

SEABIRDS RECORDED AT THE CHATHAM ISLANDS, 1960 TO MAY 1993

By M.J. IMBER

*Science and Research Directorate, Department of Conservation,
P.O. Box 10420, Wellington*

ABSTRACT

Between 1960 and May 1993, 62 species of seabirds were recorded at Chatham Islands, including 43 procellariiforms, 5 penguins, 5 pelecaniiforms, and 9 Lari. Apart from the 24 breeding species, there were 14 regular visitors, 13 stragglers, 2 rarely seen on migration, and 9 found only beach-cast or as other remains. There is considerable endemism: 8 species or subspecies are confined, or largely confined, to breeding at the Chathams.

INTRODUCTION

The Chatham Islands (44°S, 176.5°W) are about 900 km east of New Zealand, and 560 km and 720 km respectively north-east of Bounty and Antipodes Islands. The Chatham Islands lie on the Subtropical Convergence (Fleming 1939) – the boundary between subtropical and subantarctic water masses; near the eastern end of the Chatham Rise – a shallow (<500 m) submarine ridge extending almost to the New Zealand mainland. Chatham Island seabirds can feed over large areas of four marine habitats: the continental shelf of the Chatham Rise; the continental slope around it; and subtropical and subantarctic waters to the north, east, and south. The Chatham Islands' fauna and flora have, however, been very adversely affected by human colonisation for about 500 years (B. McFadgen, pers. comm.).

Knowledge of the seabird fauna of the Chatham Islands gained up to 1960 is summarised in Oliver (1930), Fleming (1939), Dawson (1955, 1973), and papers quoted therein. The present paper summarises published and unpublished data on the seabirds of the archipelago from 1960 to May 1993, from when visits to these islands depended on infrequent passages by ship from Lyttelton, South Island, to the present, when a visit involves a 2-h scheduled flight from Napier, Wellington, or Christchurch, six days/week. It therefore covers the period, concomitant with improving accessibility, that saw the development of sustained conservation programmes for several endangered species on the islands. Among seabirds, these particularly concerned the Taiko *Pterodroma magentae* and, later, the Chatham Petrel *P. axillaris*. Most seabird records herein were made during various bird conservation and research programmes.

SOURCES

Most data for the 1960s were extracted from unpublished reports of visits of parties led by B.D. Bell in September-December 1961, April-May 1967, and August 1968. Beginning in 1970, expeditions in search of Taiko produced many records, particularly by night at a floodlight in the Tuku-a-tamatea

(Tuku) Valley, south-west Chatham Island (Crockett 1994). From 1975, New Zealand Wildlife Service parties searched for Taiko on many of the lesser islands and the entire southern coast of Chatham Island from Cape Fournier to Point Gap (Imber *et al.* 1994b). These annual or semi-annual trips over 11 years yielded many data. Concurrently, incidental observations of seabirds were made during other conservation projects.

Other seabird research projects at Chatham Islands have included long-term studies (since 1974, E.C. Young, A.D. Hemmings and others) of Brown Skuas *Catharacta skua lonnbergi* on Rangatira (South East Island); Chatham Petrels on Rangatira (since 1986, J.A. West, E.S. Kennedy, and G.A. Taylor); albatrosses (intermittently since 1973, C.J.R. Robertson and others); and petrels on Mangere Island (1987/88, A.J.D. Tennyson).

The results included were obtained mainly from the above researchers, or from the literature. The following took part in the trips during which most observations were made; those contributing original data are identified by their initials in the species list:- Brian D. Bell, C. Brumley, W.F. Cash, G.S. Clark, R. Colbourne, R.N. Cotter, S.D. Cotter, D.E. Crockett, D. Crouchley, D. Cunningham, D. Garrick, T. Greene, T. Gregory-Hunt, C. Huntington, M. Hurst, W. Hutchinson, H.M. Imber, E.S. Kennedy, D.A. Lawrie, A. Lindores, T.G. Lovegrove, L. McCormack, D.S. Melville, D.V. Merton, P.R. Millener, C.M. Miskelly, L. Moran, A. Munn, G. Murman, F. Nieuwland, R. Page, S.M. Reed, C.J.R. Robertson, G. Robertson, S. and J. Rowe, R. Russ, C. Scadden, L. Scown, B. Seddon, G.A. Taylor, A.J.D. Tennyson, J.A. West, J. Wills, S. and P. Wood, and A. Wright.

