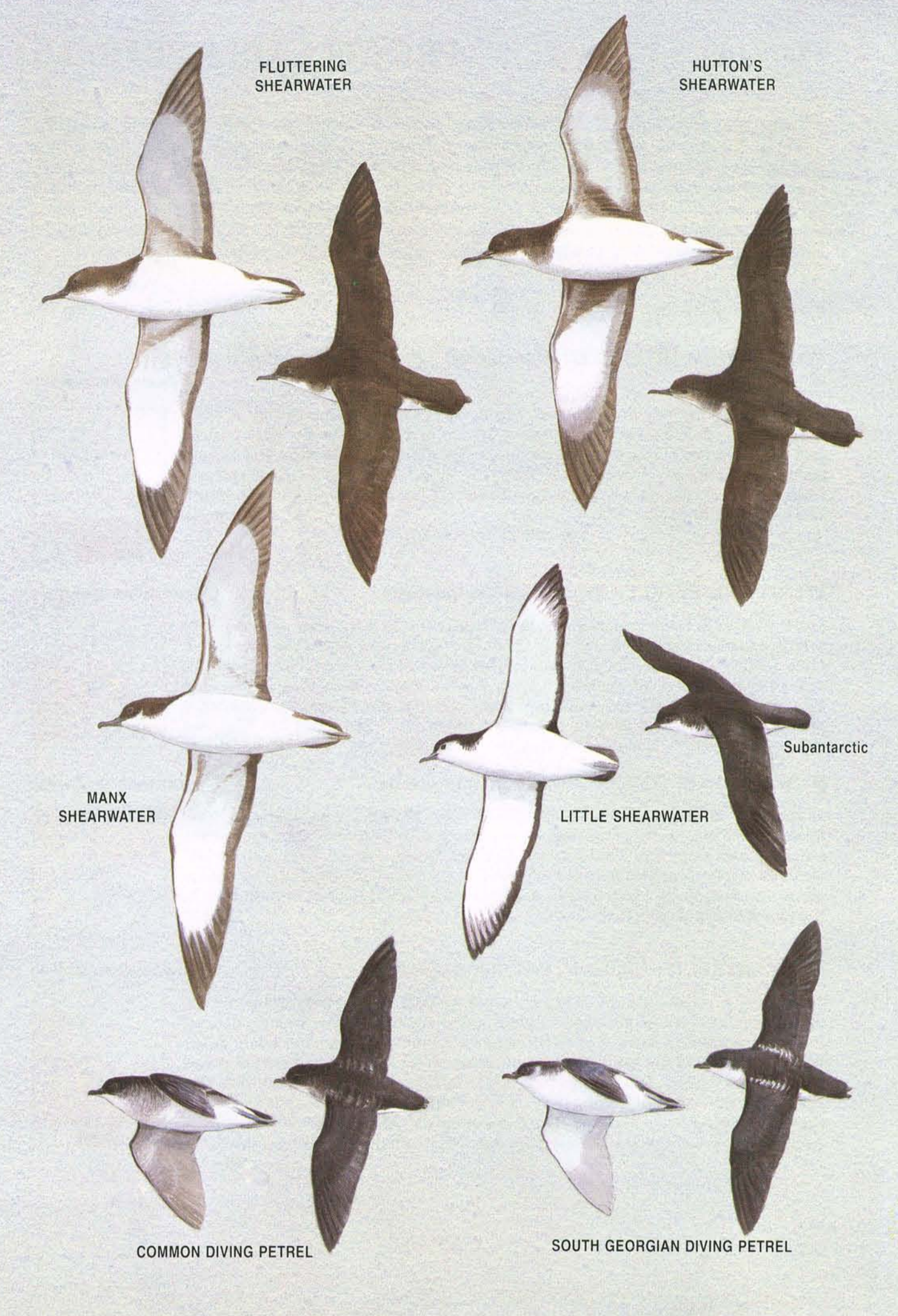
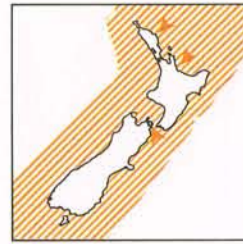


Medium to large seabirds with long slender bill and nostrils encased in a short flattened tube. Sexes and ages alike; most are dark above and mainly white below, but some are all dark. Many species form large feeding flocks. Usually fly close to the surface, often with a series of rapid wingbeats followed by a glide, but in windy conditions can wheel high on stiffly held wings. Clumsy on ground; legs and webbed feet set well back. Range from coastal to oceanic. Some species are highly migratory. Most species very vocal at breeding colonies at night. Lay 1 large white egg, usually deep in a burrow. Long incubation and fledging periods.

