

THE PELAGIC DISTRIBUTION OF THE ROYAL ALBATROSS

DIOMEDEA EPOMOPHORA

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SUMMARY

This paper reviews all published sight records of the Royal Albatross *Diomedea epomophora* at sea and also records new sightings from the African sector of the Southern Ocean in an endeavour to establish how these records correlate with present knowledge of the species' pelagic distribution. There are 13 sight records for the African sector of the Southern Ocean, of which eight are attributable to *D. e. sanfordi* and two to *D. e. epomophora*. Ten records are for winter months (June to August). Birds have been recorded either in the Trade Wind Belt mostly near Gough Island, or immediately off the South African coast associated with trawlers. The Royal Albatross is circumpolar in its pelagic distribution and may undergo a circumpolar migration.

INTRODUCTION

The Royal Albatross *Diomedea epomophora* consists of two subspecies, both of which breed only in the New Zealand sector of the Southern Ocean. The southern subspecies *D. e. epomophora* breeds at Auckland and Campbell Islands and the northern subspecies *D. e. sanfordi* breeds at the Chatham Islands and Taiaroa Head, Otago Peninsula, South Island, New Zealand (Serventy *et al.* 1971). No evidence supports the presumption in Murphy (1936) that the Royal Albatross breeds in Tierra del Fuego.

Both subspecies breed biennially, returning to their colonies in October. Egg laying occurs in November and December with departure of fledglings from colonies in September (Richdale 1950). Young birds breed at about eight years old (Richdale 1952) and birds can live to 55 years of age (Robertson 1980). The total population is approximately 16 000 pairs (Robertson 1975).

The pelagic distribution of the Royal Albatross in the southern Atlantic and Indian Oceans is not well known (Harrison 1983). Watson *et al.* (1971) stated that "there are no confirmed records for Africa or the Indian Ocean". Robertson & Kinsky (1972) mapped the species from $c. 58^{\circ}E$ in the Indian Ocean to the Australian coast, based on six ringing recoveries, but did not record the species off Africa. Watson *et al.* (1971) suggested that, like the Wandering Albatross *D. exulans*, the Royal

Albatross probably has a circumpolar pelagic distribution, although they gave no records for the southeastern Atlantic and the Indian Oceans.

Harrison (1979, 1983) has published criteria to separate Royal from Wandering Albatrosses at sea, and it is only now becoming appreciated that it is also possible to separate nominate *epomophora* from Wandering Albatrosses at sea. With such advances in field identification it is not surprising that confusion had occurred in the past with observers either recording birds as "great albatrosses", or misidentifying the two species.

METHODS

A literature search for at-sea records of Royal Albatrosses in the African sector and elsewhere in the Southern Ocean was made using an albatross bibliography (FitzPatrick Institute unpublished ms). Unpublished sightings from trawlers off the African coast and research cruises on board the R.S. *Africana* and M.V. *S. A. Agulhas* off the African coast and in the Southern Ocean between 1980 and 1984 have been collated. All at-sea records, including those of birds collected at sea, have been mapped (Fig. 1).

Results and discussion are presented by oceans, taking into account historical records and information from ringing recoveries made on land. The latter are not given in Fig. 1. Several at-sea sight records without co-ordinates (e. g. Chapman 1982) have not been mapped.

RESULTS AND DISCUSSION

Pacific Ocean distribution

New Zealand Sector

Murphy (1936) stated that Royal Albatrosses are known from Campbell Island eastwards and northwards to the Chatham and the Kermadec Islands and are also common off the coasts of the South Island, New Zealand. Fleming (1950) gave only three definite sightings: 1 Jul 1948, c. 41 15S, 179 48E (near Wellington, New Zealand); 7 Dec 1948, 36 26S, 160 54W one *epomophora*; and 11 Dec 1948, 40S, 178 54W one *sanfordi*, off the east coast of North Island, New Zealand.

