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## RECORDS OF SEABIRDS (ORDER: PROCELLARIIFORMES) IN SOUTH-EAST QUEENSLAND WATERS

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### ABSTRACT

Details are given of the occurrence of 48 species of seabirds of the order Procellariiformes in the area of south-east Queensland, stretching from 25°00'S (north of Fraser Island) to 28°10'S (the Queensland/New South Wales border) and eastward to 157°00'E. Records of seabirds seen during pelagic and other seabird watching boat trips undertaken between 1979 and February 1999, other boat trips, Queensland Museum specimens and birds observed during seawatches are provided.

The number of seabird species occurring in south-east Queensland varies seasonally, peaking in winter (maximum 19 species during August). Most species have been rarely recorded in the region (less than 50 records) and only one species, the Wedge-tailed Shearwater *Puffinus pacificus*, breeds here. The seabird species diversity found in south-east Queensland resembles the diversity found in the Tasman Sea, rather than that found in the Coral Sea further to the north.

### INTRODUCTION

Recent increases in interest, observers and pelagic boat trips in the area have resulted in increased records of Procellariiformes. Lavery (1969) listed only 23 species known to occur in south-east Queensland whereas the number documented here is 48.

A number of other authors have summarised the general distribution and abundance of Queensland's seabirds (e.g. Roberts 1979, King 1993) but there has been no attempt to collate records from the regular pelagic birdwatching trips conducted in south-east Queensland since 1983. This paper compiles the

observations from these pelagic trips and other available records of Procellariiformes in south-east Queensland waters up to February 1999. An annotated list of 48 Procellariiformes indicating their general status in south-east Queensland is provided, followed by a discussion relating to the seasonal diversity of seabirds present in south-eastern Queensland. This diversity is compared to two other 'seabird areas' on the east coast of Australia, the Coral and Tasman Seas, and a possible explanation for the difference in diversity is hypothesised.

## METHODS

### STUDY AREA

The area from which records were sought extended from north of Fraser Island, at 25°00'S, to the Queensland border, at 28°10'S, and eastward to 157°00'E. The movement of ocean water within this area shows a distinct seasonal pattern, with the East Coast Current (a component of the East Australian Current) extending onto the continental shelf during the summer months, and becoming part of the warm core eddy system south of the Tasman Front (Ashby 1995). In the winter, the western edge of the East Coast Current moves offshore to the edge of the continental shelf, leaving a strip of cool water extending up from the Tasman Front (Ashby 1995). During the winter months the wind is also predominantly from the south-east, possibly forcing birds up from the south.

### REGULAR PELAGIC TRIPS

Regular trips across the marine waters of south-east Queensland to specifically observe pelagic and other seabirds commenced in October 1983. These early trips were *ad hoc* in nature, and undertaken when sufficient bird-watchers expressed an interest in participating.

The initial boat used was the 19m charter vessel, the *Murphy Star*. The *Murphy Star* was berthed at the Manly Boat Harbor and trips would start at 4am to accommodate the two hour trip across Moreton Bay. These trips were variously co-ordinated by Tony Palliser, David Stewart, Tom Tarrant and Paul Walbridge. From April 1995 the trips were undertaken almost monthly on the larger Sea World Research and Rescue Vessel, and coordinated by Paul Walbridge. Its berth location at Sea World, on the Gold Coast, allowed quicker access to the open sea and the edge of the continental shelf. When this boat has not been available *Flying Fish II* has been used.

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All trips have aimed to reach the edge of the continental shelf and travel over the continental slope. Weather conditions dictated precise distance and direction taken by the vessel on any given pelagic trip. Table 1 shows the number of trips undertaken for each month since the commencement of the organised pelagic trips.

**Table 1. Number of boat trips in south-east Queensland during each month.**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	8	7	3	5	5	6	6	4	7	6	4

**Total 66.**

### **OTHER PELAGIC TRIPS**

Additional ship based pelagic seabird records have been provided by Neil Cheshire (observed from the CSIRO oceanographical research vessel, the *Franklin*), David Eades (observed from the CSIRO fisheries research vessel, the *Soela*) and Chris Jowett. Most of these observations have been made well-off the continental slope, and much further east than the regular Manly and Gold Coast trips. For this reason, records from these additional trips are distinguished from those obtained on the regular pelagic trips.

Approximate location or area travelled for each of these trips has been provided by the observers. Neil Cheshire's observations were made on 4 May 1979, between 27°S, 154°E and 27°S, 155°E; on 30 October 1981, between 25°S, 153° E and 26°S, 153°E; on 13 November 1981, between 27°S, 153°E and 26°S, 153° E; on 27 August 1983 at 27°S, 153° E; on 20 April 1985, between 25°S, 154°E and 26°S, 154°E; on 15 June 1985 at 25° 20'S, 154° 55'E; on 16 September 1986 at 27° 55'S, 155° 35'E; on 17 September 1986, between 25° 59'S, 154° 53'E and 26° 03'S, 155° 00'E; and on 13 October 1988 at 26° 24'S, 154° 58'E. David Eades' observations were made on 2 October 1985, between 28° 01'S, 155° 35'E and 27° 56'S, 155° 35'E; and on 3 October 1985, between 26° 01'S, 154° 48'E and 25° 03'E, 155° 01'E. And Chris Jowett's observations were made on 8 Dec 1997, between 28° 00'S, 154° 40'E and 27° 08'S, 153° 56'E; on 18 June 1998 at 65 km ESE of Noosa Heads; and on 20 June 1998 at 25° 10'S, 153° 42'E.

## BREEDING RECORDS

Only one species of Procellariiformes has been recorded breeding within the study area. The Wedge-tailed Shearwater *Puffinus pacificus* breeds on Mudjimba Island (26°37'S, 153° 07'E; Lane & Battam 1984, 1985) and previously near Point Lookout, North Stradbroke Island (27°21'S, 153° 34'E; Dyer & Hines 1994).

## DATA ANALYSIS

To obtain a greater understanding of the seabird abundance and seasonal diversity patterns, data from the pelagic trips have been combined with other data sources, including specimens held by the Queensland Museum, published accounts, and unpublished data when available. Despite these careful checks of the resources available to the authors, we believe that there is still a considerable volume of unpublished and unavailable seabird records from the study area. The authors acknowledge that these data would add to the overall picture of seabird abundance and diversity in south-eastern Queensland. We do not however, believe that the conclusions drawn would differ significantly.

To enable the species diversity of seabirds in south-east Queensland to be compared on a seasonal basis, it was necessary to assess each species as either predominantly a 'summer' visitor or predominantly a 'winter' visitor, which was straightforward for species that had been recorded during only a limited and regular annual time period. However, for other species this categorization was more subjective, particularly when a rare or vagrant species was recorded in south-east Queensland over many different months with no clear pattern of occurrence. For such species, it was necessary to consider the breeding season (e.g. summer visitors would be predominantly on the breeding grounds during the southern winter) and/or input an abundance factor into the analysis (e.g. during which season did the records indicate that a species was most likely to occur).

## ANNOTATED LIST

For each species, all known specimens in the Queensland Museum (QM), published records from a variety of sources, and the records from regular and *ad hoc* south-east Queensland pelagic trips are summarized (Tables 2 to 8). The number of records per month for each species (including provision for records with no retained date) have also been provided. Terms used in the annotated list are defined in Appendix 1.

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**Common Diving-Petrel** *Pelecanoides urinatrix*

Fragmented circumpolar distribution, usually between 35°S and 55° S. Breeds on temperate and subantarctic islands. Common off the Tasmanian and east Victorian coasts.

**QM specimens (1):** North Stradbroke Island, 14 Aug 1961 (Hines 1962).

**Records:** no additional records.

**Pelagic trips:** no records.

**Comments:** vagrant (1 record; 1 beach-washed), recorded only during winter.

**Southern Giant-Petrel** *Macronectes giganteus*

Circumpolar northerly distribution, north to 20°S in winter. Breeds on Antarctica and subantarctic islands. Storr (1984) states it to be a “moderately common visitor (May–November)” to south–east Queensland.

