et al.* (1984a: 230) recorded the Arctic Tern at Isla Guafo, southwest of Chiloé Island, in 1983: "Three arrived at Caleta Samuel on 17 October, and by the next day there were 23, and 1 dead on the shore." In the Falkland (Malvinas) Islands, the Arctic Tern is "apparently a scarce non-breeding visitor from the Northern Hemisphere recorded offshore throughout the year (Bourne & Curtis 1985) and occasionally inshore with South American terns (Peatfield 1981). Peatfield (1981: 18) considered the Arctic Tern in the Falklands to be "a regular (?) passage and wintering species offshore during the Falkland summer - the birds appearing inshore if and when food is available." One was seen by W Bourne in the southern approaches to Falkland Sound on 27 February 1986 (Bourne & Curtis 1987)" (Woods 1988). Strange (1992: 45) lists the Arctic Tern as an annual visitor in the Falklands. Gregory (1994: 18) saw only one "adult in non-breeding dress" in the Falklands on 15 November 1990. At South Georgia, Prince & Croxall (1983: 25, 1996) mentioned several records since 1977. Prince & Croxall (1996) call the Arctic Tern a "rare migrant" at South Georgia.

Olrog (1958: 32) saw 3 birds on 6 February 1953 in the "Melchior Archipelago," Antarctic Peninsula,

adding that "the three were in winter plumage, quite distinct from the summer plumage of the Antarctic Terns [*Sterna vittata*] present." Murphy (1936: 1100-1104) discussed the distribution of the Arctic Tern in southern hemisphere and Antarctic waters, including a demotion of the "legend which may yet prove to be a far-reaching ornithological illusion, namely, that the Arctic Tern on its annual migration regularly crosses the antarctic circle, enters the pack-ice zone, and attains latitudes as high as 74°S." In a later paper, however, Murphy (1938: 4), in his revision of the status of what he called "Pan-Antarctic terns," rectified this conclusion, stating that he had examined "nine specimens of arctic terns collected between latitudes 56° and 68°S," clearly showing that "the arctic tern does regularly migrate as far as the pack-ice belt of the southern oceans, and even across the Antarctic Circle." Much later, Watson (1975: 229) summarized the distribution of the Arctic Tern in Antarctic waters, where "most records are from the Weddell sea." More recently still, Parmelee (1977) and Zink (1981a: 66) showed that Arctic Terns occurred in the northern winter in the Antarctic pack-ice of the Weddell Sea. Parmelee (1977) emphasized the role played by ice (pack-ice or icebergs) as roosting sites for molting terns. Zink (1981a) stated that the Arctic Tern "seemed to be most abundant in open waters with icebergs present." During a cruise from the Ross Sea to Anvers Island, between 19 January and 4 February 1976, Zink (1981b: 11-12), found the Arctic Tern to be "the fourth most abundant species observed and was seen mostly in loose pack ice...along the northern edges of the pack; few were encountered south of the pack edge." Clearly, the Arctic Tern migrates south to winter in loose pack ice in the Antarctic area and makes only brief appearances at intermediate points.

*Sterna paradisaea* can be considered an uncommon visitor in Fuego-Patagonian waters.

### 23. *Riparia riparia*. Bank Swallow.

The only record for Chilean Fuego-Patagonia, a single bird (AMNH 826149) I collected on 12 November 1988 along the Strait of Magellan in Peninsula Brunswick south of Punta Arenas, was published by Vuilleumier *et al.* (1993: 86-87). Note that the correct date of this record is 12 November 1988 (not 1989, as erroneously published in that paper). There are a few recent records from northern Chile (Howell & Webb 1995: 64). Elsewhere in Patagonia, I have seen the Bank Swallow at Río Curacó, southern La Pampa Province (1 bird on 26 October 1992). According to de la

Peña (1989: 25), in Argentina, the Bank Swallow has been recorded in Catamarca, Córdoba, Santa Fe, Buenos Aires, and Entre Ríos. *Riparia riparia* was not mentioned from the Falkland (Malvinas) Islands by Woods (1988) or Strange (1992), but has been sighted there on 13 October 1988 and 18 December 1988 (Gregory 1994: 20), the same year I collected it in Chilean Fuego-Patagonia (Vuilleumier *et al.* 1993). Watson (1975: 235) wrote that "A specimen of this holarctic migrant was collected at sea between the Falkland Islands and South Georgia (53°S, 50°30'W) in mid-November 1967 (J. R. Beck, personal communication, 1968)."

*Riparia riparia* can be considered to be accidental in Fuego-Patagonia.

#### 24. *Hirundo rustica*. Barn Swallow.

Johnson (1967: 297) wrote that "East of the Andes the migration route [of the Barn Swallow] continues considerably further south [than Valdivia in Chile], some individuals even reaching Tierra del Fuego." I observed this species on 7 occasions in Fuego-Patagonia: (1) 1-2 birds flying over matorral and woodland near Los Canelos, south of Porvenir, Tierra del Fuego, 7 November 1985; (2) several birds flying over a small lagoon in steppes near Punta Arenas on 19 November 1985; (3) 2 birds flying in the morning, and 3 in the afternoon over the subantarctic *Poa flabellata* grassland of Isla Gonzalo, Diego Ramírez Islands, about 60 nautical miles southwest of Cape Horn, on 1 December 1985; (4) 1 bird at Los Canelos, south of Porvenir, 7 December 1985 (same site as 7 November 1985); (5) 1 bird near the coast at Bahía Chilote, Porvenir Bay, Tierra del Fuego, on 14 October 1987, (6) 1 flying over a small pond in steppes near San Gregorio on 27 October 1987, and (7) 1 bird near San Juan, about 60 km south of Punta Arenas in the Brunswick Peninsula on 12 November 1988 (cited by Vuilleumier *et al.* 1993: 86). Thus 3 observations are from the mainland, 3 are from Tierra del Fuego, and 1 from the Diego Ramírez Islands. Venegas (1982: 195) had reported that *Hirundo rustica* had been "observada en las islas Diego Ramírez" (observed in the Diego Ramírez islands) but had given no details. I did not see the Barn Swallow in Fuego-Patagonia in 1993. According to Humphrey *et al.* (1970: 289-290) and Humphrey & Bridge (1970: 262-263) the 4 specimens of Barn Swallow that were collected by P. W. Reynolds on Tierra del Fuego between 1929 and 1939 (three of which are deposited at the British Museum and the fourth in the Museo Argentino de Ciencias Naturales) represented

at the time the only records for Tierra del Fuego. Humphrey & Bridge (1970: 262-263) cited one observation by Humphrey and Peterson from Punta Arenas, as well as other sightings in Río Negro, Chubut, and Santa Cruz. Markham (1970: 69) mentioned observations on 28 December 1970 and early January 1971, and reported 3 birds collected at the Instituto de la Patagonia in Punta Arenas. Jehl & Rumboll (1976: 149-150) made six sightings of Barn Swallows in Tierra del Fuego in 1973. Venegas & Jory (1979: 167-168) reported records from several localities and indicated that the Barn Swallow was seen regularly in small numbers at Punta Arenas. Clark (1986: 244) called the species "Poco común" on Tierra del Fuego. Fjeldsæ & Krabbe (1990: 532) wrote that it winters "in small numbers to Isla Grande." Elsewhere in Patagonia, I saw *H. rustica* at Península Valdés, Chubut (2 birds, 7 November 1993), Uzuclú, Chubut (1 bird, 9 December 1993), Cabo dos Bahías, Chubut (1 bird, 11 November 1993), and 150 km southeast of Caleta Olivia, Santa Cruz (1 bird, 15 November 1993). In the Falkland (Malvinas) Islands, the Barn Swallow is a "vagrant, occurring frequently in spring (October/November) and rarely in autumn (March/April)" (Woods 1988: 222). The Barn Swallow is listed as an annual visitor to the Falklands by Strange (1992: 45). Bourne & Curtis (1985: 28) reported Barn Swallows "at 38°44'S42°19'W on 4 Nov 82, ten miles east of the Falklands on 26th Oct 83, and at 45°25'S46°34'W on 2 Oct 84." Recent Falklands records were published by Gregory (1994: 19). *Hirundo rustica* has been recorded 5 times at South Georgia (Prince & Croxall 1983: 25, 1996). It is worth noting here that *Hirundo rustica* has recently been found breeding at Mar Chiquita, Buenos Aires Province, Argentina (Martínez 1983, de la Peña 1988: 25, Fjeldsæ & Krabbe 1990: 532). Are these newly established South American breeding birds the source of the migrants found in Fuego-Patagonia, rather than birds from North American populations? This possibility should be kept in mind in future studies.

*Hirundo rustica* is a regular visitor in Fuego-Patagonia, from October to January.

#### 25. *Petrochelidon pyrrhonota*. Cliff Swallow.

I saw this species only once in Fuego-Patagonia, 1 bird flying over open shrubsteppe near a small lake about 16 km north of Porvenir, Tierra del Fuego, on 14 November 1985. Elsewhere in Patagonia I saw this species on 26 October 1992 at two localities in southern La Pampa Province: 1 bird near Pichí Mahuida and 1 at Lihué Canel National Park. Humphrey & Bridge



(1970: 263) mentioned an observation of 8 birds on 14 November 1960 at Puerto Deseado, Santa Cruz, but found no information for Fuego-Patagonia. Humphrey *et al.* (1970) did not mention the species for Tierra del Fuego. Jehl & Rumboll (1976: 150) saw it only once on Tierra del Fuego at Río Grande, and stated that this was "the southernmost record of the species and the first for Tierra del Fuego." The sight record from Isla Grande mentioned by Fjeldså & Krabbe (1990: 533) probably refers to Jehl & Rumboll's (1976: 150) observation. Venegas & Jory (1979: 192) mentioned a possible sighting at Punta Dungeness in December 1977 and Venegas (1982a: 195) an observation of 6 birds in October 1981, also at Punta Dungeness. Araya *et al.* (1986: 324) mentioned only 2 records from Chile (from Tarapacá, where the first record for Chile was as late as 1949, Johnson 1967: 299; and from the Lakes Region of south-central Chile). Howell & Webb (1995: 64-65) reported several other sightings from central and northern Chile. In Argentina, de la Peña (1989: 26) shows much of Argentina in his range map. Woods (1988: 223) gave one record from the Falkland (Malvinas) Islands. Gregory (1994: 20) cited two observations from the Falklands, 1 bird on 8 December 1989, and 2 birds on 14-15 November 1990: "The second and third records for the islands." Strangé (1992) did not list this species for the Falklands.

*Petrochelidon pyrrhonota* can be considered to be a rare or occasional visitor to Fuego-Patagonia from October to January.

