

DISTRIBUTION OF THE ATLANTIC PETREL *PTERODROMA INCERTA* AT SEA

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SUMMARY

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The Atlantic or Schlegel's Petrel *Pterodroma incerta* is the only endemic gadfly petrel in the South Atlantic Ocean, breeding at the Tristan da Cunha group (including Gough Island). Data from published and unpublished sources have been collected to investigate at-sea distribution. There are more records to the west of Tristan da Cunha than to the east. Off South America, Atlantic Petrels are regularly recorded from 24 to 50S in large groups, in most months of the year. In the central South Atlantic birds are regularly recorded from 33 to 50S. In the southeast Atlantic birds occurred in small groups, from 12 to 48S, especially from July to November. Records in the Indian Ocean are few, usually of singletons, and extend to 105E, usually from June to December.

INTRODUCTION

The Atlantic or Schlegel's Petrel *Pterodroma incerta* is one of the few endemic seabirds, and the only endemic gadfly petrel, of the South Atlantic Ocean, breeding only at the Tristan da Cunha group and at Gough Island (Watson 1975). Breeding at Tristan da Cunha (37 05S, 12 17W) was first reported in 1905 (Nicholl 1908), some 40 years after the species was first described. Breeding at Inaccessible (37 17S, 12 45W) and Nightingale (37 24S, 12 38W) Islands in the Tristan da Cunha group was first reported by Barrat & Mougín (1974) but it is not clear on what evidence breeding on these two islands was based.

It appears that the first breeding record for Gough Island (40 02S, 10 00W) was made as late as 1952 (Ripley 1954). Richardson (1984) gives an estimated total population of 100 000-1 000 000 pairs with all but a few hundred pairs breeding on Gough Island.

Published information on the Atlantic Petrel is scattered and rather conflicting. On Tristan da Cunha, birds return ashore in March, and lay from mid-June to mid-July in the austral winter. Hatching occurs in September and fledging from mid-December (Elliott 1957, Richardson 1984). Richardson (1984) mentions a possible pre-laying exodus to sea and believed immature birds departed from Tristan da Cunha in August. Breeding data from Gough Island are equally scanty, although birds appear to be absent from the island in the months of December to March (Swales 1965, Elliott 1970, Shaughnessey & Fairall 1976, Williams & Imber 1982).

Records of the species at sea date from Murphy (1914) and Alexander (1921). However, Watson *et al.* (1971) did not map the at-sea distribution of the Atlantic Petrel as they did for most other species of southern seabirds. To fill this gap, this paper brings together published records of the Atlantic Petrel at sea as well as unpublished FitzPatrick Institute data

collected over seven years in both the South Atlantic and western Indian Oceans.

METHODS

Information on the distribution of Atlantic Petrels at sea come from two main sources: the published literature (e.g. Tickell & Woods 1972, Brooke & Cooper 1981, Thurston 1982, reports in *Sea Swallow*); and unpublished FitzPatrick Institute data from over 14 000 SCAR/BIOMASS ten-minute cards (BIOMASS Working Party on Bird Ecology 1984) collected between 1979-1985 from the South Atlantic Ocean and the western Indian Ocean. These records cover 28 voyages: eleven to the Prince Edward Islands (46 50S, 37 45E); nine to the Tristan da Cunha group including Gough Island; three to SANAE in Antarctica (70 18S, 2 24W), with the remaining five voyages to other parts of the Southern Ocean from 40W to 60E.

At-sea distribution of the Atlantic Petrel (Figs. 1-6) is presented in a similar way to that of Watson *et al.* (1971). With data coming from a number of sources, it has not been possible to plot negative records or cruise tracks. Absence of records therefore does not necessarily imply absence of the species, but the overall at-sea distribution pattern of the species is still discernable.

SPATIAL DISTRIBUTION

The Atlantic Petrel is practically restricted to the southern Atlantic Ocean, with only a few reliable records in the southern Indian Ocean east of 20E (Figs. 1-6). There are no records for the Pacific Ocean. The spatial distribution within this range is summarized by geographical sectors below.

Western South Atlantic Ocean

Off Brazil, the most northerly record is of a bird at 1 31S, 38 46W in August, approximately 100 nautical miles offshore (Bourne & Curtis 1985). Farther south, a single bird was seen at 19 03S, 37 38W in July (Chapman 1982). Southwards of 24S,

Atlantic Petrels are more frequently encountered. Rumboll & Jehl (1977) mentioned Atlantic Petrels as being numerous near the Subtropical Convergence; similarly, Thurston (1982) stated that Atlantic Petrels were the only noticeable procellariiform seabird in these northern latitudes, with more occurring in summer months. Additional records come from Murphy (1914), Alexander (1921), Holgersen (1957), Tickell & Woods (1972) and Harris & Hansen (1974).

Tickell & Woods (1972) recorded Atlantic Petrels between the River Plate and the Falkland Islands on 15 out of 16 voyages in January, April, May, November and December. The largest numbers were of "11-100 birds". Birds were most numerous in April. Thurston (1982) and Bruce (1983) provide additional data. Although these records reflect cruise tracks, there is little doubt that Atlantic Petrels are numerous for most of the year. Most records were north of 49S.

Very few birds have been recorded over the Patagonian Shelf. Farther south, there are a few records, generally of singletons, between and around the Falkland Islands and South Georgia. The most southerly records are from the Drake Passage in March (Brown *et al.* 1975). Farther east, Atlantic Petrels are numerous in most months of the year between 25 and 48S.

