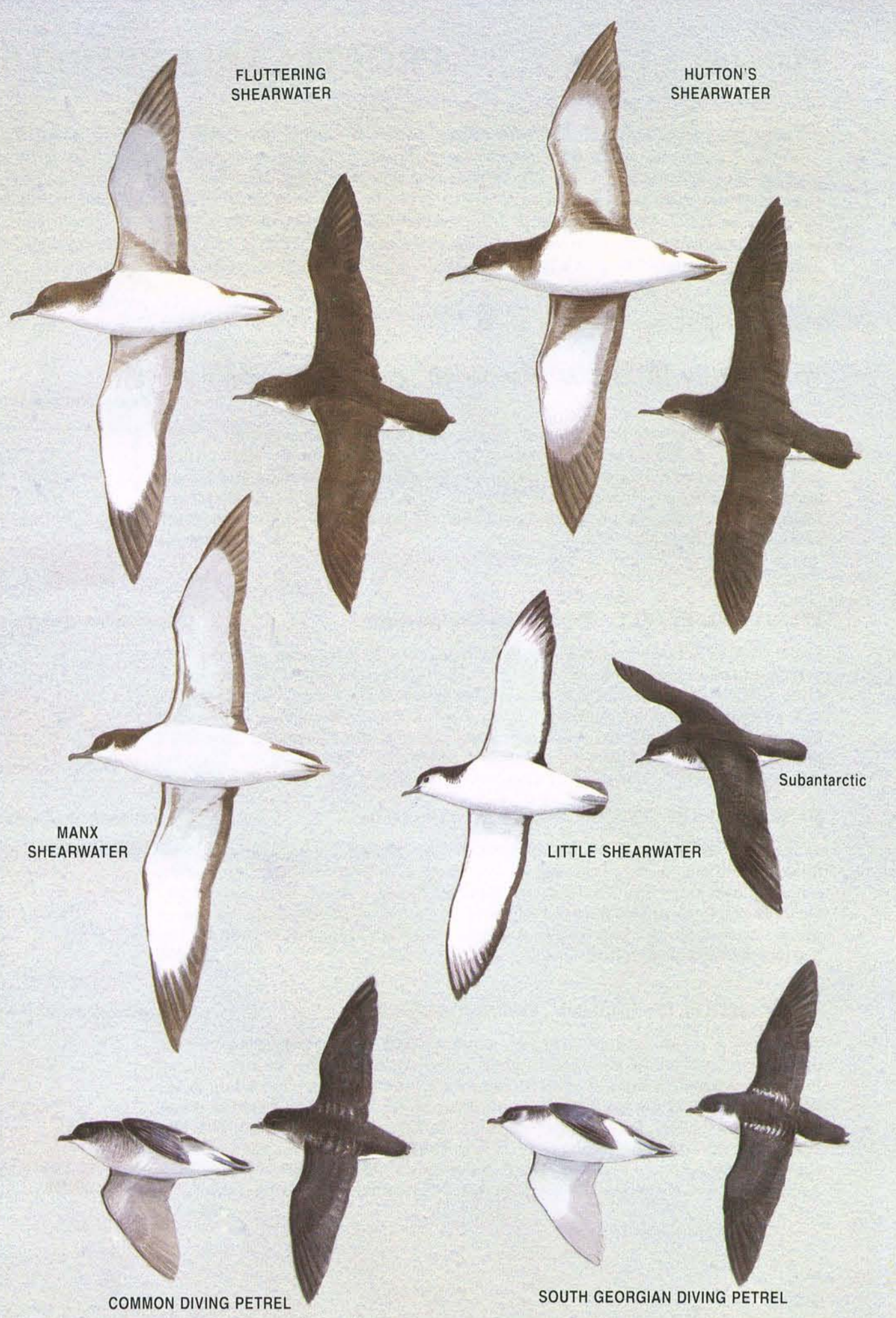
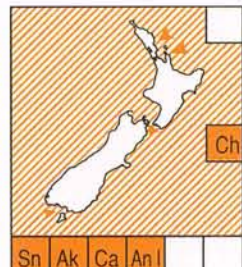


Diving petrels are small stocky seabirds with short broad wings, short wide bill and paired nostrils opening upwards; blue legs. Sexes alike. Fast whirring flight close to the surface. Generally coastal. Do not follow ships or trawlers. Noisy at night over and at breeding colonies.