I have included records of birds at sea only within the normal range of local fishing boats (up to c. 20 km from shore, and across Pitt Strait). Exceptions are sightings of two *Pterodroma* species up to 90 km offshore; both might prospect for nest sites on Chatham Islands. There are few 'at sea' records for some species commonly seen >20 km from the coast (e.g., Wandering Albatross, Salvin's Mollymawk, *Procellaria* petrels, Grey-backed Storm Petrel) because they are uncommon inshore.

Sources for breeding records of each species on different islands (abbreviations listed below), unless otherwise referenced, are: MJI - CH, RA, SK, R, K, H; CJRR - FF, S (B,M), TP; BDB - P, LM; AJDT - M, MM; GM - B. In this paper breeding records are given for Rangatira; most other observations are in Nilsson *et al.* (1994). Unreferenced records are the author's. For consistency with common names, I have deliberately excluded the epithet 'Island'.

Abbreviations

Islands: Chatham (CH); Pitt (P); South East or Rangatira (RA); The Forty Fours (FF); The Sisters - Big and Middle or Little (S (B,M)); Star Keys (SK); Mangere (M); Little Mangere (LM); The Pyramid (TP); Murumurus (MM); Rabbit (R); Kokope (K); Houruakopara (H); Blyth's Stack (B). Compass bearings: n; s; e; w; nw; se; etc. Institution: MoNZ, Museum of New Zealand Te Papa Tongarewa, formerly National Museum of New Zealand. Others: juv(s), juvenile(s); ad(s), adult(s); pr(s), pair(s); b-c, beach-cast.

SYSTEMATIC LIST

Procellariiformes

Wandering Albatross *Diomedea exulans* Pitt Strait, 1, 9/7/75. TP, 1 juv to w, 5/12/87.

Southern Royal Albatross *D. epomophora epomophora* 1, 24/10/73, between Sisters Is, behind fishing boat (CJRR). Fossil albatross from P (Robertson 1991), initially referred to *D. exulans*, now to *D. e. epomophora* (CJRR & PRM, pers. comm.).

Northern Royal Albatross *D. epomophora sanfordi* Breeding S(B,M), FF: S, c. 2700 prs; FF, c. 5000 prs (Robertson 1974a, 1985). Possibly stable, 1972-1991, but total breeding population revised to 6000-6750 prs by Robertson (1991). Singly in Pitt Strait throughout year. Fledglings still occasionally taken by Chatham Islanders for food (Robertson 1991). Fishermen report that Giant Petrels *Macronectes* spp. attack fledglings that settle on sea near colonies on departure.

Black-browed Mollymawk *D. melanophrys* spp. Pitt Strait, 1, 6/4/67; 1, 5/10/81; 1 ad, 20/10/87 (O'Donnell & West 1989). TP, 1, 5/11/74, flying among Chatham Mollymawks over island (CJRR). Between RA and SK, 1, 14/7/75. East of P, 1, 8/12/85 (Müller 1989). Replaces Buller's Mollymawk following fishing boats, Jul-Sep.

White-capped Mollymawk *D. cauta cauta* or *D. c. steadi* FF, 1 pr, incubating, Nov-Dec 1991 (GR).

Salvin's Mollymawk *D. cauta salvini* TP, 1 ashore, 21/2/74 (Robertson 1974a); 2 ashore 4/11/74 (CJRR) and Nov 1991 (GR). Pitt Strait, several, 9/11/61 (BDB); 2, 13/1/79. CH, Long Beach, 1 b-c, 29/1/75.

Chatham Mollymawk *D. cauta eremita* Breeding TP: about 4000 prs (Robertson 1974a); revised to c. 3200 breeding prs (Robertson 1991). Rarely seen over inshore waters away from TP; occasionally seen close to s of P. CH, 3, Jan 1979, b-c (Veitch 1981).

Grey-headed Mollymawk *D. chrysostoma* CH, s of Pt Durham, 1 imm, b-c, 4/2/80 (RNC).

Yellow-nosed Mollymawk *D. c. chlororhynchos* S(M), 1, ashore, 21/1/75 (Robertson 1975); 1, ashore (same bird?), collected (skin in MoNZ), Sep 1976 (CJRR). The only records of this South Atlantic subspecies in the NZ region (Imber 1990).

Northern Buller's Mollymawk *D. bulleri platei* Breeding S (B,M), FF: S, c. 2000 prs; FF, c. 24,000 prs (Robertson 1974a); counts could include many non-breeding prs; revised to total of c. 16,000 breeding prs (Robertson 1991). Often follows fishing boats; common inshore Oct-Jun, e.g., 124 round trawler off Owenga, 11/12/87 (Müller 1989).