Central South Atlantic Ocean

The two most northerly records are at 21 5W in August (Chapman 1981) and 24 8W in October (Thurston 1982). Additional records are given by Alexander (1921), Hagen (1952), Tickell & Woods (1972), Harris & Batchelor (1980), Bruce (1983) and Voisin (1983). The remaining data are from FitzPatrick Institute voyages in the Southern Ocean. Birds were recorded in January, April, May, July, and September-November between 33 and 49S. Large numbers of Atlantic Petrels were usually recorded within the immediate vicinity of Gough Island.

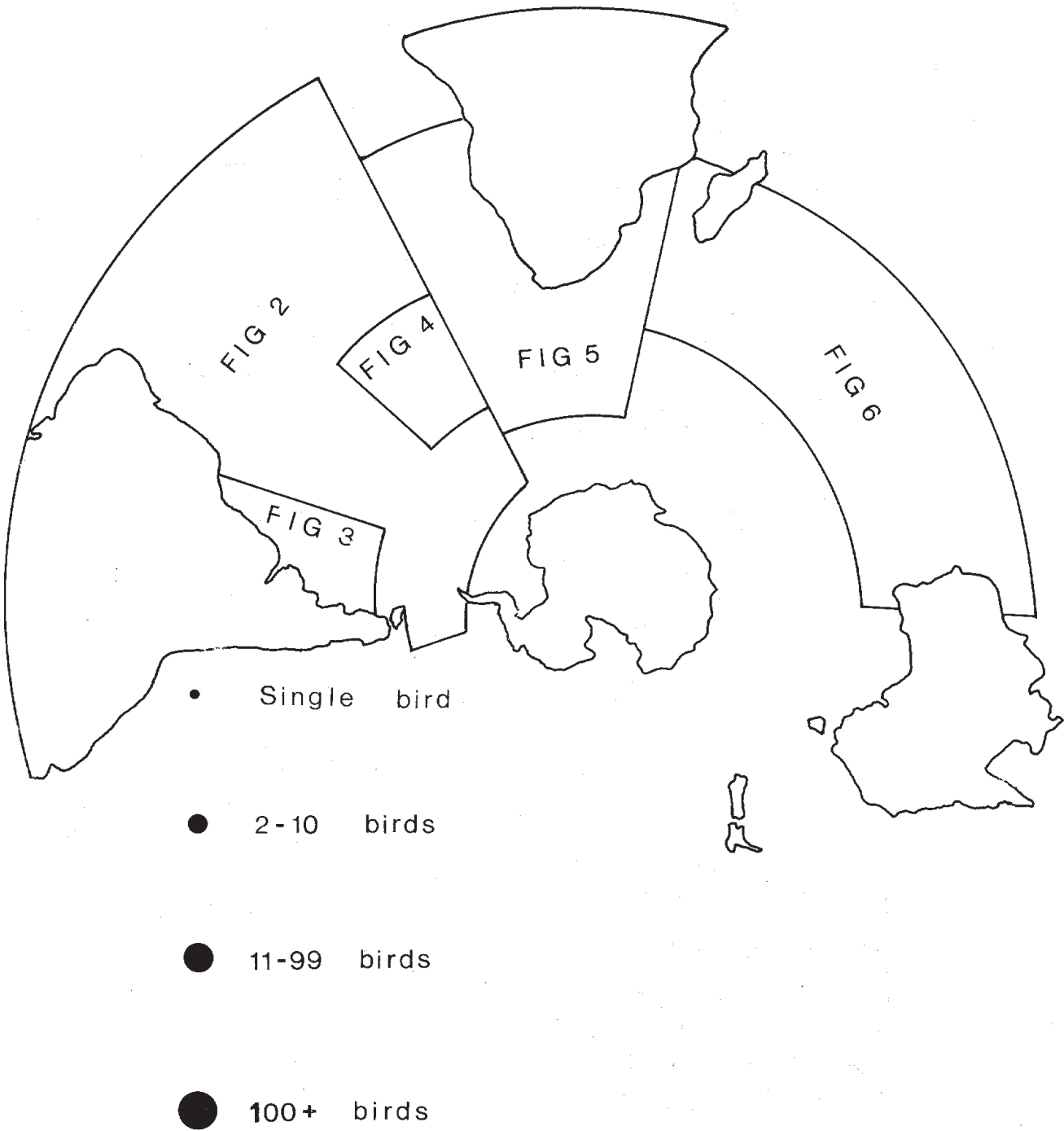


Figure 1

Overall distribution of the Atlantic Petrel at sea in the southern Atlantic and Indian Oceans.