**QM specimens (15):** Moreton Bay (2), no date; Burleigh Heads, 11 July 1955; North Stradbroke Island, 3 August 1955, 15 August 1969, 28 July 1973, 22 June 1997; Moreton Island, 12 July 1971, 25 June 1983, 5 June 1986, 25 June 1986; Caloundra, 21 September 1972; Southport Spit, 3 July 1973; South Stradbroke Island, 13 July 1973; and Jumpinpin Bar, 21 July 1982.

**Records (28):** Alexander (1922) records two birds in the QM being obtained on Mud Island, Moreton Bay, no date is given. These may be the QM Moreton Bay specimens. Single birds found beach-washed at Kirra Beach on 1 July 1955 (Robertson 1956); Fraser Island, 27 October 1970 (Barry & Vernon 1976), 16 June 1979 (Anon. 1979), late 1979 (Sutton 1990), 1 July 1987, 1 September 1997; Sunshine Beach, Sunshine Coast, 6 August 1984 (Palliser 1985); and Moreton Island, 7 July 1997, 14 September 1997. Between 1971 and 1984, Smyth & Corben (1984) record six sightings and eight beach-washed specimens (including one white phase bird) from Point Lookout, North Stradbroke Island. Further records from Point Lookout of either beach-washed or live birds, include: single birds 9 August 1986 (Redhead 1988), 27 June 1987 (Redhead 1990), mid-August 1995 (Eades 1995) and 15 June 1996 (Anon. 1996a). One live individual was observed at Moreton Island on 25 June 1997 (Anon. 1997).

**Pelagic trips (3):** 9 August 1986, 27 June 1989 and 21 June 1998.

**Comments:** rare (46 records; 32 beach-washed, 11 seawatch, 3 pelagic), usually found beach-washed, particularly in winter and early spring.

**Northern Giant-Petrel** *Macronectes halli*

Circumpolar distribution, usually between 30° and 64°S; breeds on subantarctic islands. A regular visitor to southern Australian coasts. Storr (1984) states it to be “a rare visitor to south-eastern seas north to 23°15'S.”

**QM specimens (2):** Southport Spit, 5 August 1984; and Sunshine Coast, July 1997.

**Records (2):** Blakers *et al.* (1984) contains a “... record from Scarness (25 /152) in October, 1975” with no further detail. Smyth & Corben (1984) refer to a sighting from Point Lookout, North Stradbroke Island, 17 July 1983 as the “only Queensland record.”

**Pelagic trips (1):** 12 July 1997.

**Comments:** vagrant (5 records; 2 beach-washed, 1 seawatch, 1 pelagic, 1 unknown), recorded during winter and spring.

**Southern Fulmar** *Fulmarus glacialisoides*

Circumpolar distribution in open cold waters, breeds on subantarctic islands. Australian occurrence generally in far south-eastern waters.

**QM specimens (2):** Eagers Beach, Moreton Island, 9 October 1972 (Vernon & Martin 1974); and Teewah Beach, 30 September 1985 (Niland 1986).

**Records (1):** “Wide Bay and District” (Ramsay 1888).

**Pelagic trips:** no records.

**Comments:** vagrant (3 records; 2 beach-washed, 1 unknown), recorded during spring.

**Cape Petrel** *Daption capense*

Circumpolar distribution in Antarctic and subantarctic seas. Breeds on Antarctic and subantarctic islands. Regularly found in Australian waters north to about 27° S on the east coast. Storr (1984) believed it to be “... a rare visitor (June-January) to south-east Queensland, but in some winters (e.g. 1954) moderately common.”

**QM specimens (3):** Cape Moreton, Moreton Island, 23 August 1974; Palm Beach Canal, 15 October 1975; and Fraser Island, 8 July 1985.

**Records (3):** Ramsay (1888) refers to one record; Alexander (1922) refers to a specimen in the QM, “obtained many years ago,” from Moreton Bay. A single

beach-washed specimen was found at Burleigh Heads on 29 January 1974 (Glasman 1977).

**Pelagic trips (19):** June (3), July (4), August (4), September (4) and October (4).

**Other pelagic trips (10):** 3 October 1985 (3), 16 September 1986 (2), 17 September 1986 (2), 18 September 1986, 12 October 1988 and 13 October 1988.

**Comments:** rare (35 records; 4 beach-washed, 29 pelagic, 2 unknown), most likely encountered during winter and early spring.

**Kerguelen Petrel** *Lugensa brevirostris*

Circumpolar distribution in Antarctic and subantarctic seas, north to 33° S, during winter. Breeds in South Atlantic. Uncommon visitor to southern Australian coast.

**QM specimens (2):** emaciated bird, Mermaid Beach, Gold Coast, 13 September 1975 (Vernon & Fleay 1975b); and a single bird from Burpengary on 28 July 1987.

**Records (2):** Eurong Beach, Fraser Island, 14 August 1995; and Fraser Island, 16 August 1995 (Eades 1995, Anon. 1995a).

**Pelagic trips:** no records.

**Comments:** vagrant (4 records; 4 beach-washed), all records to date are of beach-washed specimens found during winter.

**Tahiti Petrel** *Pseudobulweria rostrata*

Distribution in tropical and subtropical Pacific Ocean. Breeds on volcanic islands in tropical Pacific. Most Australian records are from north-eastern waters, south to Sydney.

**QM specimens (2):** Fraser Island, May 1968; and North Stradbroke Island, 15 March 1974.

**Records:** no additional records.

**Pelagic trips (284):** Occurs in most months, but mostly during the early part of the year.

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**Other pelagic trips (54):** 20 April 1985 (4), 3 October 1985, 13 October 1988 (4), 8 December 1988 (45), 18 June 1998 and 20 June 1998 (4).

**Comments:** common (340 records; 2 beach-washed, 338 pelagic), recorded mostly on pelagic trips where up to 23 birds may be seen between February and April.

**Great-winged Petrel** *Pterodroma macroptera*

Distributed from subtropical to subantarctic areas. Breeds on islands in the subantarctic region, and off the south-western Australia and northern New Zealand coasts. Found around southern Australian coasts north to about 30°S.

**QM specimens (13):** January (3), February (2), March (2), April (2), May (1), July (1), September (1) and December (1).

**Records (38+):** one live, and “a number beach-washed” at the northern end of Bribie Island, 20 December 1932 (Mayo 1932). Roberts (1979) records 32 beach-washed specimens along south-east Queensland coast, covering all months of the year except August and October. A single individual beach-washed at Burleigh on 8 April 1974 (Glasman 1977). Sight records from Point Lookout, North Stradbroke Island, 5 June 1983 (Smyth & Corben 1984), 7 July 1987, 21 November 1988 (Britton 1990a) and 5 June 1993.

**Pelagic trips (10):** January (2), April (5), June (1) and October (2).

**Other pelagic trips (28):** 4 May 1997 (28).

**Comments:** uncommon (89+ records; 47+ beach-washed, 4 seawatch, 38 pelagic), but may be encountered throughout the year, with little or no obvious temporal pattern in south-east Queensland.

**White-headed Petrel** *Pterodroma lessonii*

Circumpolar distribution mainly in subantarctic and Antarctic waters; mostly north to about 30°S. Breeds on subantarctic islands. Frequently seen in southern Australian waters.

**QM specimens (9):** Point Cartwright, 1 February 1949; North Stradbroke Island, 4 June 1974 (Roberts 1977), 19 March 1993; Moreton Island, 17 September 1984; and Fraser Island, 8 July 1985 (one individual from a wreck of five birds).



**Records (6):** two sightings off Point Lookout, North Stradbroke Island on 1 February 1985 (Niland 1986) and 25 January 1986 (Redhead 1988). Beach-washed specimens include Moreton Island, 13 September 1984 (Palliser 1985); South Stradbroke Island, 11 May 1986 (Lake 1987); and Fraser Island, 14 and 16 August 1995 (Eades 1995, Anon. 1995a).

**Pelagic trips:** no records.

**Comments:** rare (15 records; 13 beach-washed, 2 seawatch), most records are of beach-washed specimens, particularly during winter.

**Providence Petrel** *Pterodroma solandri*

The distribution of the Providence Petrel is poorly known, however available data indicate that it is in subtropical regions of the Pacific Ocean with some birds possibly moving as far north as the Bering Sea. In Australia, they are known to occur on the east coast from south-eastern Queensland to Tasmania, and out into the Tasman Sea. Breeds on Lord Howe and Phillip Islands.