Light-mantled Sooty Albatross *Phoebastria palpebrata* CH, Long Beach, 1, b-c, 29/1/75.

Flesh-footed Shearwater *Puffinus carneipes* North of RA, 1, 8/12/85 (Müller 1989). Pitt Strait, 2, 25/1/86.

Buller's Shearwater *P. bulleri* Pitt Strait, 6-10, 13/1/79; several, Feb - mid-Mar 1979 (Sibson 1979); c. 15, 24/1/85 (Gaze 1986); c. 15, 25/1/86;

1, 13/2/86. CH, northern beaches, 5 b-c, May 1976 (Veitch 1978); Long Beach, 1, b-c, 29/11/82. Probably the species reported as Taiko scavenging around some fishing boats in summer.

Sooty Shearwater *P. griseus* Breeding CH (declining), P (declining), RA, S(B,M), SK, MM, M, LM (dense colony), K, R, H. East of RA, large numbers passing southward, 6/11/77; Pitt Strait, big passage towards sw, 24/9/81. H, first birds visiting, 21/9/81. R, many at night, mating and copulating, 31/10-6/11/80, then decreasing; fledglings in 55% of 140 burrows, 7-8/4/81. CH, group of 10 abandoned burrows on clifftop w of Cascades Gorge, 12/4/81; clifftop behind Owenga (south coast), c. 50 burrows, some in use, 3 eggs, 5 cat-killed ads, early Dec 1982; further w near Pinnacles, 20 burrows, some used earlier that season, 12 cat-killed ads, late Apr 1983; Rangaika Reserve, group of 12 abandoned burrows at top of bluff, 24/4/83; beside columnar basalt cliff (south of Owenga), 8 burrows, 2 corpses (1 fledgling), 25/4/83; Cape Fournier-Pinnacles, c. 90 burrows possibly in use, 15 cat-killed corpses, 12-16/11/85; Tuku Valley light, occasionally seen, heard and caught, Nov-Jan; Awatapu w headland light, late Sep-end Nov 1984, only 1 seen, 20/11/84 (AJDT). Often b-c.

Short-tailed Shearwater *P. tenuirostris* CH, b-c Nov-Apr, 1970 (Veitch 1980); 4, 1977 (Veitch 1979); 2, 1979 (Veitch 1981); 2, 1983 (Powlesland 1985); 1984 (Powlesland 1986).

Fluttering Shearwater *P. gavia* CH, south of Pt Durham, 4, b-c, 4/2/80 (RNC).

Little Shearwater *P. assimilis elegans* Breeding SK, probably LM. SK, pair in burrow (229, 236 g, fresh plumage, incubation patches downy), 14/7/75; much aerial calling before dawn, 11/11/77; 2 chicks, c. 20-35 days old, 7/12/82; 1, c. 50 days, 10/12/82. LM, 1 skeleton, late 1961 (BDB). Pitt Strait, 1 off R, 3/4/81; 3, 8/12/85 (Müller 1989); 1, 7/7/86 (O'Donnell & West 1990). Off The Horns, 3, 6/11/85, e of P, 2, 8-9/12/85; s of RA, 1, 10/12/87 (Müller 1989). CH, Tuku Valley light, 1, caught, 6/11/88; near Green Point, 1, calling in flight along coast, 0120 h, 19/10/87 (GAT). Occasionally b-c.

Common Diving Petrel *Pelecanoides u. urinatrix* Breeding CH (possible), P (possible), RA, S (M), SK, MM, R,H. RA, chick in nest where Chatham Petrels bred previous two summers, 26/11/81. CH, s and sw coasts, birds calling in flight at night heard at every camp, throughout year, but no confirmed burrows, except 1 near Tuku mouth in 1970 (DEC). Tuku Valley light and Awatapu w headland light, often heard whenever operated, less often seen or caught. Often seen in coastal waters but numbers variable, sometimes numerous. Occasionally b-c.

Grey Petrel *Procellaria cinerea* Off Point Gap (CH), 1, 5/12/85; TP, 1, 8/12/85 (Müller 1989). Pitt Strait, 1, 15/7/86 (O'Donnell & West 1990). CH, Taupeka-Matarakau, 1, b-c, 19/5/76 (DEC).