Secker (1969), in observations from 1944 to 1968, recorded one to two *epomophora* on crossings of the Cook Strait in April, May, September and October, with one record for August. He recorded *sanfordi* in Wellington Harbour, New Zealand in November and December 1955. Norris (1965) recorded one bird on 22 November

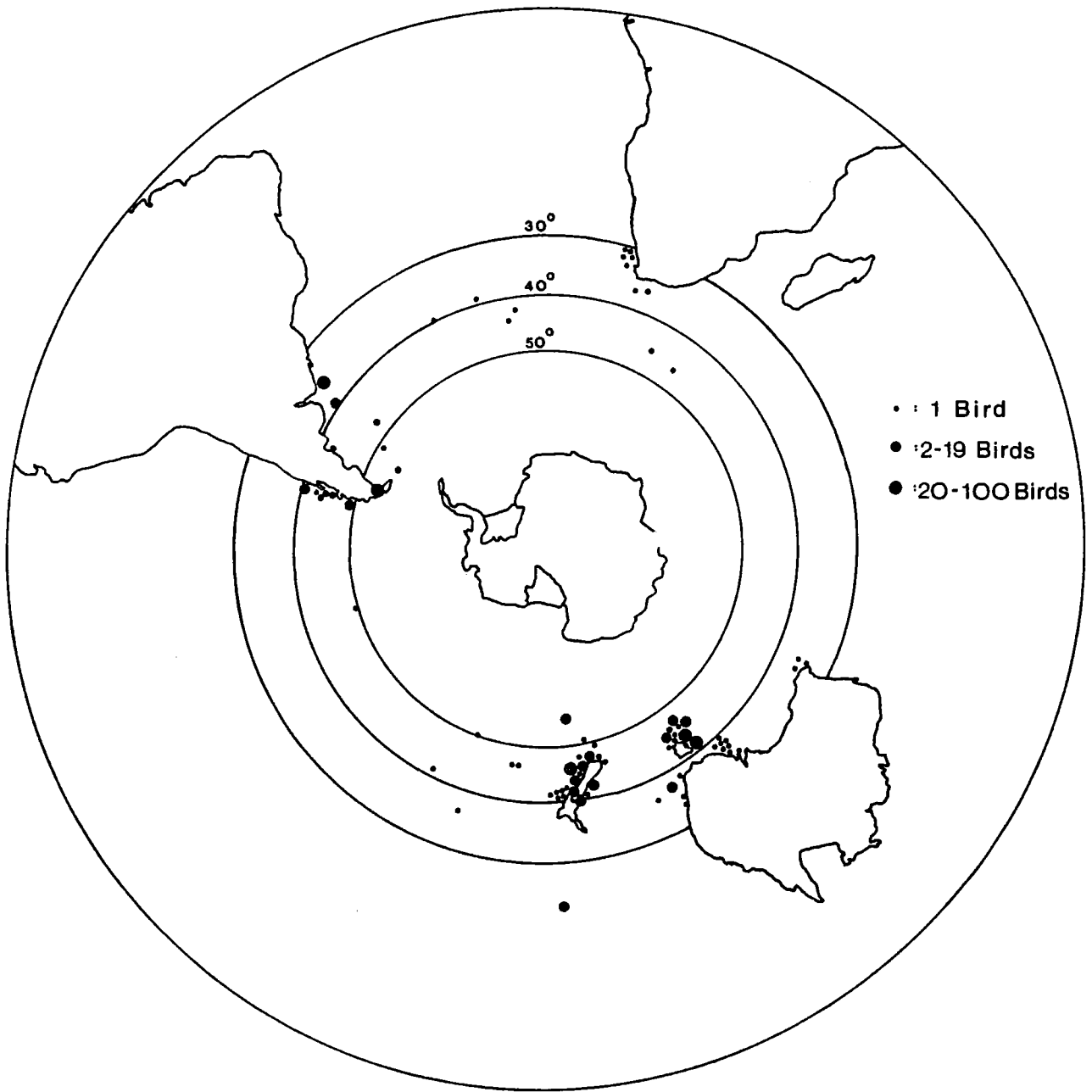


Figure 1

The pelagic distribution of the Royal Albatross

1962 near Otago Harbour (45 43S, 170 50E) with others around Taiaroa Head, near Dunedin. Bartle (1974) recorded moderate numbers of both subspecies in the Cook Strait from mid-February to mid-May 1966 between 40S - 44S, with *epomophora* outnumbering *sanfordi* by six to one. He stated that his numbers seemed high compared with those of Norris (1965) and Secker (1969) and that both those observers may have confused Royal with Wandering Albatrosses.