**QM specimens (7):** Fraser Island, North Stradbroke Island and Mermaid Beach, (May (1), July (1), October (3), December (1) and unknown (1).

**Records (14):** Smyth & Corben (1984) include two sightings at Point lookout, North Stradbroke Island on 5 June 1983 and 17 July 1983 (6). Other sight records are also from Point Lookout on 20 May 1984, 15 July 1984 (Palliser 1985) and 5 May 1985 (5) (Niland 1986).

**Pelagic trips (322):** March (6), April (9), May (25), June (96), July (113), August (57), September (15) and November (1).

**Other pelagic trips (3):** 2 October 1985 (2) and 3 October 1985.

**Comments:** common (346 records; 7 beach-washed, 14 seawatch, 325 pelagic), recorded during most months of the year, with numbers peaking during the winter months.

**Kermadec Petrel** *Pterodroma neglecta*

Distribution poorly known, generally southern and central Pacific Ocean. Breeds on islands in South Pacific Ocean. Considered a rare visitor to coastal mainland Australia.

**QM specimens (2):** Southport Spit, 13 April 1988; Deadman's Beach, North Stradbroke Island, 15 December 1996.

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**Records (1):** Point Lookout, North Stradbroke Island, 4 May 1985 (Niland 1986).

**Pelagic trips (11):** February (2), April (2) and August (7).

**Other pelagic trips (2):** 8 December 1988 (2).

**Comments:** rare (16 records; 2 beach-washed, 1 seawatch, 13 pelagic), occasionally recorded during autumn and winter.

**Herald Petrel** *Pterodroma arminjoniana*

Distribution poorly understood, found in tropical and subtropical areas of Pacific and Atlantic Oceans. Australian records include breeding on Raine Island and associated sightings in the Coral Sea, and sightings offshore from Ballina and Sydney.

**QM specimens (1):** Burleigh Heads, 22 January 1971 (Vernon & McKean 1972).

**Records:** no additional records.

**Pelagic trips:** no records.

**Other pelagic records (1):** 20 June 1998.

**Comments:** vagrant (2 records; 1 beach-washed, 1 pelagic), most likely to be encountered during the summer months.

**Soft-plumaged Petrel** (*Pterodroma mollis*)

Distributed through temperate and subantarctic waters of southern Atlantic and Indian Oceans and into the south-west Pacific Ocean, around New Zealand. Breeds on islands in South Pacific and southern Indian Oceans. Generally found on southern and south-west Australian coasts.

**QM specimens (1):** live beach-washed, Maryborough, 20 July 1984 (Smith & Smith 1984).

**Records:** no additional records.

**Pelagic trips (1):** 26 October 1996 (1).

**Comments:** vagrant (2 records; 1 beach-washed, 1 pelagic), most likely to be encountered during the winter or spring months.

**Mottled Petrel** *Pterodroma inexpectata*

A transequatorial migrant, with birds moving from their breeding islands around New Zealand to the northern and eastern Pacific Ocean. During the summer breeding season they are found in southern Indian and Pacific Oceans. Australian records have generally been confined to south-east coastal areas.

**QM specimens (3):** Spitfire Beach, Moreton Island, 18 February 1990; Moreton Island, 17 December 1992; and Deadman's Beach, North Stradbroke Island, 2 February 1999.

**Records:** no additional records.

**Pelagic trips (37):** 26 October 1996 (37) (Walbridge & Ashby 1999).

**Comments:** vagrant (40 records; 3 beach-washed, 37 pelagic), most likely encountered on migration during autumn or summer. Although the number of records for south-east Queensland exceeds that defined for a vagrant species, 37 of these birds were seen on a single day during southerly passage.

**White-necked Petrel** *Pterodroma cervicalis*

Generally distributed in southern and south-west Pacific Ocean during the breeding season. Migration to northern Pacific Ocean post breeding.

**QM specimens (3):** Noosa Heads, 1 April 1989; Sunshine Beach, 9 April 1989; and North Stradbroke Island, 19 March 1993 (Stewart & Gynther 1999).

**Records (7):** Point Lookout, North Stradbroke Island, 20 February 1983 (Stewart 1984), 19 February 1984 (Palliser 1985), 1 February 1985 (Niland 1986), 25 January 1986 (Redhead 1988), 29 January 1988, 6 February 1988 (Britton 1990a); and Mudgeeraba, 9 April 1984 (Palliser 1985).

**Pelagic trips (4):** January (2), and February (2).

**Other pelagic trips (2):** 8 December 1988.

**Comments:** rare (16 records; 3 beach-washed, 7 seawatch, 6 pelagic), occasionally recorded during the summer and early autumn months.

**Black-winged Petrel** *Pterodroma nigripennis*

Breeds in southern Pacific Ocean and disperses mainly across the central Pacific, with some birds moving into the North Pacific Ocean. Breeds Norfolk Island,

Lord Howe Island and other South Pacific islands. Visits waters off south-east Australian coast, between 27° and 40°S.

**QM specimens (9):** North Stradbroke Island, 31 January 1974 (Ingram 1975), 19 March 1993 (two specimens, Stewart & Gynther 1999); Fraser Island, 8 January 1976 (Barry & Vernon 1976), 19 October 1980 (Sutton 1990), 12 March 1996; Peregrine Beach, 18 February 1977 (Jenkins & Cheshire 1982); Southport Spit, 3 February 1990; and 5 km north of Coominya, 3 May 1996 (Anon. 1996b).

**Records (3):** Smyth & Corben (1984) record one sighting from Point Lookout, North Stradbroke Island, 29 December 1983. Beach-washed specimens: Bribie Island, 1 January, 1971 (Blakers *et al.* 1984); and North Stradbroke Island, 25 January 1974 (Ingram 1975).

**Pelagic trips:** no records.

**Comments:** rare (12 records; 11 beach-washed, 1 seawatch), usually found beach-washed during the summer and autumn months.

### **Cook's Petrel** *Pterodroma cookii*

Breeds on offshore islands of New Zealand, with birds mainly dispersing or loosely migrating east from New Zealand to the North and eastern Pacific Ocean. They are rare visitors to Australia, with very few recorded on the east coast.

**QM specimens:** nil.

**Records:** Ramsay (1888) contains a record from "Wide Bay and District.", but no other information is given. Smyth & Corben (1984) list a single individual seen from Point Lookout, North Stradbroke Island on 20 February 1983, with the added information "Only Queensland record. Details to be published." Marchant & Higgins (1990) dismiss this record as "... not authenticated and not acceptable." One author (Corben pers. comm.) advises that the record has not been written up because of the difficulty of distinguishing *P. cookii* from Pycroft's Petrel *P. pycroftii* at sea.

**Pelagic trips:** no records.

**Comments:** unconfirmed records and should be treated, at best, as a vagrant.

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**Gould's Petrel** *Pterodroma leucoptera*

Distribution at sea poorly known; believed to disperse into the Tasman Sea and southern and central Pacific Ocean after breeding during the summer on Cabbage Tree Island, New South Wales.

**QM specimens (9):** Burleigh Heads, 7 May 1955 (Robertson 1956); Southport Spit, 29 January 1974 (Ingram 1975); North Stradbroke Island, 31 January 1974, 23 February 1975 (Ingram 1975), 2 March 1980, 3 May 1996; Fraser Island, 14 January 1991, 13 January 1995; and "Currumbin area," with no date.

**Records (3):** Ramsay (1888) contains a record from "Wide Bay and District." Beach-washed specimens from North Stradbroke Island on 27 February 1990 (Britton 1991) and Dundabura, Fraser Island on 15 April 1995 (Anon. 1995b).

**Pelagic trips (29):** January (5), February (4) and November (20).

**Comments:** rare (41 records; 11 beach-washed, 29 pelagic, 1 unknown), usually recorded on passage migration during spring and summer, occasionally found beach-washed.

**Blue Petrel** *Halobaena caerulea*

Circumpolar distribution in Antarctic and subantarctic seas north to about 30°S, breeds on subantarctic islands. Most Australian records are from southern coastal areas.