## DISCUSSION

Ever since the early reports on North American migrants in South America (Dabbene 1920; Naumburg 1926; Wetmore 1927; Murphy 1936: 186-188; Philippi 1940), interest in the complexities of the migration in that continent has increased, focusing either on northern hemisphere migrants or on intracontinental migrants (e.g., Zimmer 1938; Eisenmann 1951; MacArthur 1959; Koepcke 1963; Lévêque *et al.* 1966; Olrog 1967; Sick 1968; Johansen 1969; McNeil 1970; Plenge 1974; Willson 1976; Hughes 1979; Faaborg & Terborgh 1980; Terborgh & Faaborg 1980; Keast 1980; Graves 1981; Dott 1985; Hughes 1988; Jaksic & Jiménez 1988; Robinson *et al.* 1988; Willis 1988; Hayes *et al.* 1990, 1994; Marantz & Remsen 1991; Stotz *et al.* 1992; Sick 1993: 69-74; Chesser 1994; Hayes *et al.* 1994). Some of the work on northern hemisphere migrants in the Neotropics has resulted in

books (Keast & Morton 1980; Rappole *et al.* 1983; Morrison & Ross 1989; Hagan & Johnston 1992; Greenberg & Reaser 1995; Rappole *et al.* 1993; DeGraaf & Rappole 1995; Rappole 1995) in which previously scattered information was synthesized, new data were presented, old questions were reinterpreted, and new questions were asked. In recent years, considerable attention has been paid to certain taxonomic or ecologic groups, especially the shorebirds, families Charadriidae and Scolopacidae (e.g., McNeil 1970; Spaans 1978, Jehl 1979, 1981, Myers & Myers 1979, Myers 1980, Duffy *et al.* 1981, Morrison 1984, Myers *et al.* 1985, Morrison & Ross 1989, Harrington *et al.* 1991, Hayes & Fox 1991).

Surprisingly, however, little attention has yet been paid to migrants in southernmost South America, even though as long ago as 70-75 years ago Dabbene (1920) and Wetmore (1927), and about 35 years ago Sick (1968) and Johansen (1969), had published overviews of North American migrants in the southern cone of South America. No detailed studies such as those of McNeil (1970) at Chiguana and Cumaná at 10°25'N-10°30'N in tropical Venezuela, of Spaans at about 6°N in tropical Surinam, of Duffy *et al.* (1981) at 13°40'S at Paracas along the Pacific coast in tropical Perú, of Hayes & Fox (1991) at 25°16'S along the Paraguay River near Asunción in subtropical Paraguay, of Vooren & Chiaradia (1990) at 32°12'S along the Atlantic coast in temperate Brazil, or of Myers & Myers (1979) and Myers (1980) at 36°S-38°S in the pampas region of temperate Argentina, seem to have been carried out and/or published on migrants in southernmost South America at 50°S-56°S (Fuego-Patagonia). To date, the most thorough long-term research programs on North American migrants in South America are those of McNeil and his collaborators along the Venezuelan coast (e.g., McNeil & Robert 1988, Robert *et al.* 1989, Morrier & McNeil 1991), and those carried out by many workers under the aegis of the Panamerican shorebird program (e.g., Myers *et al.* 1984). Students of North American migrants in southern South America should especially study McNeil's (1970) seminal paper, which could serve as a model for similar studies in Fuego-Patagonia.

In order to help stimulate research on North American migrants in southernmost South America, and to serve as a stepping-stone toward quantitative studies like those of McNeil (1970) in tropical Venezuela, the present report: (1) offers fresh field information about the status of several species of northern hemisphere mi-

grants in that region, (2) reviews the status of all 25 species of migrants known to occur in Fuego-Patagonia, and (3) reviews the status of 21 other northern hemisphere migrants not so far recorded from Fuego-Patagonia (Appendix).

The presence of these migrants in Fuego-Patagonia in the austral spring and summer poses at least three interrelated questions: (1) What is the relative abundance of potentially competing migrant (i.e., non-breeding) versus resident species in Fuego-Patagonia, (2) What are the habitat preferences of migrants versus residents in the austral spring and summer in Fuego-Patagonia, and (3) Do these migrants play any role in the resident summer bird communities? I turn to these questions below.

To facilitate the discussion that follows, Table 1 shows the status and habitat preferences of the 25

North American breeding species that are known to visit Fuego-Patagonia, Table 2 the status and habitat preferences of 15 species of shore and waterbirds and of 2 species of swallows that breed in Fuego-Patagonia, and Table 3 lists possible sets of ecomorphological equivalents between and among migrants and residents.

*Relative abundance.* The 25 species of northern hemisphere migrants so far known from Fuego-Patagonia fall into the following abundance categories:

(1) abundant, in other words present each year in thousands in Fuego-Patagonia in the austral spring and summer, either geographically widespread or concentrated locally (5 species: *Calidris canutus*, *C. bairdii*, *C. fuscicollis*, *C. alba*, *Limosa haemastica*);

(2) regular, present each year in small numbers at scattered localities (5 species: *Arenaria interpres*, *Tringa*

TABLE 1. Status and habitat preferences of the 25 species of North American migrants known to occur in Fuego-Patagonia.

Species	Status	Habitat preference
<i>Pluvialis squatarola</i>	Accidental	Mudflats, beaches
<i>Pluvialis dominica</i>	Accidental	Mudflats, beaches, steppes
<i>Charadrius semipalmatus</i>	Accidental	Mudflats, beaches
<i>Aphriza virgata</i>	Accidental	Beaches, rocky shores
<i>Arenaria interpres</i>	Regular	Beaches
<i>Tringa flavipes</i>	Regular	Beaches, mudflats
<i>Tringa melanoleuca</i>	Regular	Beaches, mudflats
<i>Catoprophorus semipalmatus</i>	Accidental	Mudflats, beaches
<i>Calidris canutus</i>	Abundant	Mudflats
<i>Calidris bairdii</i>	Abundant	Mudflats, beaches, lagoons, steppes, montane moorlands
<i>Calidris fuscicollis</i>	Abundant	Mudflats, beaches, lagoons, steppes
<i>Calidris melanotos</i>	Rare	Beaches
<i>Calidris alba</i>	Abundant	Beaches, mudflats
<i>Numenius phaeopus</i>	Regular	Beaches
<i>Limosa haemastica</i>	Abundant	Mudflats
<i>Phalaropus fulicarius</i>	Rare	Offshore waters
<i>Lobipes lobatus</i>	Accidental	Offshore waters
<i>Steganopus tricolor</i>	Rare	Lagoons in steppes
<i>Sierconurus parasiticus</i>	Uncommon	Offshore waters
<i>Larus pipixcan</i>	Accidental	Coastal waters
<i>Sterna hirundo</i>	Accidental	Coastal waters
<i>Sterna paradisaea</i>	Uncommon	Offshore waters
<i>Riparia riparia</i>	Accidental	Beach
<i>Hirundo rustica</i>	Regular	Steppes
<i>Peirochelidon pyrrhonota</i>	Rare	Steppes
No. accidental species (%):	9 (36%)	
No. rare species (%):	4 (16%)	
No. uncommon species (%):	2 (8%)	
No. regular species (%):	5 (20%)	
No. abundant species (%):	5 (20%)	
Total:	25 (100%)	

Note: Sequence and nomenclature follow Meyer de Schauensee (1966, 1982).

TABLE 2. Status and habitat preferences of 15 species of Fuego-Patagonian breeding shore and waterbirds, and 2 landbird species (Hirundinidae).

Species	Status	Habitat preference
<i>Vanellus chilensis</i>	Abundant	Steppes, lagoons, meadows
<i>Charadrius falklandicus</i>	Common	Beaches, steppes
<i>Zonibyx (Charadrius) modestus</i>	Locally common	Mountain moorlands, beaches
<i>Oreopholus ruficollis</i>	Uncommon	Steppes
<i>Pluvianellus socialis</i>	Rare	Lake shores, seashores
<i>Haematopus leucopodus</i>	Common	Beaches, steppes, lagoons, mudflats
<i>Haematopus ater</i>	Uncommon	Beaches, rocky shores
<i>Gallinago gallinago</i>	Abundant	Steppes, marshes, bogs, meadows, moorlands
<i>Gallinago stricklandii</i>	Rare	Moorlands
<i>Thimocorus rumicivorus</i>	Abundant	Steppes, roadside pools
<i>Catharacta chilensis</i>	Common	Steppes, lagoons, beaches, mudflats
<i>Larus scoresbii</i>	Uncommon	Beaches
<i>Larus dominicanus</i>	Abundant	Beaches, lagoons, mudflats
<i>Larus maculipennis</i>	Abundant	Beaches, mudflats
<i>Sterna birundinacea</i>	Abundant	Beaches, mudflats
<i>Tachycineta leucopyga</i>	Abundant	<i>Nothofagus</i> forest and edge, ecotone forest/steppe, towns
<i>Notiochelidon cyanoleuca</i>	Abundant	Open areas generally

Note: Sequence and nomenclature follow Meyer de Schauensee (1966, 1982).

*flavipes*, *T. melanoleuca*, *Numenius phaeopus*, *Hirundo rustica*);

(3) uncommon, present irregularly in small numbers (2 species: *Stercorarius parasiticus*, *Sterna paradisaea*);

(4) rare, present occasionally in small numbers (4 species: *Calidris melanotos*, *Phalaropus fulicarius*, *Steganopus tricolor*, *Petrochelidon pyrrhonota*);

(5) accidental, having been recorded only between one and half a dozen occasions (9 species: *Pluvialis squatarola*, *P. dominica*, *Charadrius semipalmatus*, *Aphriza virgata*, *Catoptrophorus semipalmatus*, *Lobipes lobatus*, *Larus pipixcan*, *Sterna hirundo*, *Riparia riparia*).

Thus only 10 northern hemisphere species (40%) can be considered abundant (5 species, 20%) or regular (5 species, 20%) in that region. In other words, with the exception of *Calidris canutus*, *C. bairdii*, *C. fuscicollis*, *C. alba*, and *Limosa haemastica*, boreal migrants are not abundant numerically in Fuego-Patagonia.

It is interesting to note that few or very few northern hemisphere migrants were detected in the early days of ornithological exploration of Fuego-Patagonia. Thus, Crawshaw (1907) spent several months studying and collecting birds in Tierra del Fuego, but he reported only two North American shorebirds, *Calidris fuscicollis* and *Limosa haemastica*, even though he visited the tidal mudflats in San Sebastián Bay. It was not un-

til the recent aerial surveys by Morrison & Ross (1989), therefore, that the abundance of some of the boreal migrant species was appreciated. However, even with the benefit of both ground surveys and aerial surveys, it is clear that the five species of regular migrants to Fuego-Patagonia, *Arenaria interpres*, *Tringa flavipes*, *T. melanoleuca*, *Numenius phaeopus*, and *Hirundo rustica*, are not present there in large numbers. The two most common species I detected during my own field work were *Calidris bairdii* and *C. fuscicollis*. Although I was not able to estimate their numbers, clearly thousands of individuals of both species, especially *C. bairdii*, were present in Chilean Fuego-Patagonia during the months of October through March, but they were scattered over a vast area. I found the other species to be either uncommon (a few observations, e.g., *Numenius phaeopus*) or rare (only one record or sighting, e.g., *Riparia riparia*, *Petrochelidon pyrrhonota*). The overall impression I have obtained from my own field observations and from a survey of the literature other than the aerial censuses of Morrison & Ross (1989), is that non-breeding species from the northern hemisphere are not numerous in Fuego-Patagonia. The species shown to be numerically abundant by Morrison & Ross (1989) are concentrated geographically and ecologically in a few suitable localities.