Westland Petrel (WP) *P. westlandica* / White-chinned Petrel (WCP) *P. aequinoctialis* Between P and RA, 2 together, 13/7/75; Pitt Strait, 2, 6/10/81; 3, 24/1/85 (O'Donnell & West 1990); 1 probable, 15/1/91 (AJDT). CH, 1, WCP, b-c, Long Beach, 3/12/85; 1, WCP, b-c, n of Owenga, 6/12/85; off

Point Gap, 2, 9/11/85 (Müller 1989). Many, both species, off sw CH, early Dec 1987 (Clark 1989); 2 WP, 4 WCP at trawler off Owenga, 11/12/87 (Müller 1989). CH, Tuku Valley light, 1, WCP, caught, 2/1/84 (DEC).

Kerguelen Petrel *Lugensa brevirostris* CH, s of Red Bluff, 1, b-c, 19/9/81.

Cape Pigeon *Daption capense* Breeding FF, possibly S and TP (Clark 1989); breeding proved 1987. FF, 5-10 close inshore, 1 landed briefly or flew off cliff, 2/12/83. Pitt Strait, common, feeding on dead sheep off M, 16-22/8/68 (DVM). Seen inshore in small numbers throughout year, since c. 1985.

Antarctic Petrel *Thalassoica antarctica* CH, Long Beach, 1, b-c, 12/10/87 (SDC).

Antarctic Fulmar *Fulmarus glacialisoides* S (B,M), 1, flying between islands and about s end of S (B), 3/9/75 (CJRR). CH, Waitangi-Red Bluff, 1, b-c, 1/1/78 (DEC); Long Beach, 1, b-c, 3/12/85; 1, b-c, 12/12/85; 1, b-c, 7/12/87 (Müller 1989); near Point Gap, 1, b-c, 15/10/87 (AJDT); 1, b-c, 1/11/87 (AL); Keckerione Beach, 1, b-c, 16/1/88 (PRM).

Southern Giant Petrel *Macronectes giganteus* CH, w of Okawa Point, 1 (white phase), probably others among 800+ Giant Petrels scavenging Sperm Whales *Physeter macrocephalus*, Oct 1961 (BDB). Pitt Strait, 1, 11/12/87; off Owenga, 2, 11/12/87 (Müller 1989).

Northern Giant Petrel *M. halli* Breeding S (B,M), FF; 336 nests on S(M), 10/9/76, but productivity low in 1975 and 1976 (CJRR). Regularly patrol inshore of main islands: CH, seen feeding on carcasses of sheep on shore; on 30 stranded Sperm Whales, Oct 1961 (BDB); on dead sheep off M, 16-22/8/68 (BDB); on stranded Pilot Whales *Globicephala melaena*, 11/10/84, Nov 1984 (AJDT). SK, 11, attacking NZ Fur Seal *Arctocephalus forsteri* that had been mortally wounded, probably by a shark, 9/12/82. Pitt Strait, 1, harrying fledgling Sooty Shearwater, 30/4/93.

Fairy Prion *Pachyptila turtur* Breeding S (B,M), SK, MM, M, LM, K, R. Cyclic in abundance outside breeding season (Mar-Sep), e.g., M, very few 20-23/7/75, abundant 24/7/75. R, first eggs laid by 31/10/80; 2, about to lay, 5/11/80; trematode anklets (Imber 1984) on c. 60%, early Nov 1980; many, visiting, 5-8/4/81. S(M) chick fledged end Jan 1974 (CJRR). CH, Tuku Valley light, frequent, late Oct-Nov; Awatapu w headland light, often flying over, 4 caught, late Oct-Nov 1984 (JAW; Gaze 1986). Uncommon in inshore waters, except about dusk and dawn. Often b-c.

Chatham Fulmar Prion *P. crassirostris pyramidalis* Breeding FF, TP. FF, collected for MoNZ, 1974 (CJRR); many incubating, in groups on ledges in rock, in rock niches, and in burrows, 2/12/83. TP, on eggs, 2/11/74 (CJRR); 7, incubating in rock crevices or under rocks, 2/12/87 (Tennyson *et al.* 1993). Between CH and FF, many, 2/12/83.

Antarctic Prion *P. desolata banksi* CH, Tuku Valley light, 1, caught, Jan 1975. SK, 1, skua-cast skull, 11/11/77. H, 1, caught, non-breeding (downy incubation patch), 22/1/79. M, 1, skua-cast skull, 28/11/87 (AJDT).