**QM specimens:** nil.

**Records (2):** North Stradbroke Island, 30 June 1989; and a live beach-washed bird at Fraser Island on 15 August 1998 (Eades 1995, Anon.1995a).

**Pelagic trips:** no records.

**Comments:** vagrant (2 records; 2 beach-washed), occasionally recorded during winter.

**Broad-billed Prion** *Pachyptila vittata*

Distributed around New Zealand and the southern Atlantic Ocean. Breeds on New Zealand islands. In Australia, all records have been of beach-washed specimens.

**QM specimens (1):** Point Lookout, North Stradbroke Island, 14 August 1961 (Hines 1962).

**Records (1):** Ramsay (1888) has a record from “Wide Bay and District.”

**Pelagic trips:** no records.

**Comments:** vagrant (2 records; 1 beach-washed, 1 unknown), only recorded beach-washed in winter.

**Salvin’s Prion** *Pachyptila salvini*

Distributed in southern Indian Ocean from east coast of Africa to southern Australia and across the south-west Pacific Ocean to New Zealand. Breeds on islands of the Indian Ocean. Regularly recorded in Australia, generally in the south and east as beach-washed specimens.

**QM specimens (3):** Oxley, 15 July 1954; Twin Waters, 27 September 1992; and Point Lookout, North Stradbroke Island with no date.

**Records (3):** near Brisbane, July 1954 (McKean & Vernon 1971); North Stradbroke Island, 9 August 1975 (Roberts 1979); Fraser Island, 1 July 1985 (Niland 1986).

**Pelagic trips:** no records.

**Comments:** rare (6 records; 6 beach-washed), only recorded as beach-washed during winter and spring.

**Antarctic Prion** *Pachyptila desolata*

Distributed through Antarctic and subantarctic waters, mainly in Indian and Atlantic Oceans. Breeds on Antarctic and subantarctic islands. Generally found as beach-washed specimens along southern Australian coast.

**QM specimens (13):** Kedron, 21 June 1948; Burleigh Heads, 30 May 1955; nine beach-washed 3km south of Point Lookout, North Stradbroke Island, 22 July 1973; Redcliffe, 17 July 1954; and Fraser Island, 7 July 1985.

**Records (38):** one record from “Wide Bay and District” (Ramsay 1888), apart from the nine specimens deposited in the Queensland Museum, a further thirty-six beach-washed specimens were recovered on North Stradbroke Island between 1973 and 1974 (Smyth & Corben 1984); and Dundabura, Fraser Island, 14 August 1995 (Eades 1995, Anon. 1995a).

**Pelagic trips:** no records.

**Comments:** uncommon visitor (51 records; 50 beach-washed, 1 unknown), recorded during the autumn and winter months, occasionally in small wrecks.

**Slender-billed Prion** *Pachyptila belcheri*

Broken circumpolar distribution extending north to 30°S during winter and spring. Breeds on southern oceanic islands. Regularly recorded on south-west coast of Australia, less frequently on the east coast.

**QM specimens (4):** west side of Fraser Island, 25 June 1973, and between Eurong Beach and Hook Point, Fraser Island, September 1973 (Vernon & Martin 1974); Point Lookout, North Stradbroke Island, 9 August 1975; and Burleigh Heads, 31 August 1975.

**Records (7):** sightings from Point Lookout, North Stradbroke Island, 11 July 1983 (3), 17 July 1983 and August 1986 (3) (Stewart 1984, Redhead 1988).

**Pelagic trips (3):** 9 August 1986, 21 June 1998, and 21 August 1998.

**Comments:** rare (14 records; 4 beach-washed, 7 seawatch, 3 pelagic), winter and early spring visitor.

**Fairy Prion** *Pachyptila turtur*

A distinct circumpolar distribution, with birds moving into subtropical areas during the non-breeding season. Breeds on subantarctic and subtropical islands of the southern hemisphere. Common off south-east coast and less regularly seen in Queensland. Stated by Roberts (1979) to be a "Moderately common winter visitor to south-east Queensland seen off-shore over continental shelf."

**QM specimens (23):** January (2), June (7), July (5), August (5), September (3) and November (1).

**Records (89+):** Ramsay (1888) has a record for "Wide Bay and District." Alexander (1922) refers to a specimen in the QM labelled, "S.E. Queensland," with no supporting data. Hines (1962) found fourteen beach-washed specimens on North Stradbroke Island, 14 August 1961 (two of which have been donated to the QM). Smyth & Corben (1984) sighted a single bird from North Stradbroke Island on 27 June 1982, and about thirty birds there on 11 July 1983; from 1971 to 1984, they also recorded thirty beach-washed birds there between

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June and September. Beach-washed specimen from Fraser Island on 15 August 1995 (Eades 1995); Rainbow Beach on 7 July 1983 (2); Deadman's Beach, North Stradbroke Island on 2 July 1998; and Moreton Island on 21 June 1997. Observed from Point Lookout, North Stradbroke Island on 4 May 1985 (10).

**Pelagic trips (45):** all records were in June and July, including 21 June 1998 (24) and 18 July 1998 (19).

**Comments:** common winter visitor (157+ records; 70 beach-washed, 41 seawatch, 45 pelagic, 1 unknown).

**White-chinned Petrel** *Procellaria aequinoctialis*

Circumpolar distribution in Antarctic, subantarctic and subtropical waters. Breeds on southern subantarctic islands. In Australia, White-chinned Petrels can be found in pelagic waters off the southern coastline.

**QM specimens (1):** Coolangatta, 28 January 1974 (Vernon & Fleay 1975a).

**Records:** no additional records.

**Pelagic trips (1):** 1 July 1995 (Stewart 2000).

**Comments:** vagrant (2 records; 1 beach-washed, 1 pelagic).

**Black Petrel** *Procellaria parkinsoni*

Breed on islands off New Zealand with birds dispersing into the central and east Pacific Ocean during the non-breeding seasons. In Australia, several specimens have been found on the central New South Wales coast, and in more recent years birds have been occasionally observed offshore. While this paper was in preparation, a single individual was observed offshore from the Gold Coast on 17 April 1999. This record is currently being reviewed by the Birds Australia Rarities Appraisal Committee, and if accepted will constitute the first substantiated record for Queensland.

It is premature to comment on the status of Black Petrel in Queensland, except to say that, with the increased number of observations of this species in the Sydney region, it has long been expected to occasionally stray into south-east Queensland waters.

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**Streaked Shearwater** *Calonectris leucomelas*

Distributed throughout the western Pacific Ocean with the occasional record from the central and east Pacific Ocean. They breed on islands off the Asian coast during the northern summer. Once considered rare, it is now believed to be a regular visitor to all northern coasts of Australia during the southern summer, with birds reaching as far south as Victoria and central Western Australia.

**QM specimens (2):** two specimens from North Stradbroke Island on 15 March 1974 (Corben 1975).

**Records (104+):** sightings from Point Lookout, North Stradbroke Island, January-March 1982, March 1983, 26 December 1983 (Anon. 1984a), 19 February 1984 (17), 10 March 1984 (29), 18 March 1984 (20-30) (Anon. 1984b), 19 March 1984 (6), 26 January 1985, 1 February 1985 (3), 2 February 1985 (3) (Niland 1986), 30 March 1986 (Redhead 1988), 9 August 1986 (Redhead 1988), 18 February 1987 (4) (Redhead 1990), 4 February 1989 (Britton 1990b), 16 February 1996 (6); Moreton Bay, 2 February 1991 (Britton 1992); Caloundra Head, 25 March 1984; Point Danger, Gold Coast, 17 February 1996 (4), 24 February 1996 (2); and Gold Coast Seaway, 15 February 1996 (2).

**Pelagic trips (18):** January (1), February (10), March (2) and April (5).

**Comments:** uncommon (124+ records; 2 beach-washed, 104+ seawatch, 18 pelagic), mainly summer and early autumn visitor.

**Wedge-tailed Shearwater** *Puffinus pacificus*

Distributed throughout tropical and subtropical Pacific and Indian Oceans. Common breeding and non-breeding visitor to east and west coasts of Australia.