**COMMON DIVING PETREL (Kuaka) *Pelecanoides urinatrix* Abundant native**

20 cm, 130 g. Upperparts black; sides of face, neck and throat mottled grey; underparts white but underwings smoky grey. Bill stubby (16 x 8 mm), black; blue legs and feet. Like South Georgian Diving Petrel at sea but underwing darker. In hand, underwing coverts greyish brown, inner webs of 3 outer primaries dusky brown, and septal process near base of nostril. **Habitat:** Breeds circumpolar subantarctic. Main NZ sites off eastern North I, Cook and Foveaux Straits, Chatham Is, The Snares, Antipodes and Auckland Is. **Breeding:** Aug–Feb. [Sp 29]



**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 enclosed 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.

**29. COMMON DIVING PETREL *Pelecanoides urinatrix* Plate 9**

**Other name:** Kuaka

**Size:** 20 cm, 130 g

**Geographical variation:** Four subspecies, two of which breed in the New Zealand region: Richdale's Diving Petrel *urinatrix*, and the Subantarctic Diving Petrel *exsul*.

**Distribution:** Circumpolar, breeding on islands between 34 and 55°S and staying mainly in adjacent seas. Richdale's Diving Petrels breed on islands off Tasmania and in Bass Strait; and on many islands from the Three Kings to the Bay of Plenty, off Taranaki, in the Marlborough Sounds, on islands in Foveaux Strait and around Stewart Island, on the Solander Islands, The Snares and small islands in the Chatham. Subantarctic Diving Petrels are circumpolar, breeding mainly in the subantarctic zone, including the Antipodes

and Auckland Islands and on islets off Campbell Island.

Both subspecies are quite sedentary, remaining mainly in seas near the breeding colonies, which they visit occasionally during the non-breeding season. Common Diving Petrels are quite often wrecked on beaches close to breeding colonies with peaks of recoveries in winter and again in early summer, when young have just left the nest. **Population:** 1 million+ pairs. Large colonies are on scattered islands off Northland and in the Bay of Plenty, on Sugarloaf Island near New Plymouth, Brothers and Trios Islands in Cook Strait, on Little East Island in the Chatham, on Little Solander Island, at The Snares, and on the Antipodes. **Conservation:** Protected native. Common

Diving Petrels are vulnerable to predation by introduced mammals and survive best on islands without mammalian predators. They have become extinct or rare on islands with rats or cats, and where grazing mammals accidentally destroy burrows. Recent efforts to eradicate rats from offshore islands will probably benefit Common Diving Petrels. **Breeding:** The breeding season is a couple of months earlier in northern New Zealand than in Foveaux Strait. On Green Island in the Mercury group, Common Diving Petrels return to their colonies from March onwards, with a peak of activity around the end of May to prepare their burrows.

Eggs are laid in August in northern New Zealand, but from late September to early October in Foveaux Strait. They lay 1 white egg (38 x 30 mm) in a burrow 0.25–1.5 m long. Eggs hatch after c. 53 days. Chicks are brooded for 10–15 days and fledge at 45–52–59 days old in late November–December in northern New Zealand, and in January–February in Foveaux Strait. Some young birds return to their natal colony as yearlings but do not start breeding until 2–3 years old. **Behaviour:** Breed in colonies, and at sea they are seen in small groups. They are noisy at their breeding colonies with a variety of calls

given in the air, on the ground and from their burrows. The main calls are a harsh 'kuaka-did-a-did' and 'kuaka' given by females only; 'koo-ah', given by males only. **Feeding:** Diet is mostly small krill and copepod, taken mainly by diving into the sea from a metre or two above the surface, then swimming underwater using their wings for propulsion.

**In the hand:** The two species of diving petrel can be reliably separated only in the hand. The Common Diving Petrel has dusky-brown inner webs on its three outer primaries, not white or very pale grey as in the South Georgian; the septal process is near the base of the nostril rather than near the centre; and the underwing coverts vary from heavily smudged brown-grey to pale grey, but never white as in the South Georgian, which usually also has a black line on the rear of the tarsus. Richdale's Diving Petrel is larger than the Subantarctic subspecies, but measurements overlap. *urinatrix*: bill 15–16.7–18.5 mm, wing 113–127–137 mm; *exsul*: bill 15.1 mm, wing 119 mm.

**Reading:** Payne, M.R. & Prince, P.A. 1979. *NZ J Zool* 6: 299–318. Powlesland, R.G. et al. 1992. *Notornis* 39: 101–111. Richdale, L.E. 1943. *Emu* 43: 24–48; 97–107. Richdale, L.E. 1965. *Trans Zool Soc (Lond)* 31: 1–86. Thoresen, A.C. 1969. *Notornis* 16: 241–260.