Broad-billed Prion *P. vittata* Breeding CH, P, RA, S(M), SK, MM, M, LM, K, R, H, B. P, flying to cliffs and cave w of Flowerpot, 6/4/67

(BDB). Cyclical during non-breeding season (Feb-Jul), e.g., RA, very few, 9-10/7/75; some, 11/7/75; huge numbers, 12-13/7/75; few, 14-17/7/75; huge influx, 18-19/7/75; abundant 22/4/93; few, 23/4/93; none, 24-25/4/93; some, 26/4/93; huge numbers, 27-28/4/93; fewer, 29/4/93. H, 2, ready to lay, 30/8/80. R, small chicks, 31/10/80. S(M), egg laid 11/9/76, 1-2 week chick 25/10/73 (CJRR). Stack off Cascades, 15 burrows, 11/4/81 (DC). CH, columnar basalt cliff (s of Owenga), several burrows on ledges, 15 cat-killed ads at top, 25/4/83; point at w end of Awatapu slump, 10 recently cat-killed ads, 7/4/84; similar remains often found all along s and sw coasts; Tuku Valley light, always common when operated, Aug-May; Awatapu w headland light, common, late Sep-end Nov 1984. B, c. 18 chicks, 23/11/83 (GM, AM). Not often b-c.

Blue Petrel *Halobaena caerulea* CH, Long Beach, 1, b-c, 30/4/77 (BDB), 2, b-c, 19/9/81.

Black-winged Petrel *Pterodroma nigripennis* Breeding RA (Merton 1984; Nilsson *et al.* 1994), M, possibly SK. Earliest recorded return to colonies, 10-20 at summit of RA, 17/11/77 (Imber 1978). H, calls heard from flying bird, 2-8/1/79. CH, Tuku Valley light, 1, caught, Jan 1975; 1, seen, 4/1/79; 1, seen, 24/11/83 (flying n at great height). M, 16 burrows found, only 2 downy chicks survived to 23 Mar (Tennyson 1991). SK, a few seen or heard every night, 5-10/12/82. FF, pair collected (MoNZ) from nest in crevice, no egg, 19/2/74; skeleton (MoNZ), from skua midden, 19/2/74 (CJRR). No sightings over surrounding seas; closest pelagic records (Jenkins & Cheshire 1982) indicate that feeding places to n. CH, Long Beach, 1, b-c, 14/5/76 (DEC). Numbers found killed annually by Brown Skuas on RA, M, and SK (see also O'Donnell & West 1990), and by feral cats on P at Rangiauria (Jenkins & Cheshire 1982), far exceed probably meagre annual production of fledglings; most are probably immigrants to Chatham Islands (see also Tennyson 1991).

Chatham Petrel *P. axillaris* Breeding RA (West 1994; Nilsson *et al.* 1994). CH, Tuku Valley light, 1, caught, 26/11/85 (Müller 1989); 1, seen, 9/12/88 (TG); 1, caught, 10/1/92 (DEC). Off RA, 2, 8/12/85; off Cape L'Eveque, 1, 22/11/87 (Müller 1989). TP, 1, to w, 5/12/87; 1 to s, 5/12/87.

Mottled Petrel *P. inexpectata* CH, roadside behind Long Beach, 1, bill deformed, cat-killed, 2/11/77, probably blown ashore previous day by sw gale. Waitangi-Red Bluff, 1, b-c, 13/1/78; Moriori Creek mouth, 1, b-c, 15/1/78 (DEC).

Juan Fernandez Petrel *P. externa* RA, at least 2, prospecting between 1984 and 1990; 1, skua-killed, late 1989 (skeleton in MoNZ) (Imber *et al.* 1991); possibly seen since. M, seen, early 1988.

Kermadec Petrel *P. neglecta* 80 km w of CH, 1, seen, 8/3/75 (Roberts 1977).

Grey-faced Petrel *P. macroptera gouldi* CH, 2, b-c, s of Pt Durham, 11/10/87 (SDC).

Chatham Taiko *P. magentae* Breeding CH (Imber *et al.* 1994a; Imber *et al.* 1994b). None recorded seen at sea, though reported by fisherman (J. Wills) as occasionally seen off sw coast of CH in evening. None found b-c.

White-headed Petrel *P. lessonii* Pitt Strait, 1, 28/11/61 (BDB). CH, n of Owenga, 1, b-c, 6/12/85 (Müller 1989); Long Beach, 1, b-c, 12/10/87 (SDC).