**QM specimens (20):** January (4), February (2), April (4), May (5), October (2) and December (3).

**Records (5228+):** this species breeds on Mudjimba Island (Lane & Battam 1984, 1985), and in the past at several localities near Point Lookout, North Stradbroke Island, including Camel Rock and near the Surf Life Saving Club House (Smyth & Corben 1984, Dyer & Hines 1994); however, the last confirmed breeding record was in 1995 (M. Hines pers. comm.). Greensmith (1973) recorded 800 birds travelling south past Point Lookout on 24 March 1993, North Stradbroke Island; 4000-5000 were observed at Broadbeach, between 22 and 27 December 1975 (Glasman 1977); and 400 were recorded

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between Waddy Point and Happy Valley, Fraser Island, 26 September 1995 (Anon. 1995a). This species is regularly encountered during seawatches from coastal advantage points in south-east Queensland, particularly during spring and summer months. To demonstrate this, a summary of the observations made from Point Lookout, North Stradbroke Island, during 48 seawatches, over a ten year period (1983-1993) is provided. The numbers represent the number of seawatches that Wedge-tailed Shearwaters were seen from Point Lookout for each month, and the number in parenthesis is the number of seawatches that occurred during that month. It should be noted that counts of individual birds were not kept on most occasions, however, on the few occasions when numbers of birds were kept, the numbers ranged from 1 to 300 birds. January 7(7), February 4(4), March 1(2), April 4(4), May 3(6), June 0(4), July 0(10), August 1 (2), September 4(4), October 1(2), November 3(3) and December 0(0).

**Pelagic trips (6795):** common in all months except May – July. At times they can be seen in feeding conglomerations often numbering in the hundreds. January (854), February (820), March (369), April (496), May (2), June (5), August (1666), September (814), October (985), November (634) and December (150).

**Other pelagic trips (575+):** 4 May 1979 (6), 30 October 1981 (50), 3 November 1981 (20) 13 November 1981 (1), 27 September 1983 (1), 3 October 1985 (381), 18 September 1986 (16) and 13 October 1988 (100+).

**Comments:** common (12618+ records; 20 beach-washed, 5228+ seawatches, 7370 pelagic) in all months except May-July. Often seen in large numbers close to shore.

### **Buller's Shearwater** *Puffinus bulleri*

Distributed around New Zealand during the breeding season, dispersing to the northern Pacific Ocean during the non-breeding season. Regular visitor to the east coast of Australia during the breeding season.

**QM specimens:** nil.

**Records (23):** Point Lookout, North Stradbroke Island, January 1981 (Anon. 1981), 1 January 1983, 29 December 1983 (Smyth & Corben 1984), February 1984 (Palliser 1985), 26 November 1989 (12) (Britton 1990b), 2 February 1991 (Andrew & Eades 1991), 19 February 1995 (Anon. 1995b), 22 February 1996 (1); and Point Danger, Gold Coast, 17 February 1996 (1), 24 February 1996 (3). Earlier reports from Point Lookout, North Stradbroke Island in March 1973

(Greensmith 1973) and January 1974 (Corben *et al.* 1974) are now discounted (Smyth & Corben 1984).

**Pelagic trips (5):** 11 February 1984, 25 November 1989, 11 November 1995, 13 April 1996 and 18 January 1997.

**Other pelagic trips (1):** 8 December 1988.

**Comments:** rare (29 records; 23 seawatches, 6 pelagic), spring and summer visitor.

**Flesh-footed Shearwater** *Puffinus carneipes*

Widely distributed across southern Indian and south-west Pacific Ocean during summer breeding season. Migrates to northern Pacific during winter. Breeds on a variety of off-shore islands. In south-eastern Australia it is a locally common breeding and non-breeding visitor to coastal waters.

**QM specimens (2):** Moreton Island, 11 October 1973; and Mon Repos Beach, Bundaberg, 9 January 1977.

**Records (84+):** beach-washed specimen, North Stradbroke Island, 3 October 1976 (Smyth & Corben 1984). Observed from Point Lookout, North Stradbroke Island, 25 and 26 January 1982 (Anon. 1982), 1 February 1983, 6 February 1983 (2), 19 February 1983 (5), 20 February 1983 (5), 25 August 1983 (10), 11 December 1983, 24 December 1983, 25 December 1983, 26 December 1983 (30+), 10 March 1984 (Anon. 1984b), 12 January 1985 (5), 26 January 1985, 3 February 1985, 31 May 1986 (5), 2 January 1987 (10), 29 January 1988, 26 January 1989.

**Pelagic trips (678):** some birds sighted in most months of the year. January (81), February (45), March (52), April (6), August (9), September (306), October (7), November (163) and December (9).

**Other pelagic trips (270):** 16 September 1986 (5), 17 September 1986 (27), 18 September 1985 (19), 2 October 1985 (12) and 3 October 1985 (207).

**Comments:** common (1034+ records; 3 beach-washed, 84 seawatch, 948+ pelagic), particularly during the spring and summer months.

**Sooty Shearwater** *Puffinus griseus*

Widely distributed through the Atlantic and Pacific Oceans. Breeds in southern Australian waters. Most Australian records are from the southern coast of

Australia. Uncommon, in south-east Queensland, where it has been recorded in small numbers (Roberts 1979).

**QM specimens (5):** Green Island, Moreton Bay, no date; North Stradbroke Island, 30 January 1973; Burleigh Heads, 6 July 1976; Indian Head, Fraser Island, 9 June 1982; and Coolangatta, 14 November 1994.

**Records (14):** Smyth & Corben (1984) have four sightings and seven beach-washed birds from North Stradbroke Island between 1971-1984 (one of which has been donated to the Queensland Museum); beach-washed specimens found on Main Beach, North Stradbroke Island, 17 November 1984 (2), 30 January 1984; and Southport Spit 3 February 1986 (Redhead 1988).

**Pelagic trips:** no records.

**Comments:** rarely recorded (19 records; 15 beach-washed, 4 seawatch). However, this species may be a more common in south-east Queensland than the records indicate, due to identification difficulties with the next species.

### **Short-tailed Shearwater** *Puffinus tenuirostris*

A transequatorial migrant, that breeds in south-eastern Australia and migrates into the northern Pacific during the non-breeding season. In Queensland, this species is commonly seen on migration, particularly during the southern return of the birds.

**QM specimens (41):** January (3), April (2), May (6), June (1), October (4), November (11) and December (14).

**Records (600 000+):** Hines (1962) recorded 64 beach-washed specimens from North Stradbroke Island on 31 October 1959. Beach-washed birds on Main Beach, North Stradbroke Island, 5 September 1977 (20) (Anon. 1977), 2 May 1983 (4), 26 November 1983 (35), 17 November 1984 (4), 26 January 1985 (2), 3 January 1995 (19); Frenchman's Beach, 3 January 1995; and Southport Spit, 28 June 1992, 2 January 1993 (8). The southern movement of 100 000s of birds has been observed on several occasions, including 350 000+ birds between 16 and 23 December 1974 and a further 250 000+ individuals between the 12 and 19 November 1975 at Broadbeach (Glasman 1977). This species has also been observed from Point Lookout, North Stradbroke Island on 19 February 1983, 20 February 1983, 1 May 1983, 8 May 1983, 5 June 1983 (10), 25 September 1983,

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30 October 1983, 26 November 1983, 27 November 1983, 19 February 1984 (2), 13 May 1984, 5 October 1984 (2000), 16 November 1984, 12 January 1985, 4 May 1985, 5 May 1985, 13 January 1987 (3), 29 January 1988, 26 January 1989 (7000); and at Caloundra Head on 28 December 1984 (20).

**Pelagic trips (516):** January (8), February (4), May (2), September (1), October (83), November (245) and December (173).

**Other pelagic trips (20):** 4 May 1979 (5) and 3 November 1981 (15).

**Comments:** common passage migrant (609784+ records; 199 beach-washed, 609049+ seawatch, 536 pelagic), particularly on southerly migration to breeding islands in Bass Strait, recorded most years.

### **Fluttering Shearwater** *Puffinus gavia*

Distribution in the south-western Pacific between the breeding grounds in New Zealand and the southern and east coasts of Australia. A common visitor to south-east Queensland waters, north to approximately 24°S.

