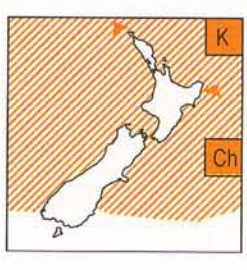
Text and images extracted from Heather, B.D. & Robertson, H.A. (2005) *The Field Guide to the Birds of New Zealand*. Penguin Books, Auckland. Pages 42, 44, 45, 184, 185, 212, 213.

Plate 13

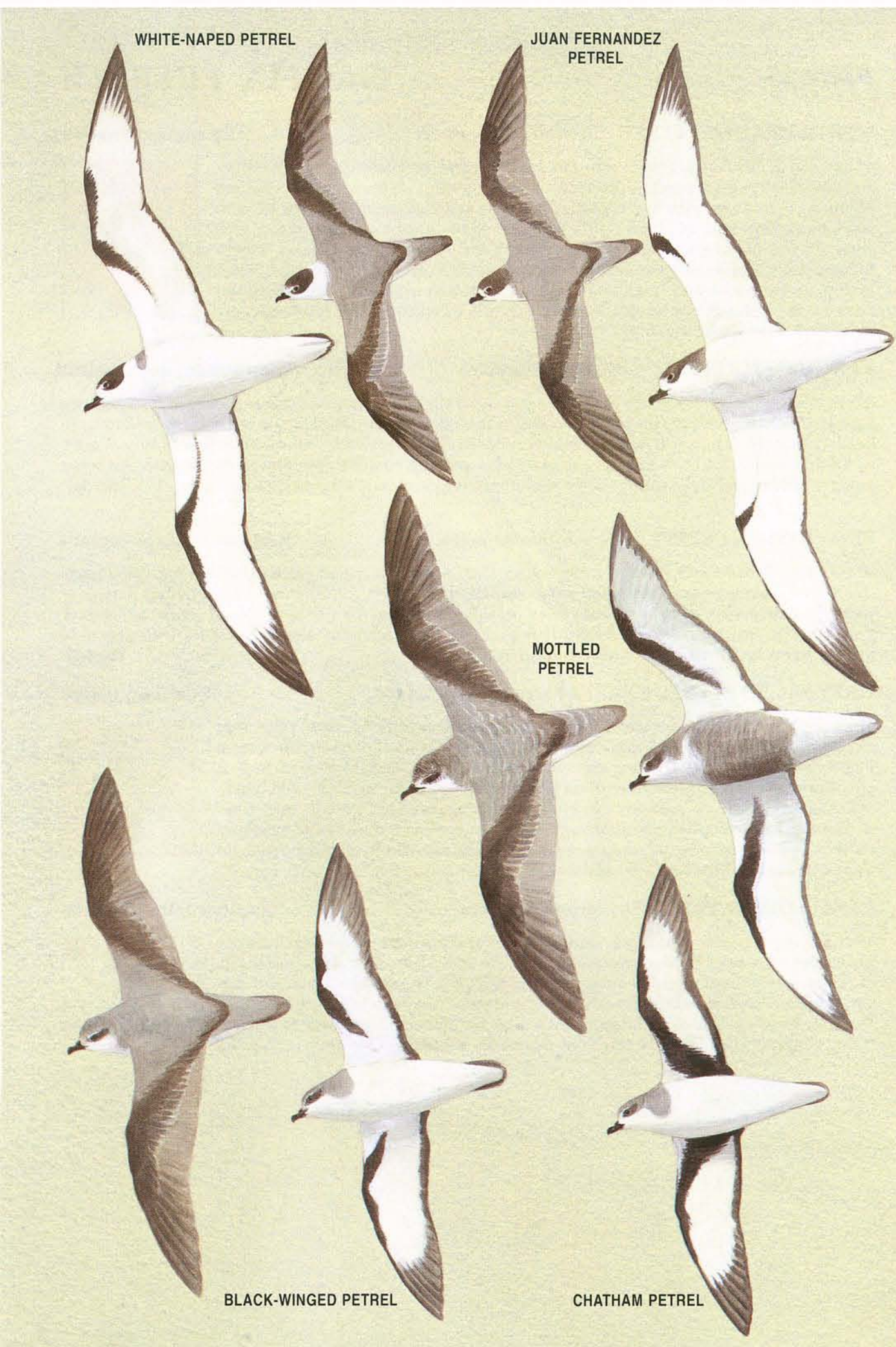
GADFLY PETRELS

Medium to large seabirds with mostly short deep and heavily hooked bill, nostrils encased in a tube, joined at the base of the bill. Most are dark above and mainly white below. Sexes and ages alike; males slightly larger. Underwing patterns are often distinctive. In flight, long narrow wings held stiffly and appear graceful as they glide and wheel in huge arcs. Generally oceanic; rarely seen near land. Many species highly migratory. Many species give high-pitched repetitive calls over breeding grounds at night. Lay 1 large egg, usually deep in a burrow. Long incubation and fledging periods.

