

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 feet black. Sometimes follows ships and fishing boats. **Habitat:** Breeds circumpolar subantarctic, including Antipodes, Auckland and Campbell Is. Occasionally seen near mainland NZ but mainly ranges to the south and east. **Breeding:** Nov–May.

Flesh-footed Shearwater (see Plate 8)

[Sp 19]

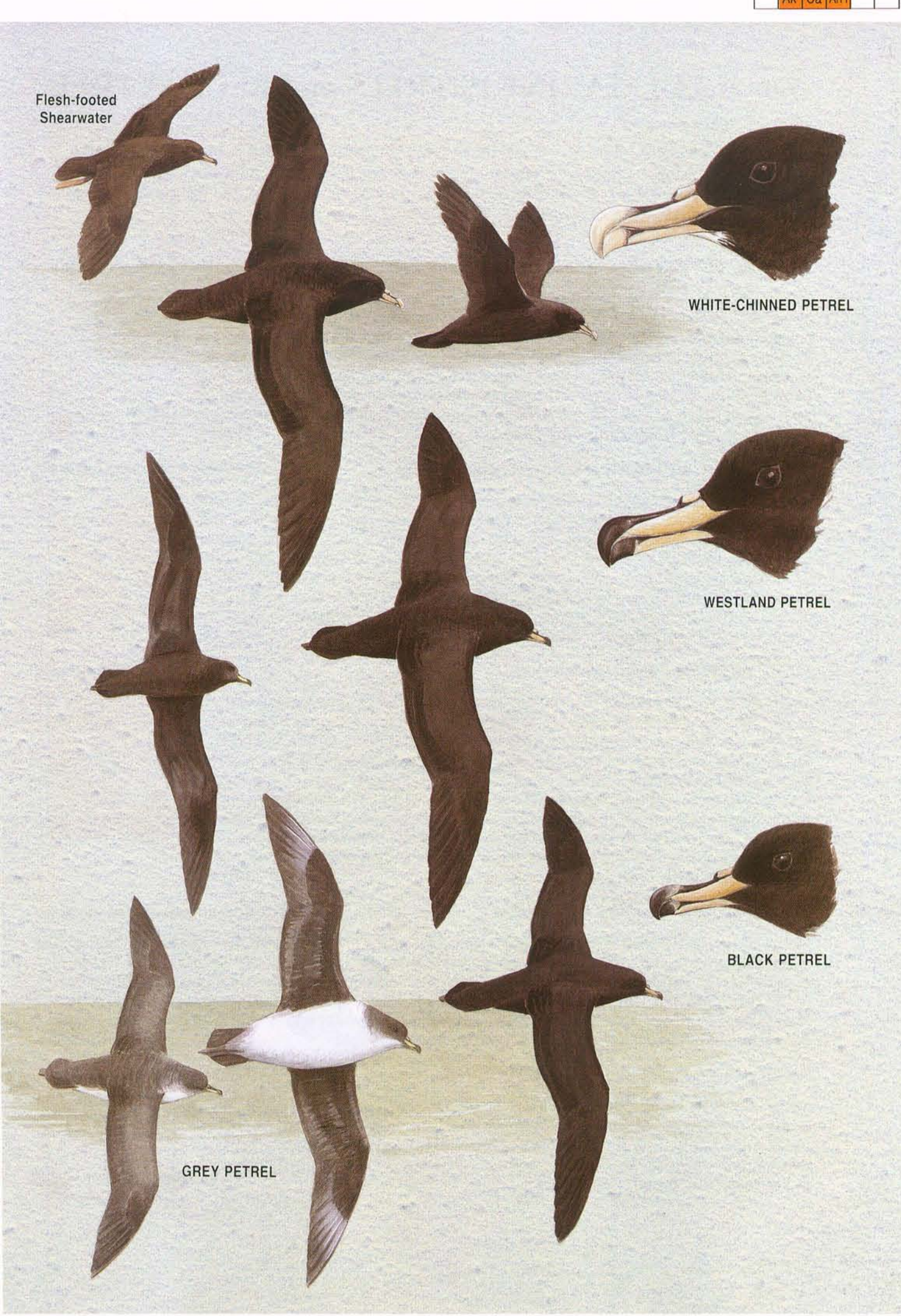
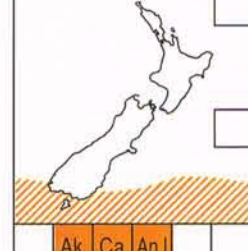
WHITE-CHINNED PETREL (Shoemaker)