Jenkins (1981) recorded *epomophora* north to East Cape (39S), south to 52S and a few off the west coast of South Island. He recorded fewer *sanfordi* from 38S to 51S with a concentration near East Cape. None was recorded off the west coast of South Island. Wandering Albatrosses were recorded more frequently than were either subspecies of the Royal Albatross. Robertson & Jenkins (1981) reported that *epomophora* was more numerous than the Wandering Albatross east and south of New Zealand. Very few *sanfordi* were recorded. Clark (1983) recorded *sanfordi* in small numbers in March 1983 from East Cape to the Chatham Islands. As the Chathams were approached, the numbers increased to 11 birds seen at one time. Robertson & Kinsky (1972) recorded 31 ringing recoveries of birds around New Zealand away from their breeding sites.

Vooren (1973) recorded the Royal Albatross as "common" at the Pukaki Rise during December 1970. The same author (1977) recorded both Royal and Wandering Albatrosses from 29 October to 1 November 1975 at 42 15S, 170 40E, but did not state which subspecies was involved.

Australian Sector

The first Australian record is of a Royal Albatross caught on 17 July 1960 at Bellambi, New South Wales (34 20S, 150 50E) (Gibson & Sefton 1962). The second record for this sector, and the third record for Australia, was one seen on 25 October 1969 off Sydney Heads, New South Wales (Rogers 1970). Serventy *et al.* (1971) recorded the Royal Albatross as an occasional straggler to southern Australia on both the eastern and western coasts. From the southeast coast of Australia, Robertson & Kinsky (1972) recorded nine recoveries of birds ringed in New Zealand.

Cox (1977) recorded a *sanfordi* from Newland Head, South Australia on 7 August 1976 and quoted Carter as saying that more Royal Albatrosses were recorded off southeastern Australia in 1976 than in previous years. Cox (1977) also quoted another record by McKean off Green Cape, New South Wales on 19 June 1976.

Since the sight records of the mid 1970's, the species has been identified more frequently off the southern and eastern coasts of Australia and Blakers *et al.* (1984) map the species as occurring off southeastern Australia and Tasmania. Barton (1979) recorded 15 adult Royal Albatrosses (12 *epomophora* and

three *sanfordi*) over 30 km offshore between September 1976 and March 1978 off southeastern New South Wales (c. 37S, 150E).

Brothers (1978) recorded about 11 Royal Albatrosses off the southern and western coasts of Tasmania in early February 1978. Carter (1981) reported three birds (1 April), 5 - 10 birds (21 April), 12-30 birds (25 April), 20-100 birds (7 May), 20-30 birds (8 May) and 20-100 birds (9 May) south of the Tasman Peninsula between 43 30S to 44S and 147 30E to 148E in 1979.

Johnstone & Kerry (1976) reported one sighting southwest of Tasmania, and Jones (1983) recorded 27 on the shelf south of Tasman Island, and 13 adults (of both races) southwest of Port Arthur. The same author (1985) recorded c. 120 throughout the year off Tasmania with *epomophora* three times more numerous than *sanfordi*; and off Port Arthur on 8 September 1985 *epomophora* again predominated over *sanfordi*.

Barton (1980) recorded one bird near the Gascoyne Seamount (a. 157E) at the end of 1979 or in early January 1980. Parker *et al.* (1979) give records of one bird on 7 August 1976 and two on 15 September 1977 off South Australia. Close (1982) recorded one *sanfordi* south of Port Fairy, South Australia on 17 July 1979, one off Port Fairy on 11 May 1980, two *sanfordi* and one *epomophora* off Port McDonnell, southeastern South Australia, on 29 August 1981 and one of each subspecies off Beachport, South Australia on 5 August 1981. Chapman (1982) recorded one bird at 42 30S, 150 01W on 2 July 1980 and several between Wellington and Cape Horn in March 1981.

Central Pacific Sector

Robertson (1972) reported a Royal Albatross ringed as a chick on Campbell Island on 23 May 1970 and recovered in the Pacific Ocean at 21 42S, 140 38W at Tematangi, Tuamotu Archipelago, about the middle of 1971. This is the most northerly central Pacific record published. Wood (1923) recorded a concentration of 15-20 birds at 22 05S, 177 27E (c. 190 km south of Viti Levu) and correlated this northern range with air temperature. This record appears to have been overlooked by later observers.