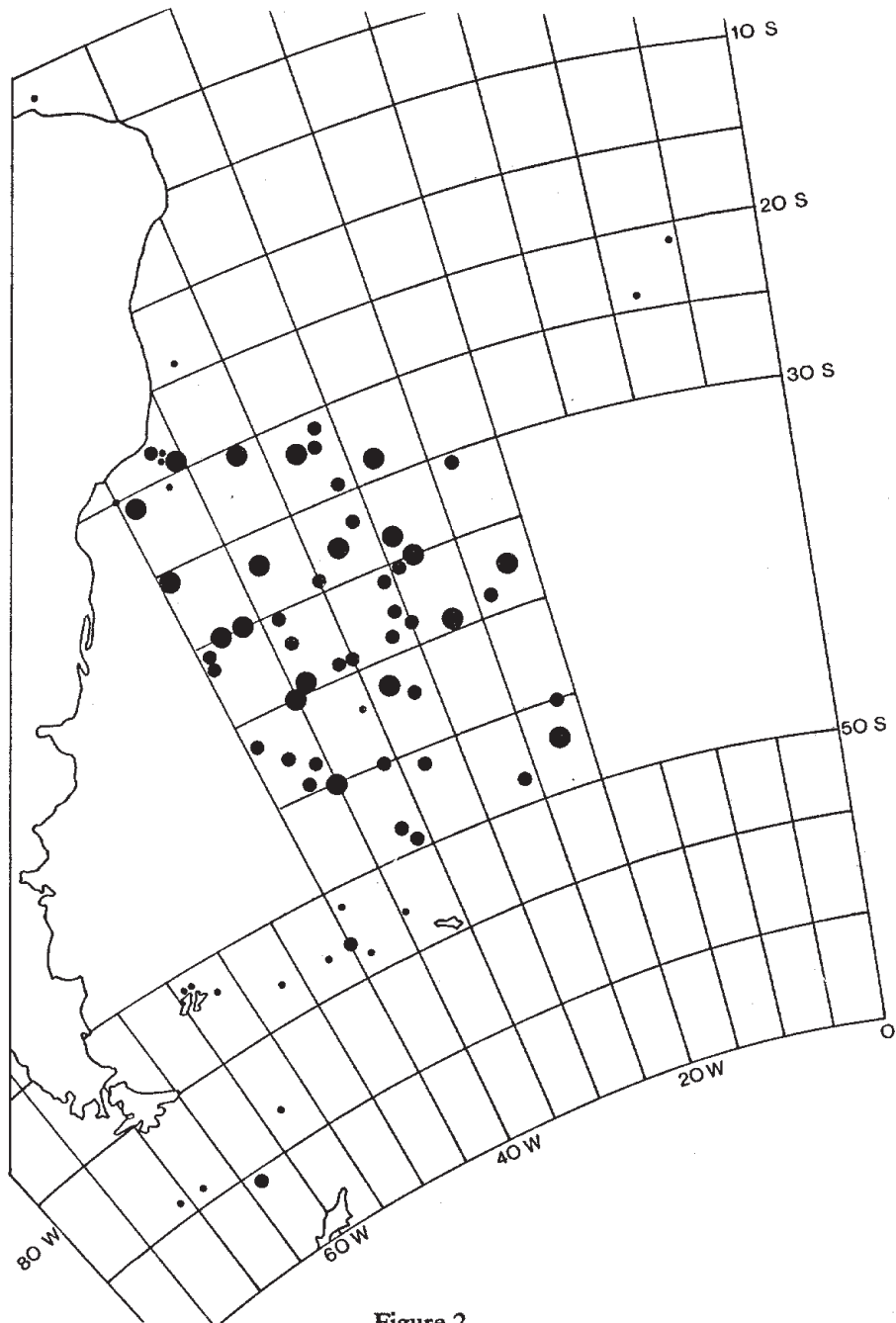


Figure 2

Records of Atlantic Petrels at sea in the southwest Atlantic Ocean. Increasing size of symbols reflects increasing number of sightings (smallest-largest symbols: single individuals; 2 - 10 birds; 11 - 99 birds; 100+ birds).

