

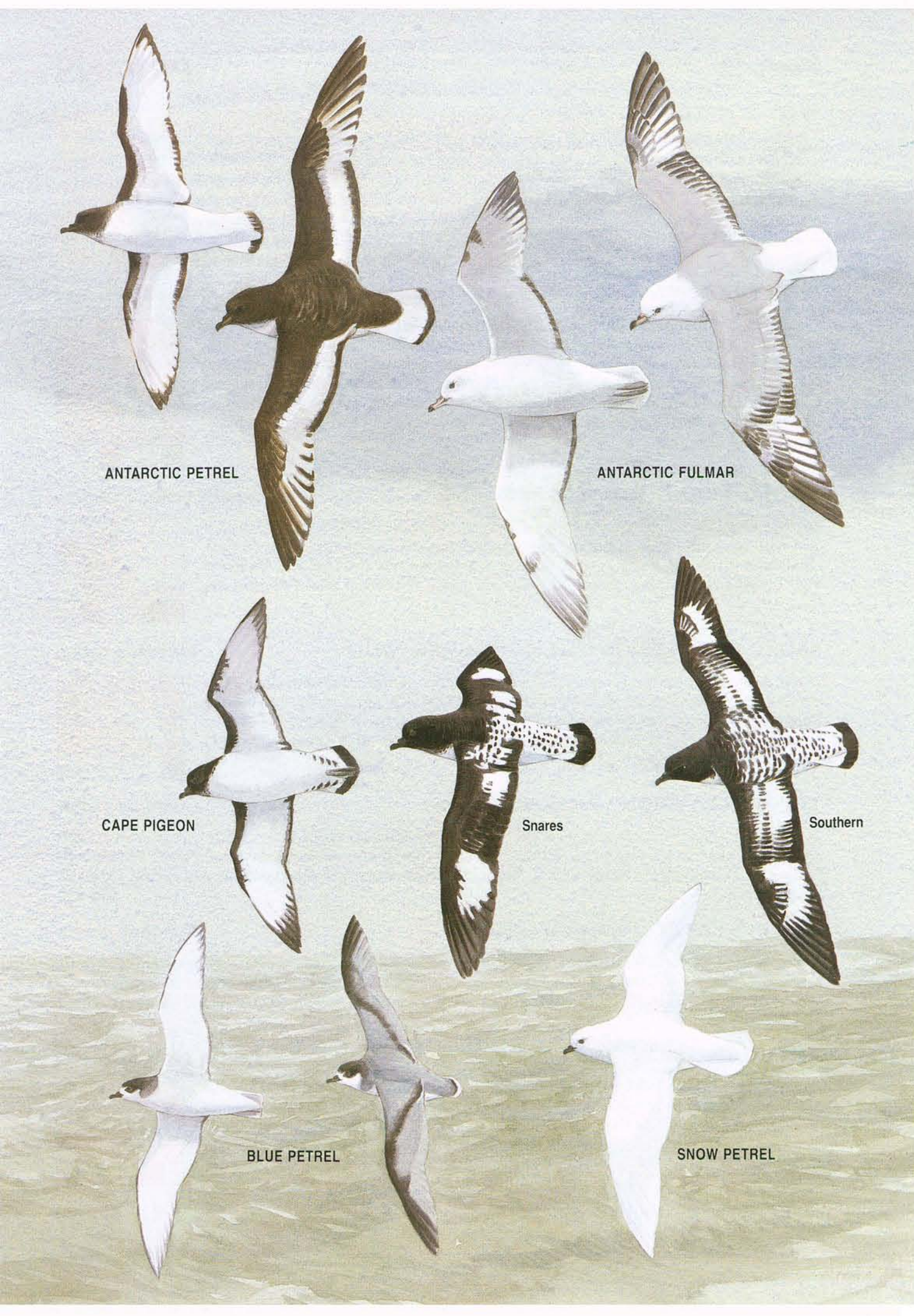
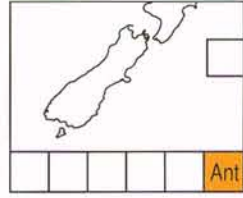
Plate 11 FULMARINE PETRELS and BLUE PETREL

A diverse group of distinctive medium to large seabirds. Sexes alike. Most breed at high latitudes and lay 1 white egg, mostly in a scrape on ledges, in crevices or rockfalls; the exceptions being giant petrels (Plate 6), which lay in a cupped mound, and Kerguelen Petrels (Plate 15), which nest in a burrow.