South American Sector

Szijj (1967), on a voyage from New Zealand to Valparaiso in the southern winter (29 July - 19 September 1964), reported birds near New Zealand: two on the third day out (46 41S, 172 17W); one on the sixth day out (50 01S, 159 52W); and one which followed the ship for four days from 49 20S, 111 48W to 43 13S, 97 42W to within 1 600 km off the Chilean coast. He stated that all South American records must have been of birds that had crossed the Pacific Ocean from Australia to South America. He explained why so few were recorded from this part of the Pacific by the difficulty of identification and the scarcity of ships in winter.

The first proof that Royal Albatrosses reach South American waters came from a specimen of *epomophora*, ringed as a chick on Campbell Island in 1943, and recovered at El Tabo, Santiago Province, Chile in March or April 1944 (Sorensen 1954). Richdale (1965) reported a *sanfordi* recaptured in the nonbreeding season off South America which returned successfully to New Zealand to breed. Robertson & Kinsky (1972) recorded 30 recoveries of ringed Royal Albatrosses on the western coast of South America.

Johnson (1965) stated that, although at first only Wandering Albatrosses were recorded off the west of South America, the work of Beck, Mathews and Murphy helped to prove that both Royal Albatrosses and Wandering Albatrosses occur. He considered that the Wandering Albatross avoids entering bays and harbours and that most albatrosses in Chilean harbours were in fact Royal Albatrosses, these being frequent from Arica to Cape Horn. He thought early sight records to be unreliable and that sight records were probably influenced by the suggestion that Royal Albatrosses bred in Tierra del Fuego (Murphy 1936), an idea that has persisted until recently (e.g. Schauensee 1971).

Clark *et al.* (1984) recorded single birds seen frequently offshore from Guafo Island during September and October 1983. Clark (1986) reported both subspecies in small numbers between 110W and 85W and 42S to 54S. Jehl (1973) recorded Royal Albatrosses mostly within 16 km of the Chilean coast in May with a maximum of eight out of 12 large albatrosses at the mouth of the Golfo de Trinidad on 22 May (50S). On 9 June 1970, off Chiloe Island (41S), he saw six Royal Albatrosses and one Wandering Albatross, and northwards from 42S, Wandering Albatrosses became less numerous whereas Royal Albatrosses were present in similar numbers all along the coast. He found Royal Albatrosses north to under 30S, which seems to agree with Johnson's (1965) observations. De Villers & Terschuren (1978) recorded three definite and two probable Royal Albatrosses in January 1976 at the southern end of the Golfo de Corcovado, Chile. They only saw one definite Wandering Albatross. Harris (1973), in a review of Galapagos birds, mentioned an albatross seen off Punta, fractionally north of the Equator, on 17 July 1948 that was probably a Wandering or Royal Albatross.

Atlantic Ocean distribution

South American Sector

Royal Albatrosses have been recorded on both coasts of South America. Murphy (1936) stated that Royal Albatrosses are common in the South Atlantic close to the continental shore. He cited a record of *sanfordi*, which he considered to be a genuine migrant from New Zealand. Dabbene (1926) recorded about 20 collected from one fishing boat around 35S, 53W, between May and September in one season, with others from Cape Horn and Rio del Plata. Woods (1975) stated that Royal Albatrosses occurred as

far north as 23S off the Brazilian coast, as well as off Uruguay and in the western South Atlantic. However, these records were not properly referenced.

From recoveries of birds ringed in New Zealand, Robertson & Kinsky (1972) noted 45 recovered in the southwestern Atlantic Ocean, some of them being *sanfordi*. Thus it seems that the southwestern Atlantic Ocean is an important foraging area for Royal Albatrosses, especially in winter.

Olrog (1948, 1950) recorded hundreds of Royal Albatrosses in Bahia de Yendegaia, Beagle Channel and at Bahia Inutil but gave no further details. Humphrey *et al.* (1970) gave sight records from the Beagle Channel in January, February and March and mentioned others near Tierra del Fuego. Harris & Batchelor (1980) recorded one bird off Cape Horn on 4 February 1977, and P. Harrison (*in litt.* 1985) stated that south of Cape Horn the most abundant whitebacked albatross was the Royal and not the Wandering Albatross.