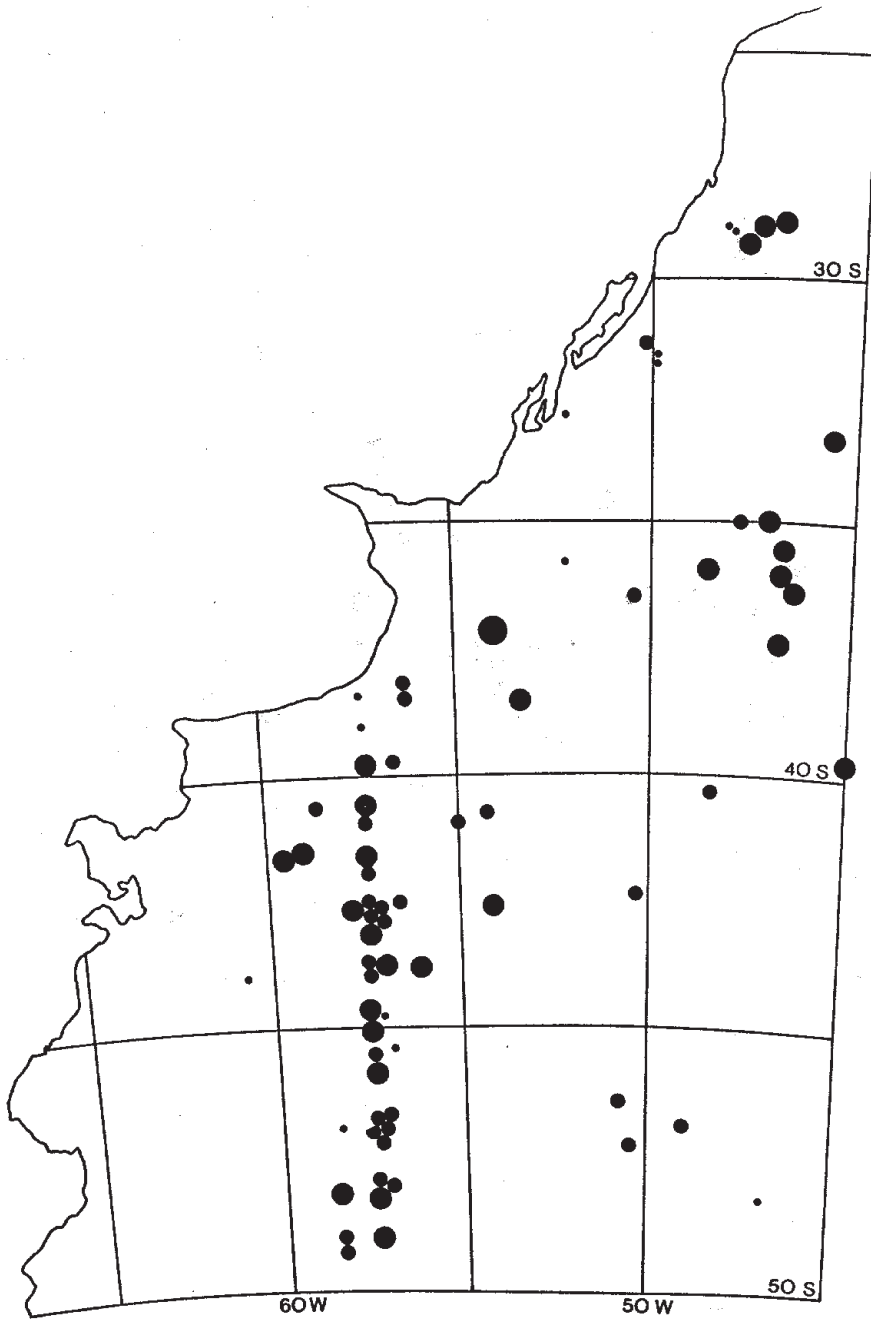


Figure 3

Records of Atlantic Petrels at sea off the Atlantic coast of South America.
Convention as for Fig. 2.

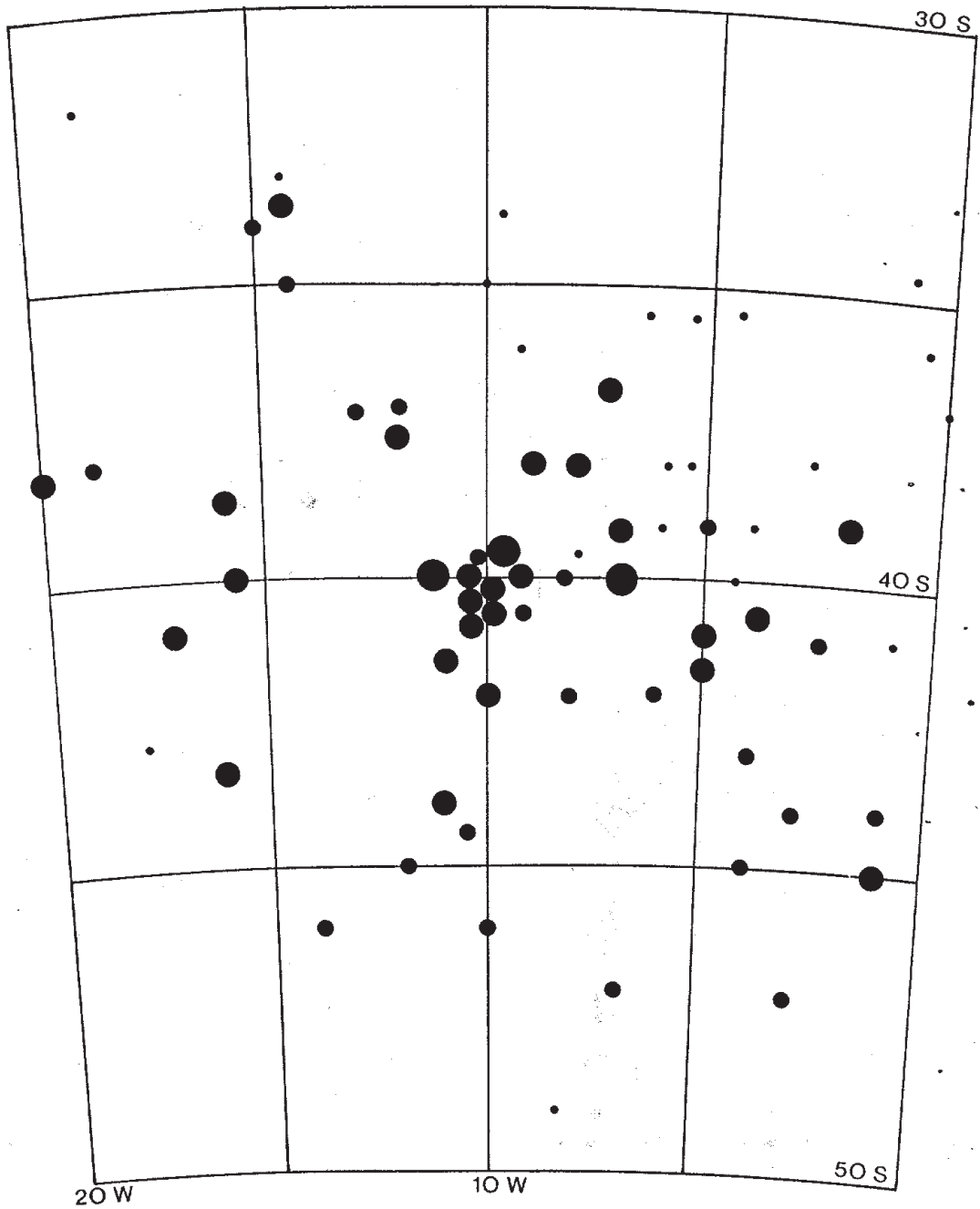


Figure 4

Records of Atlantic Petrels at sea in the vicinity of Tristan da Cunha and Gough Islands.
Convention as for Fig. 2.