**QM specimens (22):** January (6), February (1), March (4), May (1), June (3), July (3), Aug (2) and September (2).

**Records (469):** 400 birds observed at Broadbeach 14 January 1975 (Glasman 1977); Point Lookout, North Stradbroke Island, 24 March 1973 (Greensmith 1973), 19 February 1983, 20 February 1983, 5 June 1983 (10), 12 June 1983 (2), 9 July 1983, 10 July 1983, 16 July 1983, 7 Aug 1983, 14 Aug 1983, 25 September 1983, 27 November 1983, 19 February 1984, 1 May 1984, 8 July 1984, 29 September 1984 (8), 5 October 1984 (30), 29 January 1988, 4 February 1989 (Britton 1990b), 24 June 1989 (Anon. 1989), 12 July 1993; Caloundra Head, 15 July 1984; and central Moreton Bay, 22 January 1987 (Anon. 1987).

**Pelagic trips (90):** January (4), February (4), March (1), April (11), May (6), June (15), July (24), Aug (15), September (7), November (1) and December (2).

**Comments:** common (581 records; 22 beach-washed, 469 seawatch, 90 pelagic), recorded throughout the year, most numerous between June and October.

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**Hutton's Shearwater** *Puffinus buttoni*

Distribution in the south-west Pacific Ocean and Australian coast, where their precise movements are unknown. An uncommon non-breeding visitor to Australian coastal waters.

**QM specimens (1):** Main Beach, North Stradbroke Island, 26 February 1999.

**Records (19):** nine sighted from Point Lookout, North Stradbroke Island, between 1971 and 1984 (Smyth & Corben 1984). Other sighting from Point Lookout, North Stradbroke Island, 9 September 1986 (2) (Redhead 1988), 7 July 1987, 29 January 1988, 26 January 1989, 4 February 1989 (Britton 1990b), 12 July 1993, 13 July 1993, 15 February 1996. One beach-washed bird on Deadman's Beach, North Stradbroke Island on 2 July 1998.

**Pelagic trips (96):** January (3), February (18), March (19), June (1), July (18), Aug (24), September (4), October (2) and December (9).

**Comments:** uncommon visitor (116 records; 2 beach-washed, 18 seawatch, 96 pelagic).

**Little Shearwater** *Puffinus assimilis*

Distribution is almost circumpolar in the southern hemisphere, while in the northern hemisphere the species is confined to the Atlantic Ocean. Breeds throughout the area. Common in seas off south-west Australia, breeds on Lord Howe Island, New South Wales.

**QM specimens (8):** North Stradbroke Island, 1 May 1971, 3 June 1973, 9 September 1973, 15 March 1974, 14 September 1975, 14 May 1976, 5 May 1977; and Moreton Island 1986.

**Records (7):** Ramsay (1888) has a record from "Wide Bay and District." Apart from the seven specimens in the Queensland Museum from North Stradbroke Island, a further five individuals were found beach-washed on North Stradbroke Island between 1971 and 1984 (Smyth & Corben 1984). Another specimen was found beach-washed on Main Beach, North Stradbroke Island in July 1983 (Stewart 1984).

**Pelagic trips:** no records.

**Comments:** rare (15 records; 14 beach-washed, 1 unknown), only recorded as beach-washed.

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**Wandering Albatross** *Diomedea exulans*

Circumpolar in Antarctic, subantarctic and subtropical waters of Atlantic, Pacific and Indian Oceans. Small numbers to southern Australian coast, ranging north to approximately 30°S on the east coast and 35°S on the west coast.

**QM specimens (9):** Caloundra, 20 July 1954; Fraser Island, 12 October 1969 (2), 25 June 1983, 28 Aug 1992; Moreton Island, 1 April 1971; North Stradbroke Island, 13 October 1972, 7 October 1973; and Bribie Island, undated.

**Records (15):** Campbell (1901), has two 19th century records for Moreton Bay and Southport. Sightings for south-east Queensland include Sandy Cape, Fraser Island, 21 September 1926 (2) (MacGillivray 1927); Amiet (1958) listed seven south-east Queensland sightings in July (2), September (2) and October (3); Point Lookout, North Stradbroke Island, 9 September 1973 (Smyth & Corben 1984), 5 May 1985 (Niland 1986); and Broadbeach, 7 April 1974 (Glasman 1977). Beach-washed specimen from Fraser Island, September 1997.

**Pelagic trips (1):** 26 October 1996.

**Other pelagic records (1):** 5 June 1981.

**Comments:** rare visitor (26 records; 10 beach-washed, 12 seawatch, 2 pelagic, 2 unknown), particularly during winter and spring months.

**Black-browed Albatross** *Diomedea melanophris*

Circumpolar distribution, breeding on subantarctic islands, to southern coast of Australia, north to approximately 25°S on the east coast and 35°S on the west coast.

**QM specimens (10):** Point Lookout, North Stradbroke Island, 27 September 1959, 13 October 1972; Southport Spit, 20 June 1966; Eurong Beach, Fraser Island, 8 May 1967; Fraser Island, 16 June 1970, 28 Aug 1992, 29 July 1997; Bribie Island, October 1976; and Ocean Beach, Moreton Island, 25 June 1983, July 1983.

**Records (20):** Ramsay (1888) has a record from "Wide Bay and District." Alexander (1922) refers to a "... specimen in the QM labelled S.E. Queensland"; Amiet (1958) listed three south-east Queensland sightings in July, September and October. Nine sightings from North Stradbroke Island, during April-September (Smyth & Corben 1984). Other records include Point Lookout, North

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Stradbroke Island, 19 May 1984, 20 May 1984 (Palliser 1985), 5 May 1985 (Niland 1986), 9 Aug 1986 (2) (Redhead 1988); and single birds observed from the Gold Coast on 11 May 1974 (Glasman 1977) and Point Danger, Gold Coast on 19 May 1984 (Anon. 1984c).

**Pelagic trips (3):** 9 Aug 1986 (2) and 12 July 1997.

**Comments:** rare visitor during winter and spring (33 records; 10 beach-washed, 19 seawatch, 3 pelagic, 1 unknown). Of the small number of birds that have been sub-specifically identified, all have been of the nominate race.

### **Shy Albatross** *Diomedea cauta*

Possibly a circumpolar distribution in Antarctic and subtropical waters; however, the distribution of this species in the Atlantic Ocean is poorly understood. A common breeding species of southern Australia, ranging north to approximately 30°S on the east coast and 25°S on the west coast.

**QM specimens (8):** near Wynnum, Moreton Bay, 27 September 1967; Fraser Island, 12 October 1969, 9 June 1986, 18 April 1991; Point Lookout, North Stradbroke Island, 2 December 1980; Bribie Island, 27 October 1991; Moreton Island, 4 October 1992; and Wellington Point, Moreton Bay, undated, which may be the same bird that Alexander (1922) records as beach-washed at the same locality on 19 November 1921.

**Records (8):** Ramsay (1888) has a record from “Wide Bay and District.” Wellington Point, Moreton Bay, 19 November 1921 (Alexander 1922); two birds of the nominate race were observed from Point Lookout, North Stradbroke Island on 25 Aug 1972 (Corben 1972; Smyth & Corben 1984); Noosa Headland; Sunshine Coast, 25 April 1994 (Anon. 1994); and Point Danger, Gold Coast, 1 June 1997. Single beach-washed specimens from Burleigh Heads in January 1966 (Glasman 1977) and North Stradbroke Island on 11 July 1983 (Stewart 1984).

**Pelagic trips (2):** 18 July 1998.

**Comments:** rare visitor (18 records; 10 beach-washed, 4 seawatch, 2 pelagic, 2 unknown), during winter and spring months.

### **Grey-headed Albatross** *Diomedea chrysostoma*

Distribution is circumpolar in the southern oceans, breeds on subantarctic islands. It is a regular visitor to Australia.

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**QM specimens (3):** Warrajamba Beach, Moreton Island, 23 June 1979; and Moreton Island, 1 Aug 1982 (2).

**Records (8):** Alexander (1922) refers to a QM specimen labelled "S.E. Queensland." Beach-washed specimens from North Stradbroke Island include 27 September 1959 (Hines 1962), 22 July 1973 and 9 September 1973 (Smyth & Corben 1984); and three other beach-washed records to 1979 (Roberts 1979). A single beach-washed specimen found near Dilli Village, Fraser Island on 17 Aug 1995 (Eades 1995, Anon. 1995a).