The exact status of the Royal Albatross off southern South America is not entirely clear, partly because of the presumption that the species breeds in Tierra del Fuego (Murphy 1936). The present status of the Royal Albatross in the southwestern Atlantic Ocean is also somewhat confusing. Although earlier writers (e.g. Murphy 1936) stated that Royal Albatrosses are not uncommon in the southwestern Atlantic Ocean, many subsequent workers (Cooke & Mills 1972, Tickell & Woods 1972, Brown *et al.* 1975, Linkowski & Rembiszewski 1978, Jehl *et al.* 1979, Thurston 1982) recorded birds merely as "*Diomedea* spp."

Recently published observations are by Jehl (1974), who observed birds over the Argentinian continental shelf in winter (June-August), and estimated that only 20 % of large albatrosses seen were Royal Albatrosses. He gave no specific totals of either species, but on 29 July 1972 at 39 22S, 55 22W he saw four Royal Albatrosses and 20 Wandering Albatrosses with probably other Royal Albatrosses later in the day. Jehl (1974) thus questions the view of Dabbene (in Murphy 1936) that the Royal Albatross is in fact the most abundant large albatross off Argentina in winter. His observations supported the idea that the Wandering Albatross was more numerous. Chapman (1982) recorded one bird near the Falkland Islands in March 1981 and Bourne & Curtis (1985) recorded the Royal Albatross as normally the most common great albatross over the shelf around the Falkland Islands, and being seen out to sea to 47 36S, 50 13W on 3 October 1984.

African Sector

The first record of a Royal Albatross in the southeastern Atlantic Ocean was of a *sanfordi* seen from a ship on 17 July 1970 at 32 42S, 16 46E (Bourne & Dixon 1975). This bird was attracted to a fishing vessel along with c. 2 000 mollymawks and smaller petrels.

Between 1980 and 1984, nine more Royal Albatrosses (six *sanfordi*, one *epomophora*, two unidentified to subspecies) have been recorded from the African sector of the southern Atlantic Ocean. (Table 1, Fig. 1). These records fall into two distinct categories: birds in the Trade Wind Belt, mostly near Gough Island; and birds immediately off the South African coast, mostly associated with trawlers.

Most Royal Albatrosses seen in the Trade Wind Belt ignored the observation ships (none of which was trawling), whereas birds seen off the South African coast were attending vessels, especially trawlers, which fit behavioural traits observed off New Zealand (P. Harrison pers. comm.).

Within a ten-day period in July 1983, four *sanfordi* were recorded (Table 1). Observations of two individuals in July 1984 suggest that the species is regular in small numbers in winter off South Africa. A single record of *epomophora* on the South African trawling grounds has been made (Table 1).

Indian Ocean distribution

African Sector

There are three records from the African sector of the Indian Ocean: two of *sanfordi* and one of *epomophora* (Table 1). One record is from the South African continental shelf and two from farther south (Table 1).

Australian Sector

The second Royal Albatross recorded for Australia was a bird found dead at Ledge Point, West Australia (31S, 115E), on 5 March 1966. The bird had been ringed as a chick on Campbell Island in September of the previous year (Serventy *et al.* 1971).

Robertson & Kinsky (1972) referred to six ringed birds recovered at sea in the eastern Indian Ocean west of Australia. Although localities were not given, they mapped the species' distribution in this region as far west as \bar{o} . 58E. Other sightings are of several adults off western Australia at 34 56S, 114 49E on 4 June 1979 (Chapman 1981).