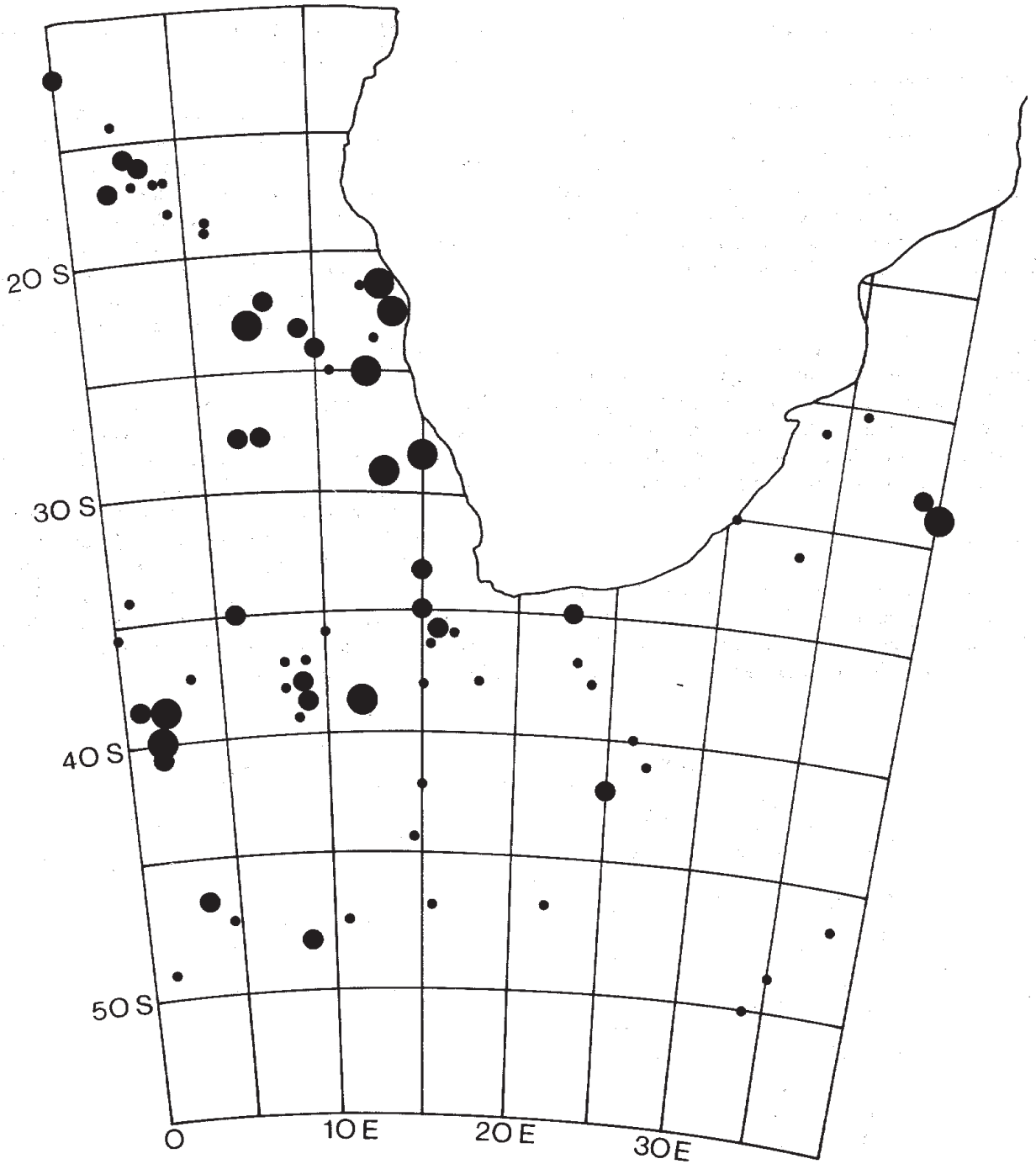


Figure 5

Records of Atlantic Petrels at sea in the southeast Atlantic and southwest Indian Oceans. Convention as for Fig. 2.

Eastern South Atlantic Ocean

Birds seen northwest of the southern African coast have usually been observed from commercial shipping to and from Cape Town. The most northerly record is of three birds at 12S 0E in September (Bourne 1964). North of 20S, single birds and small flocks have been recorded from July to November, whereas south of 20S small flocks have been recorded in most months of the year.

West of Cape Town, the narrow band of records between 35 and 40S reflects voyages to and from Gough Island and Tristan da Cunha by the FitzPatrick Institute. Occasional birds have been recorded south to 48S. There is one May record, but otherwise records are from July to November.