In contrast with the migrants of Table 1, the breeding species of Table 2 listed as abundant and common

are seen on a regular basis, often in large numbers or in relatively high densities, in appropriate habitats throughout Fuego-Patagonia. The point I am making here is that an ornithologist traveling in Fuego-Patagonian habitats in the austral spring and summer sees many more resident than migrant birds, with the exceptions (1) that *Calidris bairdii* and *C. fuscicollis* are common in steppes and in tidal mudflats, and (2) that *Limosa haemastica* and *Calidris canutus* are common locally in tidal mudflats.

**Habitat preferences.** Of the 25 northern hemisphere species listed in Table 1, 16 (64%) are shorebirds (3 plovers, 2 plover-like birds, 8 sandpipers, 1 curlew, 1 godwit, 1 phalarope), 6 (24%) are seabirds (2 phalaropes, 1 jaeger, 1 gull, 2 terns), and 3 (12%) are landbirds (3 swallows). The 16 shorebirds can be found in a variety of Fuego-Patagonian habitats, ranging from lake or lagoon shores (*Tinga melanoleuca*; Fig. 2), to wet meadows (*vegas*) in shrubsteppes (*Calidris bairdii*, *C. fuscicollis*; Fig. 3), mountaintop moors (*Calidris bairdii*; Fig. 4), and sea-beaches (*Numenius phaeopus*; Fig. 5). The 6 marine species occur in inshore and offshore waters of Fuego-Patagonia (Strait of Magellan, Beagle Channel, other canals, and open sea). The 3 landbirds, all Hirundinidae, forage aerially, and have no special ecological relationship with the two main terrestrial habitats of Chilean Fuego-Patagonia, namely steppes and *Nothofagus* forests. These three species of swallows do not "need" either steppe or forest vegetation *per se*. In Fuego-Patagonia they have been sighted and collected flying over several kinds of environments, mostly open and steppe or steppe-like habitats, as well as over and along the seashore. The habitat preferences of the 25 North American migrant species are given in summary form in Table 1. In order to permit readers to compare the habitat preferences of boreal migrants with those of resident breeders, Table 2 gives in similar summary form the habitat preferences of 17 resident species, selected as potential competitors (see below).

The breeding species of Fuego-Patagonia listed in Table 2 live in two main kinds of environments. (1) Steppe habitats, including wet meadows and lake or lagoon shores within steppes, are inhabited by 8 species: 5 Charadriidae (*Vanellus chilensis*, *Charadrius falklandicus*, *Zonibyx* [*Charadrius*] *modestus*, *Oreopholus ruficollis*, *Pluvianellus socialis*), one Haematopodidae (*Haematopus leucopodus*), one Scolopacidae (*Gallinago gallinago*), and one Thinocoridae (*Thinocorus rumicivorus*). (2) Shore habitats are occupied by 6 species: one Haematopodidae (*Haematopus ater*; Fig. 6) and 5 Lari-

dae (*Catharacta chilensis*, *Larus scoresbii*, *L. dominicanus*, *L. maculipennis*, *Sterna hirundinacea*). In addition to the waterbirds listed in Table 2, other common and widespread Fuego-Patagonian waterbirds of lakes and lagoons include species such as grebes (*Podiceps occipitalis*, Podicipedidae), geese (*Chloephaga picta*, Anseridae), ducks (*Lophonetta specularioides*, *Anas flavirostris*, *A. georgica*, *A. platalea*, Anseridae), and coots (*Fulica leucoptera*, Rallidae). Thus, Fuego-Patagonia is relatively rich in resident breeding shorebirds and waterbirds. It must not be forgotten that truly terrestrial habitats of Fuego-Patagonian steppes are inhabited by landbirds belonging to a faunal assemblage of about 42 core species belonging to the families Rheidae (1 species), Tinamidae (2), Threskiornithidae (1), Cathartidae (1), Accipitridae (3), Falconidae (4), Thinocoridae (2), Columbidae (1), Strigidae (1), Furnariidae (8), Tyrannidae (8), Troglodytidae (1), Mimidae (1), Motacillidae (1), Icteridae (1), and Emberizidae (6) (Vuilleumier 1995, and in preparation). I emphasize again the points made above: (1) the boreal migrants listed in Table 1 do not appear to constitute an important component of the Fuego-Patagonian avifauna in either numerical terms or in terms of habitat preferences and (2) the exception to this observation is the local abundance of boreal shorebirds in tidal mudflats (Fig. 7).

Some tidal mudflats of Fuego-Patagonia, especially those of San Sebastián Bay (Argentina, Fig. 7) and Bahía Lomas (Chile) in northern Isla Grande of Tierra del Fuego, are rich in boreal shorebirds. These two areas are where large concentrations of *Calidris canutus*, *Calidris fuscicollis*, and *Limosa haemastica* were censused by Morrison & Ross (1989). Detailed ground studies of these tidal mudflats are now urgently needed to complement the broad view provided by the aerial surveys, especially to gain more information on habitat preferences and habitat use. More aerial surveys will also be necessary to obtain comparative data on numbers. Do the numbers of these boreal migrants vary from year to year? How do the boreal migrants forage in the mudflats? What foods do they select? Do they associate with resident shorebird species, such as oystercatchers, charadriine waders, or gulls that also forage on mudflats? Do the boreal migrants compete with the residents for shared resources? If so, what kinds of competitive interactions exist? Do the boreal migrant species also compete among themselves on the mudflats?

**Role of boreal migrants. Competition.** In Perú, Duffy *et al.* (1981) found no evidence for competition among

the wintering shorebirds. Myers & McCaffery (1984), however, disagreed with this view, but Duffy *et al.* (1984) stood their ground in a published response. Additional research will be needed to clarify the situation. In Buenos Aires Province, Myers (1980) observed many interspecific encounters between boreal migrants and breeding species and concluded that competitive interactions not only were a paramount factor shaping the structure of the shorebird communities there but perhaps even had molded the evolution of austral shorebirds. Myers (1980: 48) also stressed the fact that, at least in Buenos Aires Province, the presence of migrants from Patagonian breeding grounds in the austral winter, in addition to the North American migrants in the austral summer, made the local shorebird community more than "a simple migrant-resident dichotomy, being instead a complicated amalgam of different migration systems." In some ways, Myers (1980) discussion elaborated on a theme recognized long ago by Murphy (1939: 186-188), who had first analyzed these "migration systems."

In a preliminary attempt to assess the relationships between migrants and residents, I list in Table 3 several "sets" of possible "ecomorphological equivalents" between migrants and residents in Fuego-Patagonia. These sets were constructed empirically and not quantitatively and are simply intended to focus on the species of boreal migrants that do or could compete with Fuego-Patagonian breeders. Clearly, an ecomorphological study similar in design and in statistical detail to the one by Blondel *et al.* (1985) on Mediterranean bird guilds would be necessary to better define ecomorphological sets or guilds in Fuego-Patagonian birds. Such an analysis remains for the future, however.

In the first and second sets of species in Table 3, involving the North American plovers *Pluvialis squatarola*, *P. dominica*, and *Charadrius semipalmatus*, the question of competition with resident species is actually academic, as the three North American species are accidental, and hence cannot exert any ecologically significant pressure on residents. The same is true of *Larus pipixcan*, *Sterna hirundo* and *S. paradisaea*, which are uncommon or accidental. However, competition between various resident species and several boreal migrants such as *Calidris canutus*, *C. bairdii*, *C. fuscicollis*, and *Limosa haemastica*, four abundant species, and *Calidris alba* and *Numenius phaeopus*, two regular species, is a distinct possibility.

Such interactions are further considered below within the context of the major habitat types (or ecosystems) of Fuego-Patagonia. Four major environments

TABLE 3. Possible sets of ecomorphological equivalents between 26 species of migrants and 17 species of resident birds in Fuego-Patagonia (see text for details).

Migrant species	Resident species
<i>Pluvialis squatarola</i> , <i>Pluvialis dominica</i>	<i>Vanellus chilensis</i> , <i>Zonibyx (Charadrius) modestus</i> , <i>Oreophobus ruficollis</i>
<i>Charadrius semipalmatus</i>	<i>Charadrius falklandicus</i> , <i>Zonibyx (Charadrius) modestus</i> , <i>Pluvianellus socialis</i>
<i>Aphriza virgata</i>	None
<i>Arenaria interpres</i>	None
<i>Tringa flavipes</i> , <i>Tringa melanoleuca</i>	None
<i>Catoptrophorus semipalmatus</i>	None
<i>Calidris canutus</i>	<i>Zonibyx (Charadrius) modestus</i> , <i>Oreophobus ruficollis</i>
<i>Calidris bairdii</i> , <i>Calidris fuscicollis</i>	<i>Gallinago gallinago</i> , <i>Charadrius falklandicus</i>
<i>Calidris melanotos</i>	None
<i>Calidris alba</i>	<i>Charadrius falklandicus</i>
None	<i>Gallinago stricklandii</i>
<i>Numenius phaeopus</i>	<i>Haematopus leucopodus</i>
None	<i>Haematopus ater</i>
<i>Limosa haemastica</i>	None
Phalaropodidae (3 species)	None
None	<i>Thibonocornis ruficollis</i>
<i>Stercorarius parasiticus</i>	<i>Catharacta chilensis</i>
None	<i>Larus scoresbii</i> , <i>Larus dominicanus</i>
<i>Larus pipixcan</i> , <i>Sterna hirundo</i> , <i>Sterna paradisaea</i>	<i>Larus maculipennis</i> , <i>Sterna birundinacea</i>
<i>Riparia riparia</i> , <i>Hirundo rustica</i> , <i>Petrochelidon pyrrhonota</i>	<i>Tachycineta leucopygia</i> , <i>Notiochelidon cyanoleuca</i>

Note: Nomenclature follows Meyer de Schauensee (1966, 1982).

can be recognized for the purpose of this discussion: beech (*Nothofagus*) forests, steppes (including shores of inland lakes and lagoons), coastal habitats (beaches and mudflats), and the open sea. The terrestrial habitats (steppes and forests) were mapped, described, and illustrated by Vuilleumier (1985, 1991), and the marine habitats were described by Murphy (1936).