CONCLUSIONS

The rather few records of Royal Albatrosses at sea may be partly

TABLE 1
ROYAL ALBATROSSES RECORDED IN THE AFRICAN SECTOR OF THE SOUTHERN OCEAN

Date	Location	Co-ordinates	Remarks	Subspecies	Source
ATLANTIC OCEAN					
17 Jul 1970	70 km west of Cape Columbine	32 42S, 16 46E	seen following a trawler	S	Bourne & Dixon (1975)
July 1980	West of Cape Town	position uncertain	seen from a trawler	?	J.C. Sinclair (pers. comm.)
10 Nov 1980	Near Gough Island	34 48S, 7 27W	From M.V. <i>S.A. Agulhas</i> , observation time 45 min	?	S. Keith (<i>in litt.</i>)
19 Jan 1983	South of Gough Island	44 23S, 9 58W	From M.V. <i>S.A. Agulhas</i> , observation time 2 min		pers. obs.
6 Jul 1983	West of Gough Island	38 43S, 15 39W	From M.V. <i>S.A. Agulhas</i> , observation time 2 min	S	pers. obs.
7 Jul 1983	c. 180 km WSW Hondeklipbaai	30 20S, 15 58E	From R.S. <i>Africana</i> , observation time 2,5 h	S	Sinclair <i>et al.</i> (1984), B. Rose (pers. comm.)
12 Jul 1983	c. 140 km W Hondeklipbaai	30 42S, 15 26E	From R.S. <i>Africana</i> , observation time 5 h	S	Sinclair <i>et al.</i> (1984), B. Rose (pers. comm.)
15 Jul 1983	West of Gough Island	39 08S, 26 32W	From M.V. <i>S.A. Agulhas</i> , observation time 2 min	S	P. Harrison (pers. comm.)
24 Jul 1984	Off Hondeklipbaai	30 31S, 15 31E	From R.S. <i>Africana</i> , observation time 20 min	E	Sinclair <i>et al.</i> (1986), P.G. Ryan (pers. comm.)
27 Jul 1984	Agulhas Bank	35 20S, 18 50S	From R.S. <i>Africana</i> , observation time 2 min	S	Sinclair <i>et al.</i> (1986), P.G. Ryan (pers. comm.)
INDIAN OCEAN					
10 Jun 1982	c. 200 km SSE Cape Agulhas	36 20S, 20 21E	Bird circled a Japanese trawler	S	Sinclair <i>et al.</i> (1984), B. Rose, (pers. comm.)
18 Dec 1978	Marion Island	46 52S, 37 51E	Seen flying over land and sea	S	Sinclair (1981)
27 Aug 1984		43 47S, 32 55E	From M.V. <i>S.A. Agulhas</i> , observation time 1 h	E	Sinclair <i>et al.</i> (1986), P.G. Ryan (pers comm)

* E = *epomophora*, S = *sanfordi*

explained by the difficulty in distinguishing this species from the Wandering Albatross, especially at a distance, and by differences between the two species in ship-following behaviour. Sightings may also be affected by the difference in population size. The Wandering Albatross has a world population of c. 36 000 pairs breeding on scattered sub-Antarctic islands around the Southern Hemisphere whereas the Royal Albatross has a world population of c. 16 000 pairs which breed only in the New Zealand sector (Robertson 1975). Thus fewer sightings of Royal Albatrosses are likely than of Wandering Albatrosses in the open ocean. However, with increasing observer experience Royal Albatrosses will probably be recorded at sea more frequently.

Ringling recoveries (Robertson & Kinsky 1972) and the increasing number of records of birds at sea, especially in the African sector of the Southern Ocean (Fig. 1), confirm the suggestion of Watson *et al.* (1971) that the Royal Albatross has a circumpolar distribution. It seems possible that the species undergoes a circumpolar migration as suggested by Robertson & Kinsky (1972).

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REFERENCES

- BARTLE, J.A. 1974. Seabirds of the eastern Cook Strait, New Zealand, in autumn. *Notornis* 21: 135-166.
- BARTON, D. 1979. Albatrosses in the west Tasman sea. *Emu* 79: 31-35.
- BARTON, D. 1980. Birds around the Gascoyne Seamount. *Austral. Seabird Group Newsletter* 14: 8-13.
- BLAKERS, M., DAVIES, S.J.J.F. & REILLY, P.H. 1984. The atlas of Australian birds. Melbourne: Royal Australian Ornithologists' Union.
- BOURNE, W.R.P. & CURTIS, W.F. 1985. South Atlantic seabirds. *Sea Swallow* 34: 18-28.
- BOURNE, W.R.P. & DIXON, T.J. 1975. Observations of seabirds 1970-1972. *Sea Swallow* 24: 65-88.