**Pelagic trips:** no records.

**Comments:** rare (11 records; 10 beach-washed, 1 unknown).

### **Yellow-nosed Albatross** *Diomedea chlororhynchos*

Distribution, south Atlantic, southern Indian Ocean and Australasian waters. Breeds on subantarctic and northern Antarctic islands. Found around Australian coast ranging north to approximately 24°S on east coast and 21°S on west coast.

**QM specimens(1):** North Stradbroke Island, 7 Aug 1960.

**Records (7):** Alexander (1920) refers to it being "very common between Sydney and Brisbane." Amiet (1958) records three south-east Queensland sightings in May 1955, July 1955 and July 1956; observed from Point Lookout, North Stradbroke Island on 9 Aug 1986 (2) (Redhead 1988) and 27 June 1987 (Redhead 1990); and beach-washed on North Stradbroke Island on 6 Aug 1962 (Hines 1962).

**Pelagic trips (16):** 9 August 1986 (2), 15 April 1987, 27 June 1989 and 12 July 1997 (12).

**Comments:** rare visitor during autumn and winter months (24 records; 2 beach-washed, 6 seawatch, 16 pelagic).

### **Buller's Albatross** *Diomedea bulleri*

A New Zealand endemic, which disperses across southern Pacific Ocean to the South American coast. In Australia, regular visitor to south-east Australian coast north to approximately 35°S.

**QM specimens:** nil.

**Records (1):** one beach-washed specimen of unknown date, Point Lookout, North Stradbroke Island (Gyntner & Stewart 1998).

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**Pelagic trips (1):** 18 July 1998.

**Comments:** vagrant (2 records; 1 beach-washed, 1 pelagic).

**Sooty Albatross** *Phoebastria fusca*

Distribution is southern Atlantic and Indian Oceans. Breeds on subantarctic islands. Regularly occurs in small numbers off southern Australian coast.

**QM specimens (2):** State Forest 451, Cooloola, 10 October 1972; and North Stradbroke Island, 22 July 1973.

**Records:** no additional records.

**Pelagic trips:** no records.

**Comments:** vagrant (2 records; 2 beach-washed).

**Light-mantled Sooty Albatross** *Phoebastria palpebrata*

Circumpolar distribution north to about 35°S. In Australia regular in small numbers to southern and eastern coasts.

**QM specimens (4):** North Stradbroke Island, 27 September 1958, 2 August 1959, 21 October 1978; and Fraser Island, 29 June 1993.

**Records (1):** Hines (1962) found the remains of an albatross believed to be a Grey-headed Albatross, which has since been shown to be a Light-mantled Sooty Albatross (Roberts 1977). Roberts (1973) also misidentified a beach-washed specimen at North Stradbroke Island on 22 July 1973, which has been shown to be a *P. fusca* (Roberts 1977).

**Pelagic trips:** no records.

**Comments:** vagrant (5 records; 5 beach-washed), recorded only as beach-washed specimens.

**Wilson's Storm-Petrel** *Oceanites oceanicus*

Summer distribution, circumpolar in Antarctic waters, winter movement is extensive with many birds travelling to northern oceans. In Australia there are many records from all coasts.

**QM specimen:** nil.

**Records (4+):** skin held by the National Museum of Victoria, taken "at sea, near Moreton Island", 27 March 1915; beach-washed specimen from North

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Stradbroke Island, June 1940 (Serventy 1952); and “a small party,” Sandy Cape, Fraser Island, 17 May 1925 (Alexander 1925); a single bird observed from Point Lookout, North Stradbroke Island, 14 April 1984 (Palliser 1985).

**Pelagic trips (150):** February (1), March (7), April (10), May (5), June (4), July (2), September (75), October (44) and November (2).

**Other pelagic trips (1):** 20 April 1985.

**Comments:** common visitor (155+ records; 1 beach-washed, 2+ seawatch, 151 pelagic, 1 unknown), particularly during spring and autumn.

**Grey-backed Storm-Petrel** *Garrodia nereis*

Ramsay (1888) refers to this species as occurring in the “Wide Bay and District” with no supporting data or comments. Campbell (1901) refers to this species as coming into the “seas of south Queensland.”

**QM specimens:** nil.

**Records:** no additional records.

**Pelagic trips:** no record.

**Comments:** without substantiated evidence of the species occurring in Queensland, it would be premature to discuss its occurrence or status.

**White-faced Storm-Petrel** *Pelagodroma marina*

Distributed in the temperate and subtropical areas of the Atlantic, Indian and south Pacific Oceans. In Australia they breed on islands off the New South Wales, Victorian, Tasmanian and Western Australian coasts, with birds dispersing into pelagic waters of the Indian and Pacific Oceans.

**QM specimens (2):** Eagle Farm, Brisbane, 8 Aug 1967; and Main Beach, North Stradbroke Island, July 1983.

**Records (2):** Agnew (1913) states “Solitary specimens have been seen flying over the island [Peel Island] in bad weather.” Alexander (1922) refers, without dates, to a QM specimen “captured in Moreton Bay.”

**Pelagic trips:** no record.

**Comments:** vagrant (4 records; 2 beach-washed, 2 seawatch), recorded during the winter months.

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**Black-bellied Storm-Petrel** *Fregetta tropica*

Circumpolar distribution in subantarctic and Antarctic waters, moves to more northerly waters in non-breeding times. Rare visitor to eastern and southern Australian waters.

**QM specimens (2):** North Stradbroke Island, 22 July and 9 September 1973 (Roberts 1973).

**Records (2):** Salvin (1896) notes a specimen, marked "Coast of Queensland," in the collection of the British Museum. Alexander (1922) refers to a mounted specimen then in the QM, labelled "S.E. Queensland," but doubts its origin.

**Pelagic trips (15):** May (1), July (4), August (2), September (6), October (1) and November (1).

**Other pelagic trips (66):** 15 June 1985, 2 October 1985 (4), 3 October 1985 (3), 16 September 1986 (4), 17 September 1986 (32), 18 September 1986 (4) and 13 October 1988 (18).

**Comments:** uncommon (85 records; 2 beach-washed, 81 pelagic, 2 unknown), recorded predominantly during the winter and spring months.

**White-bellied Storm-Petrel** *Fregetta grallaria*

Distribution generally in southern oceans, and poorly understood. Australian records are limited (Christidis & Boles 1994); however, the species may breed on Lord Howe Island (Marchant & Higgins 1990).

**QM Specimens:** nil.

**Records (1):** Ramsay (1888) has a record from "Wide Bay and District."

**Pelagic trips (6):** 11 February 1984, 6 July 1991, 29 October 1994, 30 Aug 1995 and 1 July 1995 (2).

**Comments:** rare visitor (7 records; 6 pelagic, 1 unknown).

**DISCUSSION**

In the past 30 years knowledge of seabirds in south-east Queensland has grown considerably, with 22 species previously unknown in the offshore waters being recorded. Eight of these newly recorded species have come from specimens being found beach-washed, while the majority have been observed from the prominent headlands along the coast. The status of a further three species

(Cook's Petrel, Black Petrel and Grey-backed Storm-Petrel) could not be established, with no satisfactory published records or specimens of these species in Queensland.

### **Affinities with other seabird regions**

All Procellariiformes recorded in the Coral Sea (Stokes & Corben 1985, King 1993) have also been recorded in south-east Queensland; however, many of the species in south-east Queensland waters have not been recorded further north. The species diversity of south-east Queensland resembles that found in the Tasman Sea (data derived from Lindsey 1986, Marchant & Higgins 1990 and Brandis *et al.* 1992). This may be a consequence of a disproportionately large number of observers in south-east Queensland compared to northern Queensland. However, the greater diversity of seabirds is probably due to more favourable conditions throughout the year in south-eastern Queensland than in northern Queensland. These favourable conditions are a consequence of the seasonal pattern in the movements of water along the east coast of Australia. During the winter there is usually cool water extending up from the south, enabling species that usually associate with temperate water to move into south-east Queensland. In the summer months the East Coast Current and warm core eddy system carry large concentrations of plankton from the Great Barrier Reef, which support large numbers of shearwaters and other seabirds (Ashby 1995).