**Beech forests.** No migrants were recorded by me in Fuego-Patagonian forests dominated by southern beeches of the genus *Nothofagus* (Fagaceae), although at San Juan, south of Punta Arenas, *Riparia riparia* and *Hirundo rustica* were seen along the shore of the Strait of Magellan near *Nothofagus* forest. Boreal migrants therefore can be stated to play no ecological role in the *Nothofagus* ecosystem, inhabited by an assemblage of relatively few native species (Vuilleumier 1985), of which "only one, *Elaenia albiceps*, migrates to the tropical zone during the [austral] winter" (Chesser 1994: 102). Several other species that breed in *Nothofagus* forests are partial migrants, leaving this habitat after nesting, and migrating northward to lower latitudes in temperate South America, although not as far north as the Tropic of Capricorn. An example is *Phrygilus patagonicus*.

**Patagonian steppes.** Shrubsteppes or grassy steppes hold numerous bodies of water (such as temporary or permanent pools, ponds, lagoons, and lakes) and harbor the sandpipers *Calidris bairdii* and *C. fuscicollis*, which are common, as well as the phalarope *Steganopus tricolor*, which is rare. In such steppe wetlands, these boreal migrants could conceivably compete for resources shared by local breeders. Table 2 lists the Fuego-Patagonian shorebird and waterbird breeding species that do or could occur in the same habitats as the migrants.

Six Fuego-Patagonian breeding species are found in steppes (Table 2). However, the full extent and exact nature of their competitive interactions with migrant species remain to be discovered and described. No breeding species foraging in the same way as *Calidris* sandpipers occurs in these steppe wetlands, save perhaps the locally common snipe *Gallinago gallinago* (marshy areas, wet meadows; see below), or the locally common *Thinocorus rumicivorus* (steppes, lake and lagoon shores), or else the rare and localized Magellanic Plover *Pluvianellus socialis* (lake shores; Jehl 1975). The resident oystercatcher *Haematopus leucopus* lives in both marshy areas and lagoon shores within the steppes, but does not forage like *Calidris* sandpipers, or in exactly the same areas.

At one locality, Estancia Los Tehuelches, about 4 km inland from the shore of Bahía Inútil in Chilean Tierra del Fuego, flocks of migrant *Calidris bairdii* and *C. fuscicollis* were sighted in the same general area as *Gallinago gallinago* (Fig. 3). Although I did not find nests of *G. gallinago*, these birds were certainly breeding there, and displayed frequently. No interactions between *Calidris* spp. and *G. gallinago* were observed. In fact, although both *Calidris* spp. and *Gallinago* occurred in wet meadows, they were not seen together. *Gallinago* usually displayed over shrubsteppe rather than wet meadows, and *Calidris* spp. did not forage in pure shrubsteppe. The lapwing *Vanellus chilensis* also occurred in wet meadows at Los Tehuelches, but did not interact with *Calidris* spp.

My observations in Fuego-Patagonia appear to differ from those reported by Myers (1980) in Buenos Aires Province. Myers (1980: 41) wrote that "both the Rufous-chested Dotterel [*Zonibyx* (*Charadrius*) *modestus*] and the Two-banded Plover [*Charadrius falklandicus*] fight repeatedly with White-rumped Sandpipers [*Calidris fuscicollis*] during late austral summer and early austral spring." Instead, my observations suggest that in some instances, boreal migrants appear to seek the presence of the residents. One occasion, on 23 November 1993, I observed interactions between about 20 *Calidris bairdii*, 7-10 *Charadrius falklandicus*, and 2-3 *Zonibyx* (*Charadrius*) *modestus* in grassy steppe above O'Higgins, Magallanes, Chile. *Charadrius falklandicus* was breeding, as I found one nest with 2 eggs. At least some individuals of *C. falklandicus* were territorial, and excluded the other 2 species. It appeared as if some individuals of *Calidris bairdii* were following *C. falklandicus*, whereas the latter were aggressive toward *C. bairdii*. In addition, 1 *Gallinago gallinago* was foraging at the edge of a pool, near the other three species, but no interactions were noted between the snipe and other waders. Similarly, *Oreopholus ruficollis* was present in nearby steppe, but again, no interactions were witnessed between *O. ruficollis* and the other species. On another occasion, on 31 January 1996 on Bleaker Island, Falkland Islands, I observed an individual of *Calidris fuscicollis* closely following an adult *Zonibyx* (*Charadrius*) *modestus* with a downy chick. The boreal sandpiper was clearly actively seeking the company of the breeding plover. Myers (1980: 41) also mentioned the aggression of *Vanellus chilensis* toward migrants. *Vanellus chilensis* is a bold and aggressive species that will attack almost anything that moves, whether avian or mammalian, including human beings. Consequently, I do not believe that Myers' ob-

servations that *V. chilensis* was aggressive toward migrants are truly relevant in terms of interactions between migrants and residents.

Thus qualitative observations suggest that boreal migrants appear either (a) to occupy a "space" within the wetlands of the Fuego-Patagonian steppe environment that is unoccupied, or virtually unoccupied, by resident birds, or (b) not to compete with residents if they share that "space." Table 4 illustrates the instances of mixed species flocking that I have noted between residents and migrants in Fuego-Patagonia. Finally, I must mention that one abundant Fuego-Patagonian resident, *Thinocorus rumicivorus*, which lives in steppe, has no ecological equivalent among the northern hemisphere migrants. Seedsnipes of the genus *Thinocorus*, instead, are convergent on Old World Pteroclididae (sandgrouse) (Maclean 1969; pers. obs.). Dorst & Vuilleumier (1986: 133) suggested that "The resemblance between *Syrhaptes* and *Thinocorus* would be especially worthy of detailed study."

**Coastal habitats.** Beaches of Fuego-Patagonia, whether sandy or pebbly, usually have very few birds, migrants or residents. The calidrine sandpipers *Calidris bairdii* and *C. fuscicollis* and the Whimbrel *Numenius phaeopus* (Fig. 5) occupy them in small numbers, but no or only a few resident species seem to share this habitat with them. Resident species that are regularly found along beaches, like the oystercatcher *Haematopus leucopodus* and the plovers *Zonibyx* (*Charadrius*) *modestus* and *Charadrius falklandicus*, are not usually very numerous. Occasionally, migrant *Calidris fuscicollis* and resident *Zonibyx* (*Charadrius*) *modestus* were found in mixed flocks along shingle beaches (Table 4), displaying no interspecific aggression. Northern hemisphere migrants seem to play only a minor role in beach environments, where they do not appear to compete with local birds.

The major coastal habitat occupied by northern hemisphere migrants in Fuego-Patagonia is not beaches but tidal mudflats. Note, however, that not all mudflats appear to be equally attractive to birds. Morrison & Ross (1989) have documented the presence of tens of thousands of shorebirds of several North American migrant species on some favored mudflats in Fuego-Patagonia in the austral summer, as at Bahía San Sebastián (Fig. 7). Do resident species also use tidal mudflats in Fuego-Patagonia? Morrison & Ross (1989: 255) wrote that Bahía Lomas, Chilean Tierra del Fuego, where thousands of migrants were found, "also supported large numbers of Kelp Gulls *Larus dominicanus*, terns, and oystercatchers," but did not give further details. Jehl *et al.* (1973: 63) saw "small numbers of 'summering' northern hemisphere sandpipers *Calidris canutus*, *C. bairdii*, *C. fuscicollis*, *C. alba*...each year" in Golfo San José, Chubut (June-July 1971, August 1972). "These birds tended to feed in intertidal regions in association with Falkland Plovers [*Charadrius falklandicus*]." Years before, Crawshaw (1907: 129) had seen *Calidris fuscicollis* together with *Charadrius falklandicus* in San Sebastián Bay. Unfortunately, neither Jehl *et al.* (1973) nor Crawshaw (1907) gave any details about these associations.

More work is needed to establish what resident species use tidal mudflats, and what interactions, if any, take place between boreal migrants and residents. This research will have to include study of the foraging behavior and food preferences of both migrant and resident species. My prediction is that resident species will be found to occupy mudflats in relatively small numbers and rather opportunistically, and furthermore that their foraging methods and food preferences will overlap only little with those of the more abundant northern hemisphere migrants. In ecological terms, therefore, I believe that the migrants have the mudflats pretty much to themselves. Finally, and importantly, ti-

TABLE 4. Interactions between some migrant and resident species in Fuego-Patagonia (see text for details).

Migrant species	Resident species	Interactions
<i>Calidris bairdii</i> , <i>Calidris fuscicollis</i>	<i>Oreopholus ruficollis</i> , <i>Zonibyx</i> ( <i>Charadrius</i> ) <i>modestus</i> , <i>Charadrius falklandicus</i>	Occasionally in mixed flocks (various combinations)
<i>Riparia riparia</i> , <i>Hirundo rustica</i> , <i>Petrochelidon pyrrhonota</i>	<i>Tachycineta leucopygia</i> , <i>Notiochelidon cyanoleuca</i>	Occasionally in mixed flocks

Note: Nomenclature follows Meyer de Schauensee (1966, 1982).

dal mudflats are not a breeding habitat, and hence migrants foraging in mudflats cannot have any competitive impact on breeding species in this environment. Myers (1980: 43), of course, was aware of the fact that tidal mudflats are not a breeding habitat when he wrote "that no shorebirds [should] breed in broad intertidal areas is not that surprising, since none in north temperate regions have solved this problem either" (sic!). Nevertheless, as Rappole (pers. comm.) pointed out to me, many species of shorebirds, while not nesting in mudflats, place their nests in a neighboring habitat and use adjacent mudflats for foraging during their nesting period. Hence, even though no nesting actually takes place in mudflats, competition between boreal migrants and resident breeders could still occur. To what extent this occurs in Fuego-Patagonia remains to be determined.

*Marine waters.* Inshore waters in Fuego-Patagonia are occupied chiefly by breeding species of seabirds, especially the widespread and abundant *Sterna hirundinacea* and *Larus dominicanus*, as well as the common but more localized *Pelecanoides magellani*. Some non-breeding seabirds also forage in inshore waters in the austral spring and summer, at least occasionally. They include White-chinned Petrels *Procellaria aequinoctialis* and Antarctic Fulmars *Fulmarus glacialisoides*. Off-shore waters are host to a complex mixture of species, some of which breed, at least locally, in or at the periphery of the Fuego-Patagonian region. They include *Puffinus griseus*, *Diomedea melanophrys*, *Macronectes giganteus*, and *Catharacta chilensis* (Schlatter 1984; pers. obs.). Other species include the Antarctic breeding *Fulmarus glacialisoides*, and the subantarctic breeding *Procellaria aequinoctialis*. Hence, the breeding elements of the marine avifauna of Fuego-Patagonia do not appear to be impacted ecologically by northern hemisphere migrants. Fuego-Patagonian marine waters appear instead to be shared by local breeders and subantarctic/Antarctic non-breeding visitors (migrants?).