- BROTHERS, N. 1978. Off the south and west coast of Tasmania. Austral. Seabird Group Newsletter 11: 6-8.
- BROWN, R.G.B., COOKE, F., KINNEAR, P.K. & MILLS, E.L. 1975. Summer seabird distribution in Drake Passage, the Chilean fjords and off South America. Ibis 117: 339-356.
- CARTER, M.J. 1981. Seabird observations off south-eastern Tasmania. Austral. Seabird Group Newsletter 15: 9-10.
- 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.
- CLARK, G.(S.) 1983. Totorore expedition to southern Chile. Austral. Seabird Group Newsletter. 18: 20-21.
- CLARK, G.S. 1986. Seabirds observed in the Pacific Southern Ocean during autumn. Austral. Seabird Group Newsletter 23: 1-15.
- CLARK, G.S., VON MEYER, A.P., NELSON, J.W. & WATT, J.N. 1984. Notes on Sooty Shearwaters and other avifauna of the Chilean offshore island of Guafo. Notornis 31: 225-231.
- CLOSE, D.H. 1982. Offshore sightings of Procellariiformes in South Australia. S. Austral. Ornithol. 28: 210-213.
- COOKE, F. & MILLS, E.L. 1972. Summer distribution of pelagic birds off the coast of Argentina. Ibis 114: 245-251.
- COX, J.B. 1977. Royal Albatross at Newlands Head, South Australia. S. Austral. Ornithol. 27: 177-178.
- DABBENE, R. 1926. Los petreles y los albatros del Atlantico Austral. Hornero 3: 311-348.
- DE VILLERS, P. & TERSCHUREN, J. 1978. Midsummer seabird distribution in the Chilean fjords. Gerfaut 68: 577-588.
- FLEMING, C.A. 1950. Some South Pacific seabird logs. Emu 49: 169-188.
- GIBSON, J.D. & SEFTON, A.R. 1962. First Australian record of the Royal Albatross. Emu 62: 167-168.
- HARRIS, M.P. 1973. The Galapagos avifauna. Condor 75: 265-278.
- HARRIS, M.P. & BATCHELOR, A.L. 1980. Seabird records from the Linblad Explorer in the South Atlantic, 1976-1978. Cormorant 8: 59-64.
- HARRISON, P. 1979. Identification of Royal and Wandering Albatrosses. Cormorant 6: 13-20.
- HARRISON, P. 1983. Seabirds. An identification guide. Beckenham: Croom Helm.

- HUMPHREY, P.S., BRIDGE, D., REYNOLDS, P. & PETERSON, R. 1970. Birds of Isla Grande (Tierra del Fuego). Washington : Smithsonian Institute.
- JEHL, J.R. 1973. Distribution of marine birds in Chilean waters in winter. *Auk* 90: 114-135.
- JEHL, J.R. 1974. Distribution and ecology of marine birds over the continental shelf of Argentina in winter. *Trans. San Diego Soc. Nat. Hist.* 17: 217-234.
- JEHL, J.R., TODD, F.S., RUMBOLL, M.A.E. & SCHWARTZ, D. 1979. Pelagic birds in the South Atlantic Ocean and at South Georgia in austral autumn. *Gerfaut* 69: 13-27.
- JENKINS, J. 1981. Birds seen at sea around New Zealand during the 1978 B.A.A.S. Expedition. *Austral. Seabird Group Newsletter* 16: 3-16.
- JOHNSON, A.W. 1965. Birds of Chile and adjacent regions of Argentina, Bolivia and Peru, Vol. 1. Buenos Aires: Platt Establecimientos Graficos.
- JOHNSTONE, G.W. & KERRY, K. 1976. Ornithological observations in the Australian sector of the Southern Ocean. *Proc. 16th Int. Orn. Congr:* 725-738.
- JONES, W. 1983. Tasmanian bird report No. 12. Hobart: Bird Observers Association of Tasmania.
- JONES, W. 1985. Tasmanian bird report No. 14. Hobart: Bird Observers Association of Tasmania.
- LINKOWSKI, T.B. & REMBISZEWSKI, J.M. 1978. Distribution of seabirds of the Argentina coast and feeding habits of the bird fauna in the Drake Passage and Scotia Sea. *Polisk. Arch. Hydrobiol.* 25: 717-727.
- MURPHY, R.C. 1936. Oceanic birds of South America. New York: MacMillan.
- NORRIS, A.Y. 1965. Observations of seabirds in the Tasman Sea and in New Zealand waters in October and November 1962. *Notornis* 12: 80-105.
- OLROG, C.C. 1948. Observaciones sobre la avifauna de Tierra del Fuego y Chile. *Acta Zool. Lilloana* 5: 437-531.
- OLROG, C.C. 1950. Mamiferos y aves del Archipelago de Cabo de Hornos. *Acta Zool. Lilloana* 9: 505-532.
- PARKER, S.A., ECKERT, H.J., RAGLESS, G.B., COX, J.B. & REID, N.C.H. 1979. An annotated checklist of the birds of South Australia, part 1. Adelaide: South Australian Ornithological Association.
- RICHDALE, L.E. 1950. The pre-egg stage in the albatross family. *Biol. Monogr.* 3: 1-92.
- RICHDALE, L.E. 1952. The post-egg period in albatrosses. *Biol. Monogr.* 4: 1-166.