SNOW PETREL *Pagodroma nivea*

Locally common native

35 cm, 325 g. All white. Bill narrow (22 x 11 mm), black; legs and feet black. Flight erratic with short, rapid wingbeats. **Habitat:** Breeds circumpolar coast of Antarctica; in NZ region, at Balleny Is (Greater Snow Petrel *nivea*) and around Ross Sea (Lesser Snow Petrel *minor*). Ranges through southern oceans but never confirmed as far north as NZ mainland. **Breeding:** Nov–Apr.



SHEARWATERS, FULMARS, PRIONS and PETRELS

Procellariidae

The Procellariidae is the largest and most diverse family of seabirds, with about 72 species. In the New Zealand region, 49 species have been recorded, including 11 endemic species and 23 other breeding species.

The Procellariidae includes a wide variety of seabirds from the giant petrels to the diving petrels. All have distinctive external nostrils encased in a tube on the top or sides of the bill. They have 11 primaries. The 11th (outermost) is minute, but the 10th is at least as long as the 9th, giving the wing a pointed tip. All seabirds have webbed feet with three forward-pointing toes of about the same length.

Most species nest in burrows or crevices, normally clumped into colonies. Birds return

being chilled for six days. Incubation stints shorten as incubation proceeds, and when the egg hatches the downy chick is brooded and guarded for only a few days in hole-nesting species, but for several weeks in surface-nesting species, until it is able to maintain body temperature.

Throughout its development, the chick is fed large meals at irregular intervals. It gains weight rapidly, becoming much heavier than its parents, but this declines towards adult weight before it fledges. Chicks normally spend some time on the surface exercising their wings before they eventually leave the colony. Once they have flown, they are completely independent of their parents. Young birds usually return to their home colony at 2–7 years old, and spend several years visiting the colony, especially when breeders are incubating or feeding chicks, before attempting to breed. The Procellariidae are typically long-lived, with several species known to live over 25 years.

Most species now breed only on offshore and outlying islands because mainland colonies have been ravaged by introduced mammalian predators. They generally return to their colonies at night, and once on land they are clumsy and unable to take flight rapidly; their only defence is by biting or by spitting stomach oil. The nestling is particularly vulnerable to predators because it is often left unattended for long periods while the parents feed at sea and it emerges from the nest at night to exercise its wings in the week or two before it can fly.

The Procellariidae feed on a wide variety of sea life, ranging from some of the prions, which sieve zooplankton on comb-like lamellae along the edge of their bills, to the giant petrels, which scavenge on dead marine mammals and occasionally kill small seabirds. Most species feed within a few metres of the sea surface, but some shearwaters dive to at least 20 m. These shearwaters have well-developed nasal glands for extracting salt from their blood and exuding it out of the prominent nostrils.

The shearwaters (*Calonectris*, *Puffinus*) include about 15 medium to large species with long slender bills and flat nasal tubes. They

to their colony months before egg-laying to claim their nest sites (usually the same site is used year after year) and to court. After copulation, females leave the colony for one to six weeks on a 'pre-laying exodus' to form the egg. Males also leave but often make occasional visits to the nest site.

All species lay one white egg, which is very large relative to the female's size. The few instances of two eggs in a nest are from two females using the same site. A long incubation period is typically split up into several incubation stints lasting from several days to several weeks between changeovers. Occasionally the changeovers do not coincide and the egg is left unattended for several days; however, eggs have hatched successfully after

are usually brown to black above and white or brown below. Some have large sternums and dive well for fish and squid, using their wings for propulsion, while others have small sternums and feed on, or close to, the surface.

The four species of diving petrel (*Pelecanoides*) are small, stocky black and white seabirds with short wings adapted for propulsion under water. They have a fast, direct, whirring flight and readily dive for small krill and copepods.

The four species of *Procellaria* are large stocky seabirds with large, heavily hooked pale bills with dark markings and prominent nostrils. They feed mainly at night on bioluminescent squid but also now take offal discarded from fishing boats.