Years ago Murphy (1936: 197-202) published an analysis of the seabird fauna occurring in Fuego-Patagonian waters. Although many papers have brought the distribution and movements of marine birds of these waters into clearer focus (Cooke & Mills 1972; Jehl 1973, 1974; Jehl *et al.* 1973; Brown *et al.* 1975; Rumboll & Jehl 1977; Jehl *et al.* 1979; Devillers & Terschuren 1978; Schlatter 1984; Clark *et al.* 1984a, 1984b, 1992), no synthesis of these data has been attempted. It is therefore worthwhile to summarize Murphy's (1936) conclusions.

Murphy (1936: 197-202) divided what he called the "Magellanic marine avifauna" into five categories:

(1) "sedentary and exclusively Magellanic salt-water birds:" *Pelecanoides magellani*, *Phalacrocorax magellanicus*, *P. albigularis*, *Chloephaga hybrida*, *Lachyeres peneres*, *T. patagonicus*, *T. brachypterus*, *Haematopus leucopodus*, and *Larus scoresbii*;

(2) "Magellanic migratory salt-water birds:" *Spheniscus magellanicus*, *Catharacta skua chilensis*, *C. skua antarctica*;

(3) sedentary salt-water birds of combined Magellanic and Humboldt Current range: " *Phalacrocorax gaimardi*, *Haematopus ater*, *Sterna hirundinacea*;

(4) "widely distributed sub-antarctic salt-water birds, with South American breeding ranges restricted to the Magellanic district:" *Endiptes crestatus*, *Diomedea epomophora* [thought at that time to breed in Tierra del Fuego; "alleged to nest about Lake Cami or Fagnano, in Tierra del Fuego," Murphy 1936: 201, 577], *Puffinus griseus*, *Pelecanoides urinatrix*;

(5) "Magellanic salt-water birds of Pan-Antarctic or more extensive breeding range:" *Aptenodytes patagonicus*, *Diomedea melanophrys*, *D. chrysostoma*, *Oceanites oceanicus*, *Phalacrocorax atriceps*, *Larus dominicanus*.

Because the present paper deals with North American Charadriiform and Passeriform migrants, rather than with seabirds taxa like Sphenisciformes or Procellariiformes, or with seabirds as an ecological group, I will not discuss Murphy's (1936: 197-202) eco-faunal categories further here, as I plan to review the biogeography of Fuego-Patagonian seabirds in another paper.

## CONCLUSIONS

In contrast to the findings reported in this paper Myers (1980: 39) wrote that in the pampas area of Buenos Aires Province, north of Patagonia, "nonbreeding [migrant] birds are numerically dominant through the year, and...have major effects on the breeding community" of shorebirds. Indeed, Myers (1980: 40) made a strong statement: "I will argue that the most dramatic effect of nonbreeding waders in South Temperate America has been to *prevent* [italics mine] all scolopacids (save the Common Snipe) from setting up breeding populations," largely because of the "high density of competing individuals" (Myers 1980: 44) of migrant species, which impede successful reproduction of the resident species.

Myers (1980) scenario may be valid in the pampas but appears unlikely to apply in Fuego-Patagonia at



50°–56°S, given the relative abundance and habitat preferences of boreal migrants versus residents as described in this paper. Table 2 lists 15 species of Fuego-Patagonian resident shorebirds that could potentially compete with the northern hemisphere migrants, and Table 3 lists nine sets of possible ecomorphological equivalents between residents and migrants in Fuego-Patagonia. In several cases, interactions between migrants and residents are unlikely simply because of the rarity of the migrants (*Pluvialis* spp., *Sterna* spp.). In other instances, such as *Calidris* spp., however, interactions can be expected because the boreal migrants are abundant and occur in areas where residents also live and breed (e.g., wetlands within the steppe environment).

In the body of this paper I mentioned the few cases of interspecific interactions that I observed between and among these 15 species and the ecologically more or less equivalent migrants (Table 4). The most interesting cases I witnessed were: (1) 3-way interactions among breeding *Charadrius falklandicus* (nest found), probably breeding *Zonibyx* (*Charadrius*) *modestus*, and migrant *Calidris bairdii* in grassy steppe of the mainland of Magallanes near O'Higgins, and (2) active following of breeding (adult with downy chick) *Zonibyx* (*Charadrius*) *modestus* by *Calidris fuscicollis* in the Falklands.

Although as many as 25 species of northern hemisphere migrants have been recorded in Fuego-Patagonia (Table 1), my observations and a literature review suggest that:

(1) only 5 of these species (20%) are abundant and 5 others are regular (20%) in small numbers (total=10 species, 40%);

(2) the other 15 species of boreal migrants do not occur in Fuego-Patagonia in large numbers during the austral spring and summer;

(3) most migrants have no, or only very minimal, ecological or competitive impact on resident breeding species;

(4) even though two migrant species (*Calidris bairdii* and *C. fuscicollis*) are common in steppes, one of the major terrestrial environments of Fuego-Patagonia, they are scattered in this ecosystem (including the wetlands within the steppes);

(5) North American migrants occur in large numbers only in some tidal mudflats, where they may forage in different ways from the local birds, and where breeding of the latter is prevented by the temporary nature of this habitat.

Southernmost South America (Fuego-Patagonia) has a relatively depauperate avifauna of only about 208 species, including pelagic species, according to the list published by Venegas (1986), and including *Catoptrophorus semipalmatus*, not listed by Venegas (1986). This low species number is not surprising given the small surface area of Fuego-Patagonia compared to other temperate areas of South America further north, and given its peninsular position at the southernmost tip of South America. This avifauna consists of 145 residents (70%), 14 visitors (7%), 23 oceanic birds (11%), and 25 boreal migrants (12%) (and, in addition, 1 introduced species). Northern hemisphere migrants thus make up over one-tenth of the species richness of Fuego-Patagonia or nearly one fifth if the 10 species of resident pelagic Procellariiformes and Sphenisciformes are excluded. However, the boreal migrants make up only a minor biomass component of the avifauna in terms of their use of the main ecological resources of the area, *Nothofagus* forests and Patagonian steppes. Although tidal mudflats are the only habitat used by large numbers of migrants, this environment can be considered marginal in Fuego-Patagonia and is not used by similarly high numbers of foraging residents. Hence migrants and residents appear to use different resources, and this ecological segregation probably minimizes competition between them.

These considerations lead me to view the "interactions" between boreal migrants and resident breeders in Fuego-Patagonia as a form of ecological complementarity. On the one hand the most abundant migrants forage in tidal mudflats that are little used by the residents. On the other hand some common migrants are scattered in the steppes where they do not compete with residents. In addition, no migrants occur in *Nothofagus* forests. In other words, the two most characteristic environments of Fuego-Patagonia (steppes and forests) belong to the residents, whereas the tidal mudflats (Fig. 7), which I believe to be somewhat marginal for residents, belong to the migrants. The Fuego-Patagonian ecological pie appears to be rather neatly sliced. Of course, the present lack of competition in mudflats could be due to the migrants having excluded the residents from occupying this habitat, and the present lack of competition in steppes and forests could be due to the residents having excluded the migrants from those environments. There is clearly much room for further research on migrant versus residents in southern South America.

## PROSPECTS FOR FUTURE WORK

Before the general ecological (proximate causation) and evolutionary (ultimate causation) problems posed by actual or potential interactions between migrants and residents in Fuego-Patagonia can be worked out, many details remain to be elucidated. Several specific questions can be answered by carefully planned field work, best carried out by resident ornithologists. Such questions include:

(1) What resident species forage in tidal mudflats together with the abundant migrants *Calidris canutus*, *C. fuscicollis*, and *Limosa haemastica*? What kinds of interspecific interactions, if any, do they have? Do boreal migrants and residents forage in similar ways? Do they consume the same kinds of foods?

(2) Do individuals of common northern hemisphere migrants like *Calidris bairdii* and *C. fuscicollis* establish northern winter (austral summer) territories in Fuego-Patagonia? Do they defend these territories against conspecifics as well as against individuals of other species, especially local breeders? Do individuals of such migrant species establish similar territories at the same sites year after year?

(3) Do aggressive local breeders like *Vanellus chilensis* have any impact on boreal migrants like *Calidris bairdii* and *C. fuscicollis*? For example, how frequently does *V. chilensis* supplant foraging migrant sandpipers or other waders?

(4) What kinds of interactions exist among individuals of migrants and residents that occur in mixed species flocks? Why are some migrants seemingly attracted by nesting resident species, as I witnessed on 23 November 1993 between *Calidris bairdii* and *Charadrius falklandicus*, on 12 November 1993 between *Calidris fuscicollis* and *Charadrius falklandicus*, and on 31 January 1996 between *Calidris fuscicollis* and *Zonibyx (Charadrius) modestus*?

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APPENDIX. In this list are included 21 species that have been reported from the Patagonian mainland north of Fuego-Patagonia, from neighboring areas such as South Georgia and the Antarctic Peninsula (including the South Shetland Islands), or from offshore waters in the Patagonian region. Some of these species are likely to be recorded in Fuego-Patagonia in the future. The sequence and nomenclature follow Meyer de Schauensee (1966, 1982) and, for some species, American Ornithologists' Union (1983).

#### 1. *Buteo swainsoni*. Swainson's Hawk.

This species is stated to occur in "Argentina south to Río Negro" in northern Patagonia (Meyer de Schauensee 1966: 53, 1982: 44). A similar statement is also found in faunal checklists. Olrog (1979: 64) for example wrote: "Migratorio desde Norteamérica, llega regularmente hasta Río Negro" (migrant from North America, regularly reaches Río Negro). The basis for these repeated assertions appears to be tenuous. Steuller & Deautier (1935-1946), for example, wrote the following: "Carlos Burmeister ha incluido el Aguilucho langostero [= *Buteo swainsoni*] en la lista de aves patagónicas, pero ningún autor posterior ha vuelto a señalarla en esa región" (Carlos Burmeister has included *Buteo swainsoni* in the list of Patagonian birds, but

no subsequent author has mentioned it in that region). Hellmayr & Conover (1949: 111) wrote, "In Argentina (south occasionally to the Río Negro1)." The footnote reads as follows: "Although the locality 'Patagonia' attached to two or three specimens in the British Museum on a dealer's authority is altogether untrustworthy, Swainson's Hawk does occasionally extend its winter migration so far south, as is proved by a juvenile male, obtained on the Río Negro in May, 1871, in the same collection." Modern works on Argentine birds (e.g., Narosky & Yzurieta 1987: 89; Olrog & Pescetti 1991: 27; de la Peña 1992: 41) all include Río Negro in the winter range of *B. swainsoni*, but the map in Fjeldså & Krabbe (1990: 103) shows the winter distribution only barely south of the Río Negro. The current status of this species in northern Patagonia should be re-examined, and this species should be looked for there. *Buteo swainsoni* has not been reported in Fuego-Patagonia. It is not listed by Venegas (1986) for instance. Vagrant individuals could be expected in that region, however.