- RICHDALE, L.E. 1965. Breeding behaviour of the Narrow-billed Prion and the Broad-billed Prion on Whero Island, New Zealand. Trans. Zool. Soc., Lond. 31: 85-155.
- ROBERTSON, C.J.R. 1972. Two unusual albatross recoveries. Notornis 19: 91.
- ROBERTSON, C.J.R. 1975. Report on the distribution status and breeding biology of the Royal Albatross, Wandering Albatross and White-capped Mollymawk on the Auckland Islands. In: Yaldwyn, J.C., (Ed.). Preliminary report of the Auckland Islands Expedition 1972-1973. Wellington: Department of Lands and Survey: 143-151.
- ROBERTSON, C.J.R. 1980. Albatrosses of Australia. Austral. Seabird Group Newsletter 14: 19.
- ROBERTSON, C.J.R., & JENKINS, J. 1981. Birds seen at sea in southern New Zealand waters, February-June 1981. Austral. Seabird Group Newsletter 16: 17-27.
- ROBERTSON, C.J.R. & KINSKY, F.C. 1972. The dispersal movements of the Royal Albatross (*Diomedea epomophora*). Notornis 19: 289-301.
- ROGERS, A.E.F. 1970. Royal Albatross off Sydney Heads. Emu 70: 201.
- SCHAUENSEE, R. 1971. A guide to the birds of South America. Edinburgh: Oliver and Boyd.
- SECKER, H.L. 1969. Procellariiformes in Cook Strait, New Zealand. Emu 69: 155-160.
- SERVENTY, D.L., SERVENTY, V. & WARHAM, J. 1971. Handbook of Australian sea-birds. Sydney: A.H. and A.W. Reed.
- SINCLAIR, J.C. 1981. Eight previously unreported seabirds at Marion Island, Indian Ocean. Ardea 69: 217-218.
- SINCLAIR, J.C. AND THE RARITIES COMMITTEE 1984. S.A.O.S. Rarities Committee report. Bokmakierie 36: 64-68.
- SINCLAIR, J.C. AND THE RARITIES COMMITTEE 1986. SAOS Rarities Committee's annual report. Bokmakierie 38: 20-25.
- SORENSEN, J.H. 1954. Royal Albatross A99. Notornis 6: 25-27.
- SZIJJ, L.J. 1967. Notes on the winter distribution of birds in the western Antarctic and adjacent Pacific waters. Auk 84: 366-378.
- THURSTON, M.H. 1982. Ornithological observations in the South Atlantic Ocean 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, 1954-1964. Br. Antarct. Surv. Bull. 31: 63-84.

VOOREN, C.M. 1973. Notes on sea birds between New Zealand and the Bounty Islands. *Notornis* 20: 301-310.

VOOREN, C.M. 1977. Seabird observations off the west coast of the South Island, New Zealand, October-November 1975. *Notornis* 24: 137-139.

WATSON, G.E., ANGLE, J.P., HARPER, P.C., BRIDGE, N.A., SCHLATTER R.P., TICKELL, W.L.N., BOYD, J.C. & BOYD, M.M. 1971. Birds of the Antarctic and Subantarctic. *Antarct. Map Folio Ser.* 14: 1-18.

WOOD, C.A. 1923. The northern range of the Royal Albatross. *Emu* 23: 151.

WOODS, R.W. 1975. The birds of the Falkland Islands. Oswestry: Anthony Nelson.

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