Indian Ocean

Records of Atlantic Petrels in the Indian Ocean are few and are generally of singletons or small flocks (Bourne & Radford 1961, Bourne & Dixon 1975, Sinclair 1974, 1978b, Hansen 1978, Summerhayes *et*

al. 1974). However, Bourne & Dixon (1975) quote a record of 40 birds at 29 40E in July.

FitzPatrick Institute data give only seven records of single birds in the Indian Ocean. There are no French records for the western and central southern Indian Ocean despite observations over several years between the islands of Reunion, Mauritius, Amsterdam, the Crozets and Kerguelen (J.-P. Roux *in litt.*). Observations by Rand (1962) and Flora (1981) are thought to be misidentifications (Griffiths 1982) and are therefore not mapped.

Farther east, observations are rarer. Bourne & Dixon (1975) recorded "others" between 20S, 66E and 20S, 78E in July and Gill (1967) recorded three birds in April at 34 34S, 69 03E. Taylor (1965) reported 40 birds at 30S, 55E in July and Chapman (1965) had two uncertain records in August at 26 30S, 83 42E and 29 06S, 69 12 E. The most easterly acceptable record is of a singleton at 26S, 105E in September (Bourne & Dixon 1975). Much farther east J.A.F. Jenkins (*in litt.*) reported a "possible" at 132E in July in the Great Australian Bight.

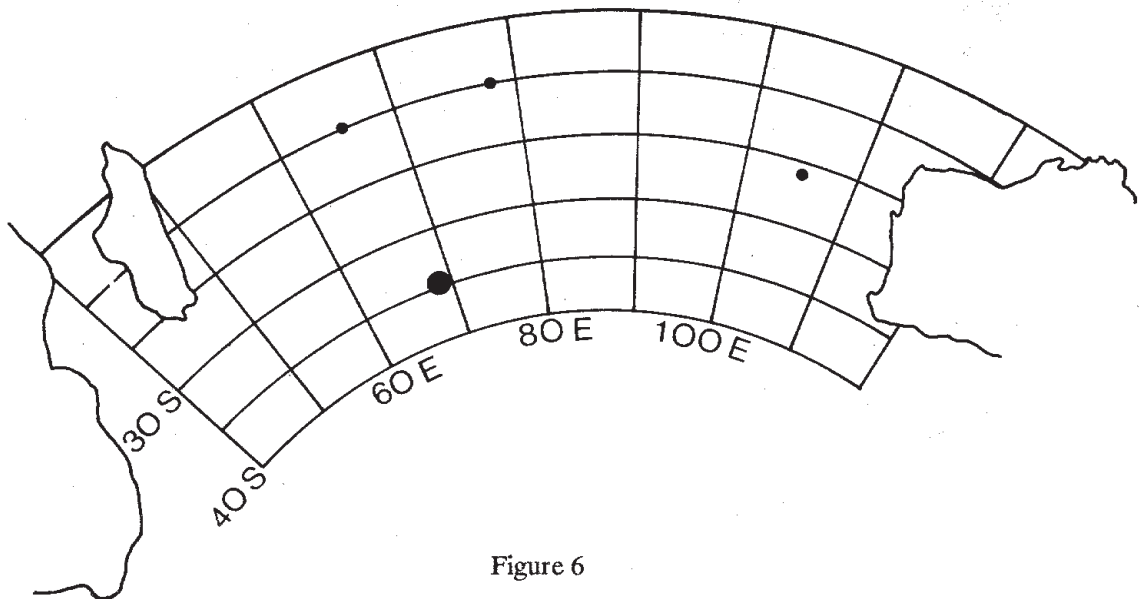


Figure 6

Records of Atlantic Petrels at sea in the southern Indian Ocean.

It thus appears that the Atlantic Petrel is a rare bird in the Indian Ocean. Individual birds entering the ocean from the west are as likely to continue eastwards with the prevailing westerlies as to return to the Atlantic Ocean.

SEASONAL DISTRIBUTION

Apart from the extreme west and extreme east of the species' range, Atlantic Petrels have been recorded in more than half the months of the year in all sectors (Table 1). It appears that Atlantic Petrels are recorded more frequently and in larger numbers to the west of Tristan da Cunha. March has provided the most extreme records in the Drake Passage. However, especially from 60 to 20W, substantial numbers have been recorded regularly in most months of the year and these may consist of immature birds.

The regular northern limit of the species off Brazil appears to be at about 24S for several months of the year. More pelagic records towards Tristan da Cunha range from 30 to 50S fairly regularly throughout the year. Around Tristan da Cunha, Atlantic Petrels have been recorded in all seasons

with a general pelagic range from 33 to 49S. Most of the FitzPatrick Institute sightings are in the austral spring in the breeding season, when large numbers have been recorded in the immediate vicinity of Gough Island.

Far fewer birds have been recorded off the African coast compared to off the South American coast. Small groups of Atlantic Petrels have reached 12S, generally in the months of July to November. Between Cape Town and Gough Island birds have been recorded between 35S and 48S with the fewest numbers between December and June.

In the Indian Ocean records of Atlantic Petrels are scarce with singletons being recorded more frequently than groups. Excluding probable misidentifications (especially of larger groups) most birds have been recorded from June to December, a similar time of year to most records in the southeast Atlantic. These records are from 26 to 50S.