Soft-plumaged Petrel *P. mollis* CH, Tuku Valley light, 1, caught, Nov 1980 (LM). About 90 km ssw of CH, 1, seen, 16/12/87 (Plant 1988).

Leach's Storm Petrel *Oceanodroma leucorhoa leucorhoa*: R, 2, prospecting, 1-10/11/80 (Imber & Lovegrove 1982); not recorded since but R not visited since 3-8/4/81.

Wilson's Storm Petrel *Oceanites oceanicus* Between CH and FF, 1, flying south, 2/12/83. Reported as *O. leucorhoa* in Imber (1990); identification reconsidered after 2 *O. oceanicus* seen among Bounty Islands by MJI and others, 11/12/90.

Grey-backed Storm Petrel *O. nereis* Breeding CH (possibly), RA, S(M), TP, SK, M, R, H, Stack and islet east of H. RA, visiting, 11-19/7/75. H (Plant 1989), 2, caught, still feeding chicks, 1/3/76; some still incubating, 24/1/79; 2, fully-fledged, 2/1/79, 4/1/79; few, visiting, 23/4-4/5/79; none, 23-26/8/80 (full moon), increasing numbers 27-30/8/80; first egg, 26/9/81; fresh eggs, young chicks, 1 with growing quills, 28/11-2/12/81. R, 1 just hatched, 7/11/80, guarded for 3 days; 1 fresh egg, 11/11/80, only one laid 2-11/11/80; few, visiting, 5-8/4/81; some nests pulled open by skuas and chicks eaten, 1980/81 season. S(M), chick just hatched 23/11/73 (CJRR). TP, on eggs, 5/11/74 (CJRR). Stack e of H, 3 chicks, 13/12/83. Islet e of H, several chicks, 13/12/83 (GM). CH, Tuku Valley light, seen or caught all months operated (Aug-May) - commonest bird, with Broad-billed Prion; Awatapu w headland, regular at light, 26/9-29/11/84. Rarely reported over coastal waters, but some few sightings in Müller (1989). None recorded b-c.

White-faced Storm Petrel *Pelagodroma marina maoriana* Breeding RA, S(M), SK, MM, K, R. RA, trematode anklets common, 3/11/77; 1, 20/1/79 (banded Motunau I., North Canterbury (900 km wnw), 7 years before); 1 of 265 banded on 10/2/80, recovered over Peru Current (10°S, 88°W), 22/5/80. S(M), in burrow, 18/11/73 (CJRR). R, laying begun, 31/10/80; 2, about to lay, 1/11/80, 3 on 3/11/80; trematode anklets on c. 90%, early Nov 1980; 1 late (last?) fledgling departed 7/4/81. SK, in 10 burrows, only 3 of 9 eggs being incubated, 10/12/82. CH, Long Beach, 5, b-c, 16/1/82 (DEC). Irregular in coastal waters, Sep-Mar, sometimes numerous.

Black-bellied Storm Petrel *Fregetta tropica* CH, Tuku Valley light, 1, seen, 28/1/79 (CMM); 1, probable, 14/10/87 (GAT).

Sphenisciformes

Yellow-eyed Penguin *Megadyptes antipodes*: CH, near Cape Fournier, 1 ashore occasionally, 1982-1983 (TGH); also reported in 1985 (Müller 1989); possibly subsequently, as well as at RA (Nilsson *et al.* 1994). All records may be of same bird.

Little Blue Penguin *Eudyptula minor* Breeding CH, P, RA, SK, M, H, K. CH, cat-killed remains or feathers in scats - Pinnacles area, 18/10/84; Abyssinia (Tuku Valley), 12/10/85; Tuku lower valley, 29/9/86; The Horns, 17/10/87 (AJDT); lower Moriori Creek-Point Gap, 8, 15-31/10/87 (AJDT),

AL). SK, all over island to summit, on eggs, 9/11/77 (CJRR). Often seen and heard in coastal waters; often b-c.

Eastern Rockhopper Penguin *Eudyptes chrysocome filholi* M, 1, ashore moulting, 28/2-13/3/88 (Tennyson 1994).

Moseley's Rockhopper Penguin *E. chrysocome moseleyi* RA (Moors & Merton 1984). First record for NZ region.

Snares Crested Penguin *E. robustus* CH, 1 banded yearling, ashore, probably moulting, on n coast, 21/2/73 (Robertson 1974b).