The three species of *Pseudobulweria* are medium-sized seabirds with exceptionally large feet and a notch on the cutting edge of the upper bill caused by the latericorns having blunt ends.

The fulmarine petrels (*Lugensa*, *Pagodroma*, *Daption*, *Thalassoica*, *Fulmarus* and *Macronectes*) are a diverse group of 8 species, all of which have robust bills with prominent joined nasal tubes, rising from the base.

The six species of prion (*Pachyptila*) are small seabirds pale blue above and white below with a prominent M-shaped mark across the upperwings and a dark-tipped tail. Comb-like lamellae on the inside of the bill are used to filter zooplankton.

The single *Halobaena* species looks like the prions but has a white-tipped tail and the upper bill has small tooth-like serrations at the base.

The gadfly petrels (*Pterodroma*) consist of 29 species of highly agile seabirds with long wings and short, laterally compressed black bills with a strongly hooked nail. They feed mainly on squid and small fish.

Reading: Harrison, P. 1987. *Seabirds of the World: a photographic guide*. London: Christopher Helm. Harrison, P. 1988. *Seabirds: an identification guide*. London: Christopher Helm. Imber, M.J. 1985. *Ibis* 127: 197–229. Murphy, R.C. 1936. *Oceanic Birds of South America*. New York: MacMillan. Serventy, D.L. et al. 1971. *The Handbook of Australian Seabirds*. Sydney: Reed. Warham, J. 1990. *The Petrels: their ecology and breeding systems*. London: Academic Press.

37. SNOW PETREL *Pagodroma nivea*

Plate 11

Size: 35 cm, 325 g

Geographical variation: Two subspecies: the Greater Snow Petrel *nivea* breeds on the Balleny Islands in the Ross Dependency and hybridises with the other subspecies at some other colonies, and the Lesser Snow Petrel *minor* breeds widely in Antarctica, including the Ross Dependency.

Distribution: Circumpolar, breeding on ice-free areas of Antarctica and on small islands around the coast, and on southern subantarctic islands in the Atlantic Ocean. Most remain within or close to the edge of the pack ice, and they are rarely recorded north of 55°S. No confirmed records from around the New Zealand mainland.

Population: Abundant, with many colonies, but no data are available on the size of colonies in the Ross Dependency.

Conservation: Protected native.

Breeding: Snow Petrels arrive at their colonies in October and take a pre-laying exodus of

2–3 weeks in late November. Laying is highly synchronous, in the last few days of November and the first week of December. They lay 1 white egg (55 x 40 mm) in a scrape on a ledge, in a crevice or under a rockfall. Eggs hatch in early January after c. 44 days, and the chick is brooded at first but left unguarded from about the fifth day. Chicks fledge in late February and early March at c. 48 days old. **Behaviour:** Breed in scattered colonies, but they are probably forced together by limited sites that are relatively free from snow and ice. At sea, they are usually alone but form small groups at food. They do not normally follow ships. Usually silent at sea, but at their colony they have an aerial display accompanied by a chirring call, and they are very noisy on land with a rapid burst of guttural notes.

Feeding: Diet is mainly squid, fish and krill, mostly obtained from the sea surface, either from the air or while resting on the surface.

In the hand: Snow Petrels show great size variation. Wing length ranges from 240 to 320 mm, with 280 mm being used to separate the two subspecies. At some colonies (e.g. Balleny Islands), all are long-winged, at some all are short-winged, whereas at other colonies (e.g. Cape Hallett) there is a mix of forms, and so two races may be hybridising. Overlapping this racial variation, males are heavier and have longer bills than females.

Reading: Brown, D.A. 1966. *ANARE Sci Rep Ser B* 89: 1–63. Cowan, A.N. 2001. *Notornis* 28: 169–188. Croxall, J.P. 1982. *Notornis* 29: 171–180. Falla, R.A. 1937. *Rep BANZARE Ser B*. Harper, P.C. 1987. *Notornis* 34: 169–192. Jouventin, P. & Voit, C.R. 1985. *Ibis* 127: 430–441. Maher, W.J. 1962. *Condor* 64: 488–499.