TABLE 1

THE SEASONAL AND SPATIAL DISTRIBUTION OF THE ATLANTIC PETREL AT SEA

Sector	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
80W-60W				+								
60W-45W	+	+	+	+	+	+	+		+	+	+	+
45W-20W	+	+	+			+	+	+	+	+	+	+
20W-0	+			+	+		+	+	+	+	+	+
0-20E	+	+			+		+	+	+	+	+	+
20E-40E	+		+			+	+	+	+			+
40E+				+			+		+			

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REFERENCES

References marked with an asterisk contain information plotted on the figures but are not cited in the text.

- ALEXANDER, W.B. 1921. Especies de Tubares observadas por W.B. Alexander durante el viaje de Buenos Aires a Rio De Janeiro y de Rio de Janeiro a Cape Town, a bordo del vapor "Kanagawa Maru". *Homero* 2: 224.
- BARRAT, A. & MOUGIN, J.L. 1974. Données numériques sur la zoogéographie de l'avifaune Antarctique et subantarctique. *Com Nat. Franc. Rech. Antarct.* 33: 1-18.
- *BIERMAN, W.H. & VOOUS, K.H. 1950. Birds observed and collected during the whaling expeditions of the "Willem Barendsz" in the Antarctic, 1946-1947 and 1947-1948. *Ardea* 37 *Suppl.*: 1-23.
- BIOMASS WORKING PARTY ON BIRD ECOLOGY 1984. Recording observations of birds at sea (revised edition). *BIOMASS Handbook* 18: 1-20.
- *BOURNE, W.R.P. 1963. Observations of seabirds. *Sea Swallow* 16: 9-38.
- BOURNE, W.R.P. 1964. Observations of seabirds. *Sea Swallow* 17: 10-39.
- *BOURNE, W.R.P. 1966. Observations of seabirds. *Sea Swallow* 18: 9-36.
- *BOURNE, W.R.P. 1967. Observations of seabirds. *Sea Swallow* 19: 51-76.
- *BOURNE, W.R.P. 1989. Seabird reports received in 1987 and 1988. *Sea Swallow* 38: 7-30.
- BOURNE, W.R.P. & CURTIS, W.F. 1985. South Atlantic seabirds. *Sea Swallow* 34: 18-28.
- *BOURNE, W.R.P. & DIXON, T.J. 1973. Review of observations of seabirds 1967-1969. *Sea Swallow* 22: 29-60.
- BOURNE, W.R.P. & DIXON, T.J. 1975. Observations of seabirds 1970-1972. *Sea Swallow* 24: 65-88.
- BOURNE, W.R.P. & RADFORD, M.C. 1961. Notes on observations of seabirds received during 1960. *Sea Swallow* 14: 7-27.
- BROOKE, R.K. & COOPER, J. 1981. A bibliography of seabirds in the waters of southern Africa, the Prince Edward and Tristan groups. *S. Afr. Natn. Sci. Progr. Rpt.* 48: 1-297.
- BROWN, R.G.B, COOKE, F., KINNEAR, P.K. & MILLS, E.L. 1975. Summer seabird distributions in Drake Passage, the Chilean fjords and off southern South America. *Ibis* 117: 339-356.
- BRUCE, D.G. 1983. Observations of seabirds from H.M.S. *Hecla* during the Falklands campaign April - July 1982. *Sea Swallow* 32: 54-58.
- CHAPMAN, S.E. 1981. Notes on seabird reports received 1979-1980. *Sea Swallow* 30: 45-67.
- CHAPMAN, S.E. 1982. Notes on seabird reports received 1980-1981. *Sea Swallow* 31: 5-24.
- *CHAPMAN, S.E. 1983. Notes on seabird reports received 1981-1982. *Sea Swallow* 32: 12-21.
- *CHAPMAN, S.E. 1984. Notes on seabird reports received 1983. *Sea Swallow* 33: 12-21.
- *CHAPMAN, S.E. 1985. Notes on seabird reports received 1984. *Sea Swallow* 34: 46-55.
- *CHAPMAN, S.E. 1986. Notes on seabird reports received 1985. *Sea Swallow* 35: 3-14.
- *CHAPMAN, S.E. & CHESHIRE, N.G. 1987. Notes on seabird reports received 1986. *Sea Swallow* 36: 32-46.
- *CLARK, G.S. 1987. Seabird observations between South Georgia and South Africa from a sailing vessel. *Cormorant* 14: 20-30.
- *COOKE, F. & MILLS E.L. 1972. Summer distribution of pelagic birds off the coast of Argentina. *Ibis* 114: 245-251.
- *DIXON, J.E.W. 1970. Miscellaneous notes on South West African birds. *Madoqua* 2: 45-47.