BLACK-WINGED PETREL *Pterodroma nigripennis* **Common native**



30 cm, 175 g. Forehead white, mottled on forecrown; dark patch below eye; crown, sides of neck and upperparts pale grey; upperwings grey with darker M across wings. Underparts and underwings white except for dark outer half to primaries, dark trailing edge and *black diagonal band from bend of wing to near body*. Bill short and stubby (24 x 11 mm), black; legs and feet fleshy pink with dark toes and ends to webs. **Habitat:** Breeds subtropical S Pacific, including Kermadecs, Three Kings, East, Portland and Chatham Is. Seen prospecting over headlands on northern NZ coast. Migrates to N Pacific. **Breeding:** Dec–Jun. **[Sp 54]**



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.

54. BLACK-WINGED PETREL *Pterodroma nigripennis* **Plates** 13 and **14**

Size: 30 cm, 175 g

Distribution: Breed in the southwestern Pacific, at Lord Howe Island, Philip Island off Norfolk Island, islets off New Caledonia, in the New Zealand region, Tonga, the Cook Islands, on islets off Rapa Island and on Bass Rock in French Polynesia. In New Zealand, they breed at the Kermadecs, Three Kings, East and Portland Islands and in the Chathams (South East, Mangere and possibly Star Keys). Black-winged Petrels, expanding their breeding range, have been seen prospecting for nest sites on islands off Australia and on some headlands and islands around the northern North Island.

During the summer breeding season, they range through the subtropical southwestern Pacific and temperate waters of the Tasman Sea, as far south as Foveaux Strait. In May, they migrate to the subtropical North Pacific Ocean, mainly between 0 and 30°N, from Japan to Mexico. They return to New Zealand waters in late October. About 130 were beach-wrecked on the New Zealand coast from 1960 to 1990, with most found on the west coast of the North Island in December–April.

Population: Common and increasing breeding range, including the recent establishment of breeding pairs on East and Portland Islands off the Gisborne coast and on Mangere Island in the Chathams. Although now rare on Raoul Island, other islands in the Kermadec group have large colonies, with 2–3 million pairs on Macauley Island.

Conservation: Protected native. Huge colonies on Norfolk and Raoul Islands were exterminated by cats and rats, but those on predator-free islands are flourishing and Black-winged Petrels are expanding their range, even though this leads to many prospecting birds being killed on the ground at some mainland headlands.

Breeding: Adults return to their colonies in mid-October to early December to prepare burrows and to court. Laying is from late December to mid-January in the Kermadecs and about a fortnight later on East Island and in the Chathams, where eggs are laid in mid-January. They lay **1** white egg (52 x 37 mm, 37 g) in a burrow 0.5–1 m long. Chicks hatch in late February to early March at the Chathams, and fledge April–May at the Kermadecs.

Behaviour: Very vocal over their colonies, with a low 'ahh-oo' followed by a rapid 'wi-wi-wi-wi' call. On the ground, the main calls are a rapid, hysterical 'haa-ha-haa-ha . . .', and a low 'orrrrrr . . .' lasting up to 3–4 seconds.

Feeding: Diet is squid, small fish and crustaceans taken on the surface at night.

In the hand: Black-winged Petrels have an unmistakable underwing pattern with a broad black band along the leading edge of the outer upperwing, angling diagonally across the wing towards the body from the elbow but stopping before the axillaries. The bill is more robust than in the otherwise similar Pycroft's Petrel (bill length x depth x width: 23–26 x 10.5–12 x 9–12 mm cf. 22.5–26 x 9.5–10.5 x 7.5–9.5)

Reading: Jenkins, J.A.F. & Cheshire, N.G. 1982. *Notornis* 29: 293–310. Powlesland, R.G. 1985. *Notornis* 32: 23–41. Tanaka, Y. *et al*. 1985. *J Yamashina Inst Orn* 17: 23–31. Tennyson, A.J.D. 1991. *Notornis* 38: 111–116.