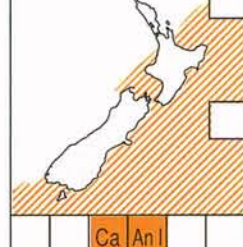


Large heavy-bodied seabirds with robust pale and well-hooked bill; prominent nostrils encased in a tube. Sexes and ages alike. In flight, long glides on stiffly held wings with occasional wingbeats. When windy, soar and wheel in huge arcs. Dive into sea and swim underwater with wings. Generally oceanic; rarely seen near land. Most follow ships and fishing boats. Clumsy on ground; legs and webbed feet set well back. Generally silent over breeding grounds at night, but loud calls and clacks from ground and burrows. Lay 1 large white egg, usually deep in a burrow. Long incubation and fledging periods.

GREY PETREL (Pediunker) *Procellaria cinerea*

Uncommon native

48 cm, 1000 g. Head and sides of face to below eye dark grey; upperparts ashy grey, darker on tail and wings, merging into white underparts without any strongly defined line; dark grey underwings and undertail separate it from large grey and white shearwaters (see Plate 7). Bill stout (47 x 17 mm), greenish flesh with black between plates and on nostrils; legs and feet greyish flesh, darker on outside, yellowish webs. Distinctive albatross-like gliding with rapid duck-like wingbeats. Regularly follows ships and fishing boats. **Habitat:** Breeds circumpolar subantarctic; in NZ region, at Antipodes and Campbell Is. Rarely seen near NZ mainland. **Breeding:** Feb–Nov.



[Sp 31]



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 seabirds 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.

31. GREY PETREL *Procellaria cinerea*

Plates 7 and 10

Other name: Pediunker

Size: 48 cm, 1000 g

Distribution: Circumpolar, breeding on many subantarctic islands, including the Antipodes (Antipodes and Bollons) and Campbell Islands. They range widely over deep water between 25 and 60°S and follow the Humboldt Current to the seas off Peru. Birds from the New Zealand colonies feed mainly in deep water to the east of New Zealand. In summer and autumn, immature Grey Petrels move north off the eastern coast of the North Island, but adults are rarely found north of 45°S. During the breeding season, adult females move further north than adult males, with a winter and spring concentration of adult females in nutrient-rich waters off East Cape and the Gisborne coast. Because Grey Petrels are more common in seas to the east of New Zealand than in the Tasman Sea, the few that are beach-wrecked are mainly on the east coast in summer, when young have just fledged.

Population: Uncommon, with main colonies (100,000+ birds) on Gough Island in the South Atlantic, and in the New Zealand region where there are 10,000–50,000 pairs, mainly on the Antipodes. The colonies on islands off Campbell Island are small, and fewer than 100 pairs remain in the remnant colonies on main Campbell Island.

Conservation: Protected native. At the Campbell Island colonies, almost all chicks are killed by cats and Norway rats. Of greatest concern, however, is that Grey Petrels are

attracted to feed on offal discarded from fishing boats, and because breeding females feed in important fishery areas, they are especially susceptible to being drowned after being accidentally hooked on tuna or ling long-lines. They made up 27% of seabirds reported killed in New Zealand waters in 1988–97. The impact on their breeding populations has not been assessed.

Breeding: No detailed study has been made in New Zealand. The timing of breeding seems similar to that on Tristan da Cunha, with laying in April–June and chicks fledging October–December. They lay 1 white egg (81 x 56 mm) in a burrow 1–3 m long. Eggs hatch after 52–61 days and chicks fledge after 110–120 days.

Behaviour: Breed in loose colonies intermingled with White-headed Petrels on Antipodes Island. At sea, they are often seen alone, but occasionally they form large mixed flocks around fishing boats or feeding whales. They are silent while flying but noisy on land, with two main calls given on the ground and in their burrows: a drawn-out moan, and more commonly, a few wheezy moans followed by loud, far-carrying, staccato bleats.

Feeding: Diet is mostly squid, fish and offal, mainly taken on the surface or by diving from about 3 m.

Reading: Bartle, J.A. 1990. *Notornis* 37: 146–150. Imber, M.J. 1983. *Notornis* 30: 283–298. Jouventin, P. et al. 1985. *Bird Conservation* 3: 181–210. Warham, J. 1988. *Notornis* 35: 169–183. Warham, J. & Bell, B.D. 1979. *Notornis* 26: 121–169.