- ELLIOTT, C.C.H. 1970. Additional notes on the seabirds of Gough Island. *Ibis* 112: 112-114.
- ELLIOTT, H.F.I. 1957. A contribution to the ornithology of the Tristan da Cunha group. *Ibis* 99: 545-586.
- FLORA, M.D. 1981. Seabird observations in the Southern Ocean, south of Africa, summer 1975/1976. *Cormorant* 9: 3-7.
- GILL, F.B. 1967. Observations on the pelagic distribution of seabirds in the western Indian Ocean. *Proc. U.S. Natn. Mus.* 123: 1-33.
- GRIFFITHS, A.M. 1982. Comment: the species of seabirds occurring in the African sector of the Southern Ocean. *Cormorant* 10: 59.
- HAGEN, Y. 1952. The birds of Tristan da Cunha. *Res. Norweg. Sci. Exped. Tristan da Cunha, 1937-38* 20: 1-248.
- HANSEN, L. 1978. Havfuglerejser Jorden rundt og fra Holland til Spitsbergen. *Dansk Orn. Foren. Tidsskr.* 72: 179-188.
- HARRIS, M.P. & BATCHELOR, A.L. 1980. Seabird records from the *Lindblad Explorer* in the South Atlantic, 1976-1978. *Cormorant* 8: 59-64.
- HARRIS, M.P. & HANSEN, L. 1974. Seabird transects between Europe and Rio Plate, South America, in autumn 1973. *Dansk Orn. Foren. Tidsskr.* 68: 117-137.
- HOLGERSEN, H. 1957. Ornithology of the "BRATEGG" Expedition. *Sci. Res. "Brategg" Exped. 1947-48*. Bergen.
- *JEHL, J.R. 1974. The distribution and ecology of marine birds over the continental shelf of Argentina in winter. *Trans. San Diego Soc. Nat. Hist.* 17: 217-234.
- *LINKOWSKI, T.B. & REMBIZEWSKI, J.M. 1978. Distribution of seabirds of Argentina coast and the feeding habits of the birds fauna in the Drake Passage and Scotia Sea. *Pol. Arch. Hydrobiol.* 25: 717-727.
- MURPHY, R.C. 1914. Observations on birds of the South Atlantic. *Auk* 31: 439-457.
- NICHOLL, M.J. 1908. Three voyages of a naturalist. London: Witherby.
- *OZAWA, K. 1967. Distribution of seabirds in austral summer season in the Southern Ocean. *Antarct. Rec.* 29: 1-36.
- *PITMAN, C.R.S. 1967. Seafowl observed on a voyage, Cape Town to London, 23rd January to 8th February 1967. *Bull. Br. Orn. Club.* 87: 117-120.
- *POCKLINGTON, R. 1979. An oceanographic interpretation of seabird distribution in the Indian Ocean. *Mar. Biol.* 51: 9-21.
- RAND, R.W. 1962. Seabirds south of Madagascar. *Ostrich* 33: 48-51.
- RICHARDSON, M.E. 1984. Aspects of the ornithology of the Tristan da Cunha group and Gough Island, 1972-1974. *Cormorant* 12: 123-201.
- RIPLEY, S.D. 1954. Birds from Gough Island. *Postilla* 19: 1-6.
- *ROGERS, A.E.F. 1980. Seabirds observed between Sydney and Buenos Aires. *Notornis* 27: 69-78.
- RUMBOLL, M.A.E. & JEHL, J.R. 1977. Observations on pelagic birds in the South Atlantic Ocean in the austral spring. *Trans. San Diego Soc. Nat. Hist.* 19: 1-16.
- SHAUGHNESSY, P.D. & FAIRALL, N. 1976. Notes on seabirds at Gough Island. *S. Afr. J. Antarct. Res.* 6: 23-25.
- SINCLAIR, J.C. 1974. Schlegel's Petrel *Pterodroma incerta*. New distributional data: 5. *Ostrich* 45: 133.
- *SINCLAIR, J. C. 1978. The seabirds of a trawling voyage. *Bokmakierie* 30: 2-16.
- SINCLAIR, J.C. 1978. Sight records of the Wedgetailed Shearwater off southern Africa. *Ostrich* 49: 46.
- *SINCLAIR, J.C., ROBSON, N. & BULL, G. 1974. New birds in Natal. *Bokmakierie* 26: 68.
- *SUMMERHAYES, C.P. 1976. Seabird observations between Dakar and Cape Town, December 1973-January 1974. *Ostrich* 47: 55-58.
- SUMMERHAYES, C.P., HOFMEYER, P.K. & RIOUX, R.H. 1974. Seabirds off the southwestern coast of Africa. *Ostrich* 45: 83-109.
- SWALES, M.K. 1965. The seabirds of Gough Island. *Ibis* 107: 17-42, 215-229.
- TAYLOR, M. 1965. Observations of seabirds on a voyage from Melbourne to England, 1947.

- Western Austral. Nat.* 1: 97-100.
- THURSTON, M.H. 1982. Ornithological observations in the South Atlantic and Weddell Sea 1959-1964. *Br. Antarct. Surv. Bull.* 55: 77-103.
- TICKELL, W.L.N. & WOODS, R.W. 1972. Ornithological observations at sea in the South Atlantic Ocean 1954-64. *Br. Antarct. Surv. Bull.* 31: 63-84.
- VOISIN, J.F. 1983. Observations of birds at sea between Cape Town, Tristan da Cunha and Gough Island - November 1977. *Cormorant* 11: 24-34.
- WATSON, G.E. 1975. Birds of the Antarctic and Subantarctic. Washington: American Geophysical Union.
- WATSON, G.E., ANGLE, J.P., HARPER, P.C., BRIDGE, M.A., SCHLATTER, R.P., TICKELL, W.L.N., BOYD, J.C. & BOYD, M.H. 1971. Birds of the Antarctic and sub-Antarctic. *Antarct. Map Fol. Ser.* 14: 1-18.
- WILLIAMS, A.J. & IMBER, M.J. 1982. Ornithological observations at Gough Island in 1979, 1980 and 1981. *S. Afr. J. Antarct. Res.* 12: 40-46.