Erect-crested Penguin *E. sclateri* RA (Nilsson *et al.* 1994). CH, Long Beach, 1, b-c, Mar 1979 (Veitch 1981).

Pelecaniformes

Australasian Gannet *Morus serrator* MM, local fishermen reported pr with 1 chick, 1983 (TGH). CH, off sw coast, 3, 10/11/85, 26/11/85 (Müller 1989); 2, 27/11/87 (O'Donnell & West 1991). See also Nilsson *et al.* (1994).

Black Shag *Phalacrocorax carbo* Breeding CH; 7 colonies known (6 at n lakes - Kaimoumi, 43 nests; Kaipakau, 68 nests; Wharo, 24 nests; Rotokawau, 11 nests; small lake se of Rotokawau, 14 nests; Rangitai, not observed - all counts late 1961 (BDB)); also small colony at Lake Matangirau, sw CH. Te Whanga lagoon, 459, 22/11/88 (O'Donnell & West 1990).

Chatham Shag *Leucocarbo onslowi* Breeding CH, SK, R. CH, Manukau Point (80 nests), Okawa (c. 68 nests), Matarakau (c. 50 nests), Nga-toka Turua (c. 37 nests), Whangamoe (5 nests), Weeding Point (10 nests), 21/9-25/10/61 (BDB); Motuhinahina I in Te Whanga lagoon (40+ nests), c.1986 (R. Chappell, pers. comm.). Manukau Point colony subsequently moved close to Cape Fournier; population accessible, particularly exposed to disturbance. Cape Fournier, 2 groups - 20+, 30+ nests, 1966/67 (BDB); 45 nests, 16/11/85 (Müller 1989); colony abandoned by 1988, possibly through predation and disturbance. Pinnacles, w of Cape Fournier, new site occupied by 1993 (BDB). SK, 358 nests with eggs or chicks 10-11/11/77, 1 with 3 chicks, 1 with 4 eggs (CJRR); 2 former colonies on n side and in nw bay invaded by expanding Fur Seal colony, displaced shags nesting at new site further w, 4/12/87. R, colony on detached rock, 1967 (BDB); on top of island, c. 80 nests, 2 groups, up to 3 eggs/nest, 31/10/80. CH, feeds in Te Whanga lagoon as well as in coastal waters (BDB); 184, Te Whanga lagoon, 22/11/88 (O'Donnell & West 1990). S(M), mainly immatures, regular visitors, summer 1974 and 1975, occasionally roosting for hours (CJRR).

Pitt Shag *Stictocarbo featherstoni* Breeding CH, P, RA, S(B,M), SK, M, LM, TP, MM, R, The Castle. Less colonial than Chatham Shag. CH, Opotango (16 nests), Te Whakaru (3 nests), Owhiro (5 nests), Rangikapua (15 nests), Okawa (16 nests), Matarakau (13 nests), Cape Young (26 nests), Waikauia (not counted), Tamehapu (possibly), Webb Point (2 nests), 30/9-25/10/61 (BDB); Tuku R mouth, 7 nests, 13-15/10/87 (AJDT). S(M), gathering nest material 30/8/75, with full crests, on eggs 10/9/76, naked chicks 26/10/73 (CJRR). SK, scattered nesting groups, some chicks with feathers and down, 9/11/77 (CJRR). RA, 18+ nests, 23/11/61 (BDB). CH, Te Whanga lagoon, 19, 22/11/88 (O'Donnell & West 1990).

Frigate Bird *Fregata* sp. CH, n of Otawae Pt, 22/11/85, 1, flying, probably *F. ariel* female (DAL); *F. ariel* female, no other data (Oliver 1930).

Charadriiformes

(Suborder Lari)

Brown Skua *Catharacta skua lonnbergi* Breeding RA, SK, FF, S, M, LM, R, TP, MM. R, 1 pr, 2 eggs, 31/10/80. FF, 1 pr only, 19/2/74 (CJRR); only 1 pr or trio, 1 egg, 2/12/83. RA, present throughout year, fewer during winter (Young 1977, 1978, 1988; Hemmings 1989, 1990). S(M), only 1 pr breeding, 1973-1976 (CJRR). SK, 15 territories, 14 with 2 ads, 1 with 3, 10/11/77, most nests 1 egg, density higher than RA; midden remains cleaner than on RA (CJRR).

South Polar Skua *C. maccormicki* S(M), band only of chick banded at Cape Crozier, Antarctica found in Northern Giant Petrel nest, 1973 (CJRR).