#### 2. *Pandion haliaetus*. Osprey.

Venegas (1986) did not list the Osprey for Patagonia as a whole or for Fuego-Patagonia. According to Meyer de Schauensee (1966: 60) the Osprey can be found in



southern Chile south to Valdivia and Llanquihué and according to Olrog (1979: 70) south to Puerto Montt. Meyer de Schauensee (1982: 50), however, indicated only northern Chile. Araya *et al.* (1986: 134) called the Osprey "un visitante regular poco común" (a regular, uncommon visitor) from Tarapacá to Valdivia. Years previously, Philippi (1942: 88-89) had written that the Osprey was a "very rare visitor" in Chile. Besides a specimen in the Museo Nacional, Santiago, captured at Paine in the Santiago area in 1885 (the only record mentioned by Hellmayr 1932: 291), Philippi (1942) listed 2 specimens in the bird collection of the Colegio Alemán in Valdivia, collected 7 November 1897 at Ensenada, Corral Bay, and on 30 June 1917 at Río Naguilán, near Valdivia. In addition, according to Philippi (1942: 89), the collector, Fernando Ohde, had recorded in his notes two additional specimens, collected on 27 February 1909 and 25 February 1914 near Valdivia. The map in Fjeldså & Krabbe (1990: 91) shows the Osprey's distribution in Chile southward to Llanquihué, but not including Chiloé Island, with an apparent regular range (marked in solid black rather than in stippled pattern) southward to Valdivia. Schlatter & Morales (1980) summarized the Chilean occurrences of *Pandion haliaetus*. Additional birds have been sighted since Schlatter & Morales' (1980) paper was published (e.g., Aguirre & Seeger 1995). Glade (1988: 7) listed the Osprey as "vulnerable" in Chile. Given the wide winter range of this species along the Pacific coast of South America it would not be surprising to record *Pandion haliaetus* as a vagrant in Fuego-Patagonia.

### 3. *Falco peregrinus*. Peregrine Falcon.

The status of the Peregrine Falcon in southern South America is made complicated by the presence of both North American (wintering) populations and southern South American (breeding) populations. As put most clearly by Hellmayr (1932: 281) with reference to Chile, "as both the North American Duckhawk and Cassin's Falcon, which nests on the Falkland Islands and along the Straits of Magellan, visit that country [Chile] in the course of their winter migrations, individuals of the "Gavilan" may be encountered there throughout the year. As local ornithologists do not discriminate between the two forms, it is impossible to properly allocate any bibliographical reference without examining the particular specimen upon which it was based." Thus in northern Patagonia and perhaps Fuego-Patagonia, two different populations of Peregrine Falcons might be found side by side in the austral spring and

summer months, which are also the northern autumn and winter. Taxonomically, these populations thus include both breeding birds (subspecies *cassini*) and North American migrants (subspecies *anatum* and/or *tundrius*). Meyer de Schauensee (1966: 64) wrote as follows: "The South American race (*cassini*) breeds in ARGENTINA principally from Santa Cruz to Tierra del Fuego and perhaps in the Andes as far north as Tucumán, and in southern CHILE from Atacama to Tierra del Fuego, in the southern winter migrating northward occasionally as far as ECUADOR and COLOMBIA and in the east to northern ARGENTINA and URUGUAY. Birds breeding in North America (*anatum*) migrate southward in the northern winter and are found in western South America as far south as Valdivia, CHILE, and Buenos Aires and La Pampa, ARGENTINA." A similar distribution pattern was described by de la Peña (1992: 63-64), but not by Narosky & Yzurieta (1987: 96). De la Peña (1992: 63) stated that the breeding subspecies (*cassini*) is pale (so depicted on his Plate 24), whereas the migrant subspecies *anatum* (Plate 24) is dark-mantled. Olrog & Pescetti (1991: 32), however, stated that the breeding form *cassini* is "muy oscura" (very dark), whereas the North American migrant form *tundrius* is "muy clara" (very pale). What forms occur where in southern South America? White (1968: 184) determined that his new North American subspecies *tundrius* was the one found as a migrant in southern South America. Steullet & Deautier (1935-1946: 482-483) cited North American *anatum* south to Cautín and Valdivia, Chile, and Buenos Aires Province, Argentina. They stated that the distribution of the South American breeding form, *cassini*, was "not well known," but probably in southernmost Chile and Argentina, Tierra del Fuego, and neighboring islands. Hellmayr & Conover (1949: 298) gave specimen records of North American *anatum* from Cautín (Chile) and "Patagonia (near Coy Inlet, Oct. 19)." They cited all "unquestionable S. A. specimens [of *anatum* they] examined." Hellmayr & Conover (1949: 300) described South American *cassini* as much darker than North American *anatum*, and gave its breeding range as "in the Falkland Islands, in Tierra del Fuego and in southern Patagonia (Straits of Magellan; coast of Santa Cruz Territory); in winter irregular visitor to Chile (and probably the more northern parts of Argentina)." They also wrote: "The naturalists of the Princeton University Expedition report it as nesting on inaccessible cliffs on the coast of Santa Cruz, Patagonia." Humphrey *et al.* (1970: 170-171) mentioned the Peregrine Falcon from Tierra del Fuego between De-

cember and April, but unfortunately did not name the subspecies involved. Humphrey *et al.* (1970: 190-171) added: "There are no data on breeding, local movements, and migration." Jehl & Rumboll (1976: 147) saw a juvenile in 1974. Olrog (1948: 478-479) saw "surely representatives" of *anatum* in Valparaíso, Chile, and of *cassini* "bastante común en el norte de Tierra de Fuego," but he did not see Peregrine Falcons in Magallanes. Unfortunately, Olrog (1948) apparently did not collect any specimens. I sighted *Falco peregrinus* on a few occasions in Fuego-Patagonia in 1985-1993. All the birds I saw were dark or very dark, and appeared to correspond to the southern breeding form *cassini*. Very little work has been done on *Falco peregrinus cassini*, although McNutt (1981) described the hunting behavior and prey in Fuego-Patagonia.

One other piece in the puzzle of the Peregrine Falcon in southern South America, namely the form *Falco kreyenborgi*, was originally described by Kleinschmidt (1929) as a separate species. Subsequent authors wondered whether *kreyenborgi* was a separate species or a morph of *peregrinus* (Stresemann & Amadon 1963, Dementiev 1965, Anderson & Ellis 1981, Ellis *et al.* 1981). The question of the status of *kreyenborgi* was solved by Ellis & Peres Gatar (1983) who studied mated *kreyenborgi* and *cassini* and studied their offspring. They found that southern South American *Falco peregrinus* has two color morphs, a rare pale one ("*kreyenborgi*") and a "normal" dark one (*cassini*).

What now remains to be resolved is the status of the North American form in Patagonia. Fjeldså & Krabbe (1990: 113) wrote that "N. Am. migrants [*tundrius*] reach 40°S." Glade (1988: 5) considered *Falco peregrinus anatum* as "endangered" in Chile, and *F. peregrinus cassini* as "indeterminate." The latter category was defined by Glade (1988: 60) as: "Taxa known to be 'Endangered', 'Vulnerable' or 'Rare' but where there is not enough information to say which of the three categories is appropriate."

So far as known at present, Fuego-Patagonia only has breeding Peregrine Falcons (Venegas & Jory 1979: 99-101), but clearly it seems quite possible that North American birds might occur there as vagrants. The Peregrine Falcon has been recorded twice at South Georgia (Bourne & Curtis 1986, Prince & Croxall 1996).

#### 4. *Pluvialis apricaria*. Greater Golden-Plover.

This Old World species was listed by Strange (1992: 46) as a vagrant from the Falkland (Malvinas) Islands, without any comments. Woods (1988) did not cite it. Did Strange (1992) mean to list *Pluvialis dominica*, the

American Golden-Plover, which has been recorded in the Falklands? There seem to be no records of *Pluvialis apricaria* from anywhere in South America. In North America, the only records appear to be from Newfoundland (AOU 1983: 166, three records; Hayman *et al.* 1986: 277). The likelihood of the Greater Golden-Plover occurring as a vagrant in Fuego-Patagonia seems remote.

#### 5. *Tringa solitaria*. Solitary Sandpiper.

This species occurs south to Río Negro in northern Patagonia (Wetmore 1926: 148; Hellmayr & Conover 1948: 121; Meyer de Schauensee 1982: 77; Olrog 1979: 93; Fjeldså & Krabbe 1990: 173), but has not been recorded from Fuego-Patagonia or the Falkland (Malvinas) Islands (not listed from these islands by Woods 1988 or Strange 1992). It has, however, been reported twice (11 November 1975, 8-9 November 1981) from South Georgia (Prince & Croxall 1983: 24, 1996), about 1700 km east of Fuego-Patagonia. Its occasional occurrence as a vagrant in Fuego-Patagonia can be expected in the future.

#### 6. *Actitis macularia*. Spotted Sandpiper.

This species occurs south to Llanquihué, Chile, according to Meyer de Schauensee (1966: 90) and Araya *et al.* (1986: 186). The map in Fjeldså & Krabbe (1990: 174) shows the species' occurrence southward to extreme northern Chile on the Pacific coast, and to coastal Buenos Aires Province, Argentina, on the Atlantic coast. Wetmore (1920: 14) remarked that he collected a specimen on "October 25, 1920...near the mouth of the Río Ajo on the eastern coast of the Province of Buenos Aires, the southernmost point at which the species is known." Although Steullet & Deautier (1935-1946: 594) and Olrog (1979: 93) reported this species south only to Buenos Aires, de la Peña (1992: 126-127) gave records from Río Negro and indicated its occurrence in Chubut Province in northern Patagonia. *Actitis macularia* has not been reported from Fuego-Patagonia, but could occur there as a vagrant.

7. *Calidris minuta*. Little Stint. "A specimen of this species was collected at Bird Island [South Georgia] on 28 December 1977 by P. A. Prince and its identity confirmed by reference to skins at the British Museum and by J. Marchant of the British Trust for Ornithology. This is not only a first record for South Georgia but also the first report for South America...of a species which breeds in north-central Siberia and winters mainly in India and Africa" (Prince & Croxall 1983:

24; see also Prince & Croxall 1996). This record is included in Hayman *et al.* (1986: 367). The possibility of a vagrant reaching Fuego-Patagonia seems remote, but is not impossible.

#### 8. *Calidris ferruginea*. Curlew Sandpiper.

Meyer de Schauensee (1966: 93) wrote: "Migrant from the Old World. Accidental in 'Eastern Patagonia,' ARGENTINA. (A specimen without further date purchased from Sir W. Burnett and Admiral Fitzroy in the British Museum, Cat. Bds. Brit. Mus. 24, p. 592)." See also Steuller & Deautier (1935-1946: 617), Hellmayr & Conover (1948: 202: "allegedly even in eastern Patagonia"), Olrog (1979: 95), AOU (1983: 200), Hayman *et al.* (1986: 381), and de la Peña (1992: 134). Irrespective of the status of this Argentine record, which should be verified, the possibility that vagrant individuals of *Calidris ferruginea* occur in Patagonia and Fuego-Patagonia cannot be discounted. There are many records from North America (Hellmayr & Conover 1948: 202, American Ornithologists' Union 1983: 200), but it is only in recent years, with increased interest in shorebirds and increased ability to identify them, that these records have become better known.