### **Seasonal species diversity**

The number of Procellariiformes in south-east Queensland shows a considerable increase during the winter months (maximum 29 species during August) compared to the summer months (maximum 19 during January, Fig. 1). This increase in species diversity is a consequence of species normally occurring off southern Australia and in the Tasman Sea during the winter months, extending into southern Queensland, possibly along the strip of cool water extending up from the Tasman Front. Many of these species are rare or vagrants, with low numbers of individuals having been recorded in Queensland. During the summer months only a small number of species move down from the north, including the Tahiti Petrel, Herald Petrel and Streaked Shearwater.

The pattern in south-east Queensland appears to be more complex (Fig. 2) than patterns at more southerly latitudes (e.g. Wollongong at 34°26'S, 150°53'E), where there is an almost complete exchange of species between summer and winter, with the autumn and spring months being interchange periods (Brandis *et al.* 1992). However, this complex pattern may be also a consequence of data

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from many years and from different sources being combined, whereas the data for the Wollongong area were all from pelagic trips and over a shorter period of time (6 years, Brandis *et al.* 1992). At present there are insufficient data from Gold Coast pelagic trips (4 years) to determine the temporal pattern of seabirds in south-east Queensland.

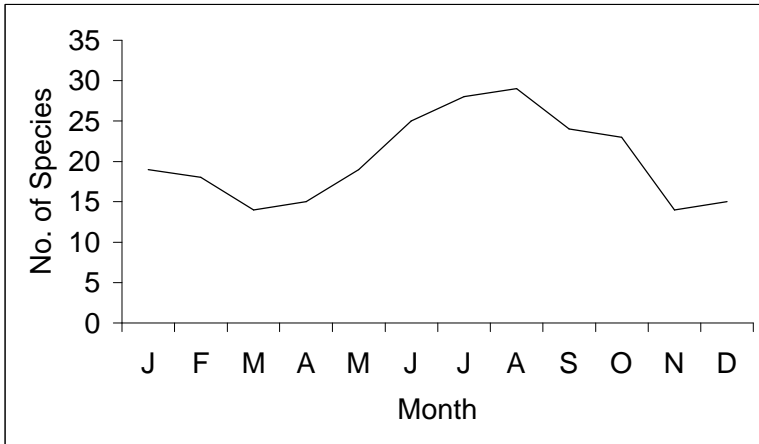


Figure 1. Number of species recorded for each month in south-east Queensland. These totals are derived from combining beach-washed specimens and observations from headlands and pelagic trips.

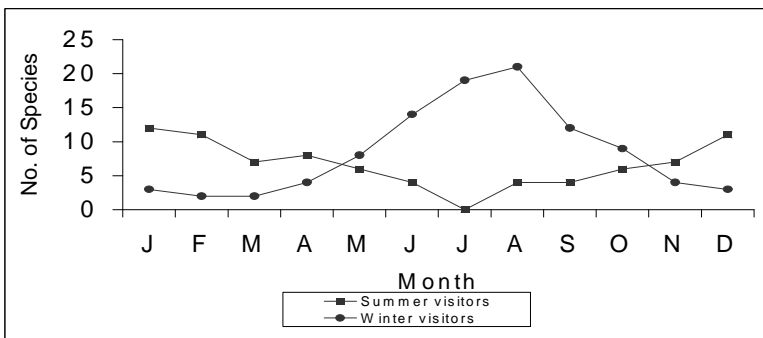


Figure 2. Comparison of species generally regarded as summer visitors compared to the number of winter visitors for each month. These totals are derived from combining beach-washed specimens and observations from headlands and pelagic trips.

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## APPENDIX 1.

### Glossary of terms used.

**Beach-washed:** covers all Procellariiformes found on beaches and further inland, living or dead, within the study area.

**Common:** likely to be seen on any visit during the season of its occurrence (more than 150 records).

**Pelagic:** of or relating to the open sea, referring to the species which inhabit the open seas.

**Rare:** species rarely recorded from the study area but whose occurrence in south-east Queensland waters is not exceptional (between 6 and 50 records).

**Records:** covers all known observations and published records, other than Queensland Museum skins, seawatches and the pelagic trips.

**Seawatches:** covers observations made from land of birds flying over the sea. Many seawatches were organised by Chris Corben and Anita Smyth during the early 1970s and 1980s.

**Uncommon:** frequently occurring, but not likely to be seen on any given occasion (between 51 and 150 records).

**Vagrant:** a species which is considered not to normally occur in south-east Queensland waters (recorded less than 6 times).

**Wreck:** a large number of pelagic seabirds being swept ashore or inland over a short period, often in response to unfavourable weather conditions.

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**TABLE 2. Total number of individual Common Diving-Petrels recorded in south-east Queensland during each month.**

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
Common Diving-Petrel									1				

n.d = no date recorded.

**Table 3. Total number of individuals for each species of 'fulmar' petrel recorded in south-east Queensland during each month.**

n.d = no date recorded.

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
Southern Giant-Petrel						10	10	10	6	3	1		16
Northern Giant-Petrel								3	1		1		
Southern Fulmar										1	1		1
Cape Petrel		1				3	5	5	5	9	10		2

**Table 4. Total number of individuals for each species of 'gadfly-petrel' recorded in south-east Queensland during each month.**  
 n.d = no date recorded.

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
Kerguelen Petrel								1	2	1			
Tahiti Petrel	56	21	94	41	49	2	10		2	5	32	33	
Great-winged Petrel	2+	5	2	2	8	29	3	2		1	2	1	32
White-headed Petrel		1	2	1		1	1	5	2	2			
Providence Petrel	1			6	9	32	97	121	57	15	6	1	1
Kermadec Petrel	3		2		3	1			7				
Herald Petrel		1					1						
Soft-plumage Petrel								1			1		
Mottled Petrel	1		2								37		
White-necked Petrel	2	4	6	1	3								
Black-winged Petrel	1	4	2	3		1				1			
Gould's Petrel		9	6	1	1	2						20	2
Blue Petrel							1		1				

**Table 5. Total number of individuals for each species of prion recorded in south-east Queensland during each month.**  
n.d = no date recorded.

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
Broad-billed Prion									1				1
Salvin's Prion								3	1	1			1
Antarctic Prion						1	1	11	1				37
Slender-billed Prion							2	4	7	1			
Fairy Prion		2				10	33	57	18	3		1	33

**Table 6. Total number of individuals for each species of Procellaia petrel and shearwater recorded in south-east Queensland during each month.**  
n.d = no date recorded.

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
White-chinned Petrel		1						1					
Streaked Shearwater	1	2	53	62+	5				1				
Wedge-tailed Shearwater	4150+	865	826	370	504	19	5		1667	1235	1519	658	800
Buller's Shearwater	2	3	9		1							14	
Flesh-footed Shearwater	42+	102	59	53	6	5			19	357	228	163	
Sooty Shearwater		2	1				1	1				3	11
Short-tailed Shearwater	350207+	7046	6		2	22	12			22	2152	250315+	
Fluttering Shearwater	2	412	9	6	11	8	31	33	19	18	30	2	
Hutton's Shearwater	9	5	19	19			1	22	24	6	2		9
Little Shearwater				1		3	1	1		2			7

**Table 7. Total number of individuals for each species of albatross recorded in south-east Queensland during each month.**  
n.d = no date recorded

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
Wandering Albatross					2	1	2	3	1	6	8		3
Black-browed Albatross						6	3	4	5	2	3		10
Shy Albatross	1	1			2		2	3	2	1	3	1	2
Grey-headed Albatross							1	1	3	2			4
Yellow-nosed Albatross						1	1	14	6				1
Buller's Albatross								1					1
Sooty Albatross								1			1		
Light-mantled Sooty Albatross							1		1	1	1		1

**Table 8. Total number of individuals for each species of storm-petrel recorded in south-east Queensland during each month.**  
n.d = no date recorded.

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	n.d
Wilson's Storm-Petrel			1	7	12	6+	5	2		75	44	2	1
White-faced Storm-Petrel								1	1				2
Black-bellied Storm-petrel						1	1	5	2	47	26	1	2
White-bellied Storm-Petrel			1					3	1		1		1