Arctic Skua *Stercorarius parasiticus* Probably regular, scarce summer visitor; usually harries White-fronted Terns. CH, Waitangi to Cape L'Eveque, 4 (2 dark, 2 pale), 9/11/61 (BDB); Te Awapatiki, 2, near tern colony, 20/11/78; Manukau Reef, 1, 12/2/79 (Sibson 1979); off Cape Fournier, 2, 16/11/85; off Maunganui Beach, 1, 1/12/85; n of Owenga, 1, 6/12/85; near Round Island, 1, 8/12/85; 2, 9/12/85 (Müller 1989); off Point Gap, 1, 17/11/87; off M, 1, 22/11/87; Te Whanga lagoon, 1, 3/12/87; bay off Waitangi, 1, 7/12/87; n of RA, 1, 11/12/87 (Müller 1989); Pitt Strait, 1, 11/12/87 (Müller 1989). Phase ratio 5 dark : 7 pale. South of P, 1, probably this sp., 6/2/85; 2, probably this sp., 9/2/88 (AJDT).

Pomarine Skua *S. pomarinus* TP, 2, just n, Mar 1972 (BDB).

Black-backed Gull *Larus dominicanus* Breeding CH, P, TP, FF, RA, SK, H, K, R, B, probably on other islands and stacks, numbers generally low. Scavenges widely from fishing and farming industries. SK, 3 nests, ads, 1 2-year-old, 9/11/77 (CJRR). TP, 4 ads and 2 juvs, 21/2/74 (CJRR). FF, 12 ads, 6 juvs, 19/2/74 (CJRR).

Red-billed Gull *L. novaehollandiae scopulinus* Breeding CH, M, RA, S(M), TP, H, SK, possibly on other islands and stacks, numbers low. S(M), copulation, egg-laying, 11-16/11/73; eggs to flying young, 21/1/74 (CJRR). FF, present, 19/2/74 (CJRR). SK, scattered nests, associated with Chatham Shag colonies, 9/11/77 (CJRR).

Caspian Tern *Sterna caspia* CH, 1, in bay off Waitangi, 7/12/85 (Müller 1989).

White-fronted Tern *S. striata* Breeding CH, RA, M, SK, S(M), MM, TP, H, possibly others. H, colony of 100+ prs on rock platform, 40 chicks banded, Jan 1979; c. 100 roosting (no bands), 24/9/81. RA, 120 chicks banded, late Nov 1977. None seen late Apr-early May 1979, late Apr 1993, Jul 1975 (absent from Chathams late Apr-early Aug). H, small numbers roosting, last week Aug 1980. S(M), on eggs 14/11/73, eggs to flying young 17/1/74 (CJRR). TP, isolated nests only, 4/11/74 (CJRR).

Arctic Tern *S. paradisaea* CH, Long Beach, 1, worn non-breeding plumage, b-c (skeleton in MoNZ), 29/1/75.

DISCUSSION

The 62 species known in the Chatham Islands seabird fauna consist of 43 procellariiforms, 5 penguins, 5 pelecaniforms, and 9 Lari. There are 24 breeding species, 14 regular visitors, 13 stragglers; 2 are only rarely seen on passage, and 9 have been found only as beach-cast or other remains. All of the latter might be expected eventually to be seen alive at the Chatham Islands.

Of the 38 regular or rare visiting species, 22.5 (the 0.5 is the Eastern Rockhopper Penguin) have a normal range to the south of the Chathams, 8 are from the north, 2 or 2.5 from the east, and 4 or 4.5 from the west (depending on whether Moseley's Rockhopper Penguin came from the Atlantic or Indian Oceans). The Arctic Tern could have come from any of several directions. Of those from the north, only two (Kermadec Petrel, Frigate Bird) come from warm, subtropical areas.

Eight species or subspecies are largely or entirely confined as breeders to the Chatham Islands: Northern Royal Albatross; Chatham Mollymawk; Northern Buller's Mollymawk; Chatham Fulmar Prion; Chatham Petrel; Chatham Taiko; Chatham Shag; and Pitt Shag. Among Southern Ocean archipelagoes, this is a relatively high number of endemic seabirds. Such a level of endemism might be attributed partly to the variety and vastness of marine and brackish habitats at and around Chatham Islands, partly to the archipelago's proximity downwind of, yet isolated from, New Zealand with its abundant seabird fauna, and partly to the position of the islands on the Subtropical Convergence and far enough north to be relatively isolated from the main circumpolar west wind zone.

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