#### 9. *Calidris pusilla*. Semipalmated Sandpiper.

To my knowledge, there have been three records of *Calidris pusilla* from southern South America. The first was from "(?)southern Chile (Isla la Mocha)" (Hellmayr & Conover 1948: 175). As Hellmayr (1932: 396-397) had explained earlier, this record is opened to question: "Housse states that it [*C. pusilla*] visits the shores of the Isla La Mocha, but the note may refer to some other species, as it seems to be based on field-observations only." Philippi (1964: 77) did not include this record in his checklist, and cited only one old record from extreme northern Chile (Arica). The second record was stated to be from the Valley of the Rio Chubut, Argentine Patagonia ("March 1876 - H. Durnford," Dabbene 1920: 125). Nores & Yzurieta (1979: 47) cited a record from "Chubut (Golfo Nuevo) en base a un ejemplar capturado en 1888." Are these two Chubut records in fact the same record? The answer seems to be "yes." Hellmayr & Conover (1948: 175, footnote) wrote the following concerning the bird from Chubut: "The specimen - now in the British Museum (ex Coll. Seebohm) - is labeled 'Unevo Gulf, Patagonia, March, 1883, female, Capt. Harrison.' The locality should really read 'Nuevo Gulf' = Bahía Nueva. Sharpe (l.c. p. 766) credits the bird to Henry Durnford, who had died several years before it was collected."

Seebohm (1888: 402) mentioned the specimen. Durnford (1877, 1878) published two papers on the birds he saw and collected in Chubut, but neither contains any reference to *Calidris pusilla*. The third record was of an individual in Córdoba, interior Argentina, on 28 December 1974 (Narosky *et al.* 1977, Nores & Yzurieta 1979: 47). Olrog (1979: 94) reported the Argentine occurrence of *C. pusilla* as follows: "Migratorio del Artico llega por el interior hasta Córdoba (Nores e Yzurieta, comunicación verbal, 1976) y por la costa atlántica hasta Chubut." This species was mentioned as a vagrant from the Falkland (Malvinas) Islands by Hayman *et al.* (1986: 367), but was not cited by Woods (1988) or Strange (1992). *Calidris pusilla* has not been recorded in Fuego-Patagonia, but could occur there as a vagrant.

#### 10. *Micropalama himantopus*. Stilt Sandpiper.

This species is common in the northern winter in Buenos Aires Province (Dabbene 1920: 119), which is also given by Olrog (1979: 95) as the southernmost part of this species' winter range. Wetmore (1927: 9) wrote that "The species is far from abundant but should be safe from actual extermination, since it is not particularly desirable to gunners." In Chile, it has only been recorded in the extreme north (Araya *et al.* 1986: 194). It has not been reported from Fuego-Patagonia, but vagrants could well be expected.

#### 11. *Tryngites subruficollis*. Buff-breasted Sandpiper.

All records mentioned by Dabbene (1920: 121) are from Buenos Aires. Olrog (1979: 95) gave Buenos Aires (and Córdoba) for the winter distribution of this species in Argentina. Wetmore (1927: 14) remarked that this species was "greatly reduced from its former abundance." Wetmore (1927: 14) also wrote that "From observations at Guamini [Buenos Aires province], it appeared that the species has some resting station in northern Patagonia, perhaps near the mouths of the Rio Colorado and the Rio Negro, or some of the large alkaline lakes of that region." It would be worthwhile to explore such river mouths, as well as others further south, such as the Chubut, as well as the alkaline lakes mentioned by Wetmore. The exploration of these wetlands is very incomplete, and fieldwork might well reveal the presence of the species there. The Buff-breasted Sandpiper has not been reported from Chile. In Lancot's (1995) review of the breeding and wintering ranges of this species the wintering range does not appear to include Patagonia. There are no records of the species from Fuego-Patagonia, but vagrants could be expected.

12. *Bartramia longicauda*. Upland Sandpiper.

This species has been reported from northern Patagonia (Río Negro) by Steullet & Deautier (1935-1946: 578), Olrog (1979: 95), and Meyer de Schauensee (1982: 79), but there appear to be no record from Fuego-Patagonia. Wetmore (1927: 13) wrote that "Stragglers may penetrate to Patagonia, as one was taken by A. G. Bennett on Deception Island, in the South Shetland group, on February 8, 1923. This, however, is unusual." Woods (1988: 176-177) and Strange (1992: 46) listed the Upland Sandpiper as a vagrant in the Falkland (Malvinas) Islands, with two records (Woods 1988: 177). It has been reported from Deception Island, South Shetland Islands, and possibly from Signy Island, South Orkney Islands (Warson 1975: 195). Its accidental occurrence in Fuego-Patagonia is likely.

13. *Numenius borealis*. Eskimo Curlew.

Even though it may not be extinct, as long as 75 years ago, Dabbene (1920: 109) already considered that this species was "No observada más" (not observed any more) in Argentina. Dabbene (1920: 125-128) discussed the status of the Eskimo Curlew in detail, and described its migration in Argentina, where it reached Chubut (see also Steullet & Deautier 1935-1946: 580). In a recent book on Argentine birds, de la Peña (1992: 123) wrote simply: "*Numenius borealis* migratorio del Artico de Norteamérica llega a Chubut," as if the species still reached northern Patagonia today, which it does not seem to do (see below for its former occurrence in Chubut). Wetmore (1927: 15) wrote "When established on its resting grounds, where it arrived in September, it frequented dry, open plains from northern Buenos Aires south into Chubut. It was found in Chile, south to the Straits of Magellan, and in the Falkland Islands, and remained in these quarters until March." Hellmayr & Conover (1948: 92), however, did not mention the Straits of Magellan, but cited the Argentine provinces of Entre Ríos, Buenos Aires, and Chubut, and the Falkland Islands ("one record"). Hellmayr (1932: 397-398) reported that "The Eskimo Curlew formerly was a [northern] winter visitor to Chile. There are two specimens in the Museo Nacional in Santiago, one from Chiloé Island, October 1858, the other taken by Froben near Arica, Tacna...They have been examined by both Mr. Conover and Mr. Sanborn." Philippi (1964: 79) mentioned captures "in Arica, Paposo (Antofagasta) and Chiloé." Araya *et al.* (1986: 196) wrote "En Chile se lo encontraba desde Arica hasta Chiloé" (in Chile it was met with from Ari-

ca to Chiloé). The Eskimo Curlew occasionally reached the Falkland (Malvinas) Islands (Woods 1988: 176).

As an example of the Eskimo Curlew's former abundance in Patagonia, here is a quote from Durnford's (1878: 404) report on the birds of the Chubut Valley: "From the 8th to the 10th October large migratory flocks [of *Numenius borealis*] passed the Chupar [=Chubut] Valley, flying south. They made a very short stay in the valley, but long enough to enable me to secure two examples." Where did they go, south of Chubut? Is it possible that they spent time in Fuego-Patagonia? There appear to be very few records from Fuego-Patagonia, however. Thus, Humphrey *et al.* (1970: 200-201) mentioned a sight record from Tierra del Fuego about 1915, but unfortunately without any details.

The decline of the Eskimo Curlew has been described by Banks (1977). Sight records supposedly pertaining to *Numenius borealis* in southern South America appear more or less regularly in the ornithological and birding literature. I have not attempted a review of recent records of the Eskimo Curlew since Weston & Williams (1965), and will only give a few examples. Michelutti (1991) reported a sighting of 4 birds at Laguna Mar Chiquita, Córdoba, on 13 October 1990. In an editorial comment added to Michelutti's (1991) note, the editors of *Nuestras Aves*, where Michelutti (1991) published his sighting, wrote: "we believe that more records will be necessary, if possible with non-destructive capture [sic] or photographs, in order to confirm [the Eskimo Curlew's] identification." Wheatley (1995: 47) wrote that "Four Eskimo Curlews were seen at Campo Mare, 17.5 km northeast of La Para in October 1989 and two in 1993," and that "Three Eskimo Curlews were seen northeast of Miramar in November 1988." These sightings are all from the Mar Chiquita area of Córdoba. Pearman (1995: 80) wrote that "There is a recent unconfirmed record of a single bird found within the historical range in eastern Chile in December 1990 (US Fish and Wildlife Service: Eskimo Curlew Advisory Group, Minutes of April Meeting) and two unconfirmed recent reports from Argentina." It would be very nice indeed if one could show that Eskimo Curlews still spend time in southern South America, but until these records are carefully examined, they should probably be taken with a grain of salt. Glade (1988: 5) listed the Eskimo Curlew as "extinct" in Chile.

14. *Stercorarius pomarinus*. Pomarine Jaeger.

Philippi (1964) did not list this species from Chile, but Araya *et al.* (1986: 212) wrote: "Raro visitante en la Antártica chilena y frente a las costas de Chile." Rasmussen & López (1988: 156) saw *S. pomarinus* on four different days at Abtao, near Puerto Montt, southern Chile, from 24 December 1986 to 6 January 1987. I did not see any jaegers in that area in April-May 1995. Sladen (1954) published two sightings from the South Shetland Islands, 22 February 1937 (Léonie Island) and 9 February 1953 (Argentine Islands). Watson (1975: 214) cited these and other records ("presumably of this species") from the Antarctic Peninsula. For Argentina, Olrog (1979: 103) only stated that the Pomarine Jaeger reaches the coasts of Argentina. Brown *et al.* (1975: 348, 350) reported this species in a seabird concentration on 23 January 1970 at 38°44'S, 57°40'W on the Patagonian Shelf off southern Argentina. Neither Woods (1988) nor Strange (1992) mentioned the Pomarine Jaeger from the Falkland (Malvinas) Islands. Bourne & Curtis (1985: 27) wrote that "all three species [of jaegers *Stercorarius* spp.] were reported [south] to about 50°S" in the South Atlantic, but unfortunately they did not indicate the longitude of Pomarine Jaeger sightings. Parmelee (1992: 136) stated that the Pomarine Jaeger was a vagrant in the Southern Ocean. This species has not been reported yet from Fuego-Patagonian waters, at least to my knowledge, but can be expected there.

15. *Stercorarius longicaudus*. Long-tailed Jaeger.

"En Chile es rarísimo" wrote Philippi (1964: 8) of this species, which had not then been recorded from Fuego-Patagonian waters. Araya *et al.* (1986: 212) gave records from near Valparaíso and the Juan Fernández Archipelago. This species has been recorded at sea occasionally off the Patagonian coasts, for example by Brown *et al.* (1975: 348) at 49°20'S, 65°28'W in January 1970. Woods (1988: 189) listed this species from the Falkland (Malvinas) Islands as a "Vagrant at southern limit of non-breeding range, recorded at least five times." Strange (1992), however, did not list the Long-tailed Jaeger from these islands. Watson (1975) did not cite the Long-tailed Jaeger from the Antarctic region. There is one record for South Georgia (Naveen 1989, Prince & Croxall 1996), of one bird on 15 January 1984. There appear to be no records from Fuego-Patagonian waters, but occasional Long-tailed Jaegers can be expected there.