Procellaria aequinoctialis

Uncommon native

55 cm, 1250 g. Entirely dark blackish brown except for a variable amount of white feathering on chin. Bill (52 x 21 mm) yellowish horn, without dark tip, but dark nostrils and lines between plates; legs and feet black. Sometimes follows ships and fishing boats. **Habitat:** Breeds circumpolar subantarctic, including Antipodes, Auckland and Campbell Is. Occasionally seen near mainland NZ but mainly ranges to the south and east. **Breeding:** Nov–May.

[Sp 34]



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.

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.

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.

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

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

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.

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.

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.

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.

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.

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

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

34. WHITE-CHINNED PETREL

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.

Other name: Shoemaker

Size: 55 cm, 1250 g

Geographical variation: Two subspecies; only *aequinoctialis* is known from the New Zealand region.

Distribution: Circumpolar, breeding on many subantarctic islands, including Antipodes Island, the Auckland Islands (Auckland, Adams, Ewing, Disappointment) and the Campbell Islands (Dent, Jacquemart and other offshore islets). They range widely over deep water between 30 and 65°S, but to 10°S off the western coasts of South America and Africa. Birds from the New Zealand colonies feed mainly to the south and east of New Zealand; adults feed over continental-shelf waters up to the latitude of Cook Strait during their summer breeding season and North Cape in winter. Immatures are occasionally seen off the coast in all seasons, and are most often beach-wrecked in November–February. Few recently fledged chicks are beach-wrecked, so they may disperse mainly to the south and east.

Population: Abundant, with 1 million+ pairs on each of South Georgia and Kerguelen Islands and large colonies at the Crozet and Prince Edward groups. In New Zealand, 100,000+ pairs on the Antipodes, 100,000+ pairs on Disappointment Island and 10,000 pairs on Monowai Island, off Campbell Island.

Conservation: Protected native. The colony on main Campbell Island has gone because adults were killed by cats, and eggs and chicks were eaten by Norway rats. Trends in New Zealand populations are not known, but they are the second most common petrel caught on tuna long-lines in New Zealand waters, and are also caught frequently on the high seas and off Australia and South America. They are sometimes drowned in trawl nets.

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.

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Reading: Hall, A.J. 1987. *J Zool (Lond)* 212: 605–617. Imber, M.J. 1976. *NZ J Mar Fresh Res* 10: 119–130. Imber, M.J. 1983. *Notornis* 30: 283–298. Jouventin, P. et al. 1985. *Notornis* 32: 199–210. Powlesland, R.G. 1989. *Notornis* 36: 257–310. Warham, J. 1988. *Notornis* 35: 169–183. Warham, J. & Bell, B.D. 1979. *Notornis* 26: 121–169.

Behaviour: Breed in scattered colonies intermingled with Grey Petrels on Antipodes Island, although some colonies are dense warrens of burrows. At sea, they are usually alone but occasionally form small groups at food and sometimes follow ships. They return to their colonies in the late afternoon and circle in loose flocks. Some land in daylight, but most visits are at dusk or after dark. At the colony, they are silent in the air but very noisy on land, with two main calls given on the ground and in their burrows: a succession of clacks or rattles (apparently the origin of the sealers' name 'shoemaker') and a harsh groan or squeal.

Feeding: The diet of three birds from the Auckland and Campbell Islands included squid, salps, crustacea and fish. Most prey is taken on the surface, by diving from the surface or by diving from just above the water.

Breeding: Summer breeders; eggs are laid from late November to December. They lay 1 white egg (82 x 55 mm, 135 g) in a burrow 1–2 m long. The burrow is sometimes quite wet, but the nest itself remains dry because it is on a raised pedestal. Eggs hatch from late January to February after 57–59–62 days. Chick are brooded initially but left unguarded from about the fifth day, and then fed at intervals of 1–6 days. Chicks fledge in April–May after 87–97–106 days.

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