FLUTTERING SHEARWATER (Pahaka) *Puffinus gavia*

Abundant endemic

33 cm, 300 g. Head to below eye, upperparts and thigh patch dark greyish brown merging into white underparts and flank patch; faintly mottled partial collar; underwings white with brownish borders and dusky-grey armpits. Bill fine (33 x 9 mm). Like Hutton's Shearwater at sea but smaller; paler underwings. In hand, sides of undertail coverts white. Main call at colony a rapid staccato 'ka-how ka-how ka-how ka-how kehek kehek kehek-errr'. **Habitat:** Breeds on many islands around North I and Cook Strait. Flocks common in coastal waters and harbours; some, especially juveniles, visit Australian waters in non-breeding season. **Breeding:** Sep–Feb. [Sp 26]



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

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

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

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.

26. FLUTTERING SHEARWATER *Puffinus gavia* Plate 9

Other name: Pakaha
Size: 33 cm, 300 g
Distribution: Breed only in New Zealand, on many islands and islets along the northeastern coast of the North Island from the Three Kings Islands to islands near Gisborne, and on islands in the Marlborough Sounds. In spring and summer, they are in inshore waters close to their breeding colonies, but in autumn and winter, they range over continental-shelf waters, inshore waters and harbours, as far south as Foveaux Strait. In autumn, many fledglings migrate to the southeastern seaboard of Australia, from South Australia to Queensland, and stragglers have been recorded from New Caledonia and Vanuatu. Most return in July–August, when often found beach-wrecked. Subfossil and midden remains from North, South and Chatham Islands suggest a wider breeding distribution in the past.
Population: A very common shearwater in the Hauraki Gulf, in the Bay of Plenty and in Cook Strait. The total is 100,000+ breeding pairs, with the largest colonies being on the Three Kings Islands, Channel Island, the Aldermens and the Trio Islands.
Conservation: Protected endemic. Chicks were harvested by Maori until legal protection in 1953. Numbers of Fluttering Shearwaters have declined with the spread of predators

such as cats and rats to headlands on the mainland and to offshore islands. The colonies on Little Barrier, Cuvier and Motuhora (Whale) Islands were destroyed by cats and rats, and within the Mercury Group, Fluttering Shearwaters are common only on islands free of Pacific rats. Efforts to eradicate mammalian predators from offshore islands will undoubtedly benefit small seabirds such as the Fluttering Shearwater.
Breeding: Some birds visit their colonies throughout the year. Most return to their colonies on forest- or scrub-covered islands in August to court and clean out their burrows. Eggs are laid from early September to mid-October. They lay 1 white egg (57 x 40 mm) in a burrow 0.5–1 m long, or occasionally in a crevice or among rock-falls. Eggs hatch in November and chicks fledge in late January and early February.
Behaviour: Breed in dense or scattered shearwaters, often interspersed with other seabirds, especially Diving Petrels, Little Shearwaters, Grey-faced Petrels, and Fairy Prions in Cook Strait. At sea, Fluttering Shearwaters are sometimes found in flocks of up to 20,000 birds while feeding, roosting or on passage. When feeding they occasionally give a soft chattering cackle, but when they are circling their breeding colonies they are

very noisy with rapid, staccato two-syllable calls, with much variation on the main call: 'ka-how ka-how ka-how ka-how, kehek kehek kehek kehek - errr'.

Feeding: Diet is mostly small fish and krill, taken mainly by plunging from a few metres above the surface or paddling slowly forwards searching with their head submerged, then diving with their partly opened wings used for propulsion.

In the hand: Fluttering Shearwaters can be

separated from Hutton's and Manx Shearwaters on measurements and on undertail and underwing colours. Bill length is 28–33.5–37 mm and wing length is 190–210–225, the side feathers of the undertail coverts are normally white, the longest undertail do not reach the trailing edge of the wing and are light buff-grey, squarish-ended and white-tipped, and apart from the dark leading edge the underwing is mainly white.

Reading: Edgar, A.E. 1962. *Notornis* 10: 1–15. Powlesland, R.G. & Pickett, C.R. 1992. *Notornis* 39: 27–46.