16. *Sterna elegans*. Elegant Tern.

Hellmayr (1932: 407), Murphy (1936: 1141), Philippi (1964: 93), Meyer de Schauensee (1982: 88), and Araya *et al.* (1986: 226) gave Valdivia as the southernmost locality in Chile. Johnson (1967: 46) wrote that the Elegant Tern was "probably more abundant [in Chile] than in Peru without being by any means common." There are no records, at least to my knowledge, from Fuego-Patagonia, but the species has been observed farther south than the faunal lists usually indicate, for instance 5 birds sighted near Puerto Montt, southern Chile, on 30-31 January 1976 by Devillers & Terschuren (1976: 118). Vagrants could thus be expected in Fuego-Patagonia.

17. *Sterna sanvicensis*. Sandwich Tern.

Murphy (1936: 1142) gave the South American range of this species as "Caribbean and Atlantic coasts of S. America between Colombia and Brazil." However, Steullet & Deautier (1935-1946: 683-684), following Dabbene, had included northern Patagonia in the range of the Sandwich Tern. Meyer de Schauensee (1982: 88) wrote that the Sandwich Tern occurs "south to Santa Cruz, ARGENTINA" (see also Meyer de Schauensee 1966: 110). According to Olrog (1979: 108), this species "llega ocasionalmente hasta la costa de Buenos Aires y de Santa Cruz." De la Peña (1992: 164) stated that the Sandwich Tern "llega por la costa Atlántica hasta Santa Cruz." *Sterna sandvicensis* has not been reported from Fuego-Patagonia, but its occasional occurrence there can be expected. It should be noted that the closely related species or allospecies *Sterna eurynata*, the Cayenne Tern, breeds locally along the coast of Patagonia in Chubut and Santa Cruz (Olrog 1979: 108; pers. obs.), so that field identification will have to be made carefully in order to clearly distinguish these two closely related taxa.

18. *Rynchops nigra*. Black Skimmer.

Hellmayr (1932: 403) reported this species in Chile "from the Peruvian boundary to the Straits of Magellan," assuming that birds "of southern Central America and of the Pacific coast of South America [including Chile] will be found to be referable to" *intermedia*. Hellmayr & Conover (1948: 342), however, gave the range of the Chilean population, assigned taxonomically to subspecies *intermedia* (see below), only south to Chiloé, remarking in a footnote that "The locality 'Straits of Magellan', attached to a specimen in the British Museum, is open to doubt." Nevertheless, the occurrence of the Black Skimmer to the Strait of Magel-

lan was mentioned, many years later, by Johnson (1967: 61), and by Araya & Chester (1993: 224), who stated that in Chile the Black Skimmer occurs from "Arica to the Strait of Magellan" and that it is a "Common austral summer visitor from North America." However, things appeared more complicated to Philippi (1964: 95-96), the compiler of the latest critical check-list of Chilean birds, who wrote that *R. nigra* "does not nest in the country," and that it was "visitante de verano desde Arica hasta el Estrecho de Magallanes," citing subspecies *cinerascens*, which breeds in northern South America east of the Andes (Amazonia sensu lato) and along the Pacific coast south to Peru. Many years previously, Wetmore (1926b: 426) had reported one "young male" *cinerascens* from "Laguna Esquel, near Esquel, Chubut, January 6, 1914." Olrog (1979: 109) remarked of the subspecies *intermedia* in Argentina: "Migratorio del hemisferio norte llega por el Pacífico hasta Chile; fue capturado en Santa Cruz y observado en Córdoba y Buenos Aires (Nores e Yzurietta, 1979, com. 3a Reunión arg. de Ornitología)." Steullet & Deautier (1935-1946: 684-687) had clearly recognized that the status of the Black Skimmer in Argentina and southern South America was not straightforward.

In Fuego-Patagonia, the Black Skimmer has been recorded on the mainland at Cabeza del Mar (Olrog 1948: 493) and on Tierra del Fuego at Cabo San Pablo (1 immature on 6 February 1975, Jehl & Rumboll 1976: 149) (see also Venegas & Jory 1979: 133). Olrog (1948: 493) also collected one male in Santa Cruz on 8 January, and saw birds in Castro, Chiloé Island. He allocated these birds to *intermedia*. *Rynchops nigra* thus occurs as a rare visitor to Fuego-Patagonia.

Where do Patagonian and Fuegian birds (Chubut, Santa Cruz, Strait of Magellan, Tierra del Fuego) come from? What subspecies should they be assigned to, *intermedia* (breeding in Pacific coastal South America), *cinerascens* (breeding in tropical South America), or *intercedens* (breeding in temperate South America)? Hellmayr (1932: 403) had assigned Chilean birds to *intermedia*. Johnson (1967: 61-63), after a careful review of the available data, concluded that the Skimmers found in Chile belong to *cinerascens*, as a "summer visitor to coastal waters of central provinces with migration records from Arica to Straits of Magellan." In my opinion, the question of the origin of Fuego-Patagonian birds remains to be settled by the critical examination of specimens.

Griscom (1935) discussed geographical variation in the Black Skimmer. Hellmayr & Conover (1948: 339-345) recognized 5 subspecies: *nigra* Linnaeus, 1758 (breeds in North America to México; winters from Florida to Venezuela); *oblita* Griscom, 1935 (breeds in México and Guatemala; apparently resident); *intermedia* Rendahl, 1919 (breeds along the Pacific coast of South America from Ecuador to Chiloé Island, Chile; accidental in Central America); *cinerascens* Spix, 1825 (breeds in tropical South America from Venezuela to Mato Grosso, Brazil); *intercedens* Saunders, 1895 (breeds in eastern and southern Brazil, Uruguay, Paraguay, and Argentina to Córdoba and Buenos Aires).

#### 19. *Tyrannus tyrannus*. Eastern Kingbird.

This species occurs as a non-breeding visitor in central and southern South America (e.g., Brazil, Stotz *et al.* 1992: 615; Paraguay, Hayes *et al.* 1990: 955; see also Ridgely & Tudor 1994: 673). It has been reported in northern and central Chile from Arica south to Valparaíso. The first Chilean specimen was collected north of Arica on 7 May 1960 (austral autumn, Philippi 1967: 124). For additional information about this species in Chile see Araya *et al.* (1986: 310), Fjeldså & Krabbe (1990: 525), and Demetrio (1995). In Argentina the Eastern Kingbird has been recorded in several provinces, including Misiones, Corrientes, Formosa, Jujuy, Salta, and Tucumán (König 1979; Olrog 1979: 214; de la Peña 1988: 78; Ridgely & Tudor 1994: 673). There is one record from the Falkland (Malvinas) Islands (Lévêque 1978; Woods 1988: 217; but not mentioned by Strange 1992), and one record from South Georgia, 11 November 1973 (Prince & Payne 1979: 116; Prince & Croxall 1996). *Tyrannus tyrannus* has not been reported from Fuego-Patagonia, at least to my knowledge, but can be expected there as a vagrant.

#### 20. *Delichon urbica*. Common House-Martin.

According to Prince & Croxall (1983: 25) "Two birds of this species were seen at Schlieper Bay [South Georgia] on 4 April 1982 by P. Martin. Good views and descriptions were obtained which exclude the possibility of confusion with superficially similar South American species, such as Chilean swallow, *Tachycineta leucopyga*. House martins are widespread in the Palaearctic region, winter abundantly throughout Africa but have not previously been recorded in South America." In the latest list of birds from South Georgia, however, Prince & Croxall (1996) state that the identification of the House Martin was an error, and that the record pertains to the Chilean Swallow *Tachycineta leucopyga*. According

to American Ornithologists' Union (1983: 499) the Common House-Martin has been found accidentally in Alaska and Bermuda. I am not aware of any record from Fuego-Patagonia, or South America for that matter.

21. *Hylocichla mustelina*. Wood Thrush.

On 4 May 1995, I briefly saw on two different occasions a single individual of what can only have been Wood Thrushes *Hylocichla mustelina* while driving through relatively dense and wet, mixed *Nothofagus* forest along the Carretera Austral. The sightings were made south of the town of Contao, about 40 km and 45 km, respectively, south of Puerto Montt, Chile, about 41°45'S. The birds were slightly smaller than the resident Austral Thrush *Turdus falcklandii*, had conspicuous reddish-orange upperparts, conspicuously and heavily streaked or spotted underparts, and a conspicuous eye-ring. On each occasion, a single bird flew over the road that I was traveling on and disappeared in impenetrable thickets on the other side. Although both observations were fleeting, the characteristic color and pattern of these two birds leave little doubt in my mind that they were Wood Thrushes, a species I am very familiar with. Clearly, however, this unusual observation needs further documentation. The rich rufescent upperparts and the heavy marking of the chest of the birds I saw would rule out the Veery *Catharus fuscescens*, which would be more likely on geographical grounds, as it occurs in the boreal winter in central South America (Meyer de Schauensee 1966: 412,

1982: 342-343; Stotz *et al.* 1992: 616-617; Rappole 1995: 373), and has been recorded once in northernmost Chile (Araya *et al.* 1986: 328; Ridgely & Tudor 1989: 112; note that Rappole 1995: 373 does not include Chile in the winter range). If confirmed, my observation of *Hylocichla mustelina* would be the third for South America and the first for Chile. Meyer de Schauensee (1966: 413) recorded the Wood Thrush as an accidental visitor in British Guiana [=Guyana] and Curaçao, and as a rare transient in the West Indies. Meyer de Schauensee (1982: 457) later also gave Colombia (Chocó), a record based on Rodríguez (1980, 1982) (see also Hilty & Brown 1986: 544). Ridgely & Tudor (1989: 494) called the Wood Thrush a casual migrant in South America. *Hylocichla mustelina* was listed as a vagrant from the Falkland (Malvinas) Islands by Woods (1988: 228-229) and Strange (1992: 46), on the basis of a specimen collected in February 1970 (Daciuk 1975, Olrog 1979: 244). Olrog (1979: 244) wrote: "Un ejemplar fue encontrado en las Malvinas (*vide*, Peterson, comunicación verbal); la especie es norteamericana y migra regularmente hasta el norte de Sudamérica." The occurrence of the Wood Thrush in Fuego-Patagonia is thus possible. (Long-distance vagrancy in the Wood Thrush is shown by a sight record from the Scilly Isles, U.K., on 7 October 1987; Dukes, Brit. Birds 88: 133-134, 1995. In this instance also identification was based on characters such as "foxy-rufous" head and mantle, "prominent" white eye-ring, and "heavily blotched" underparts.)