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, 214, 215.

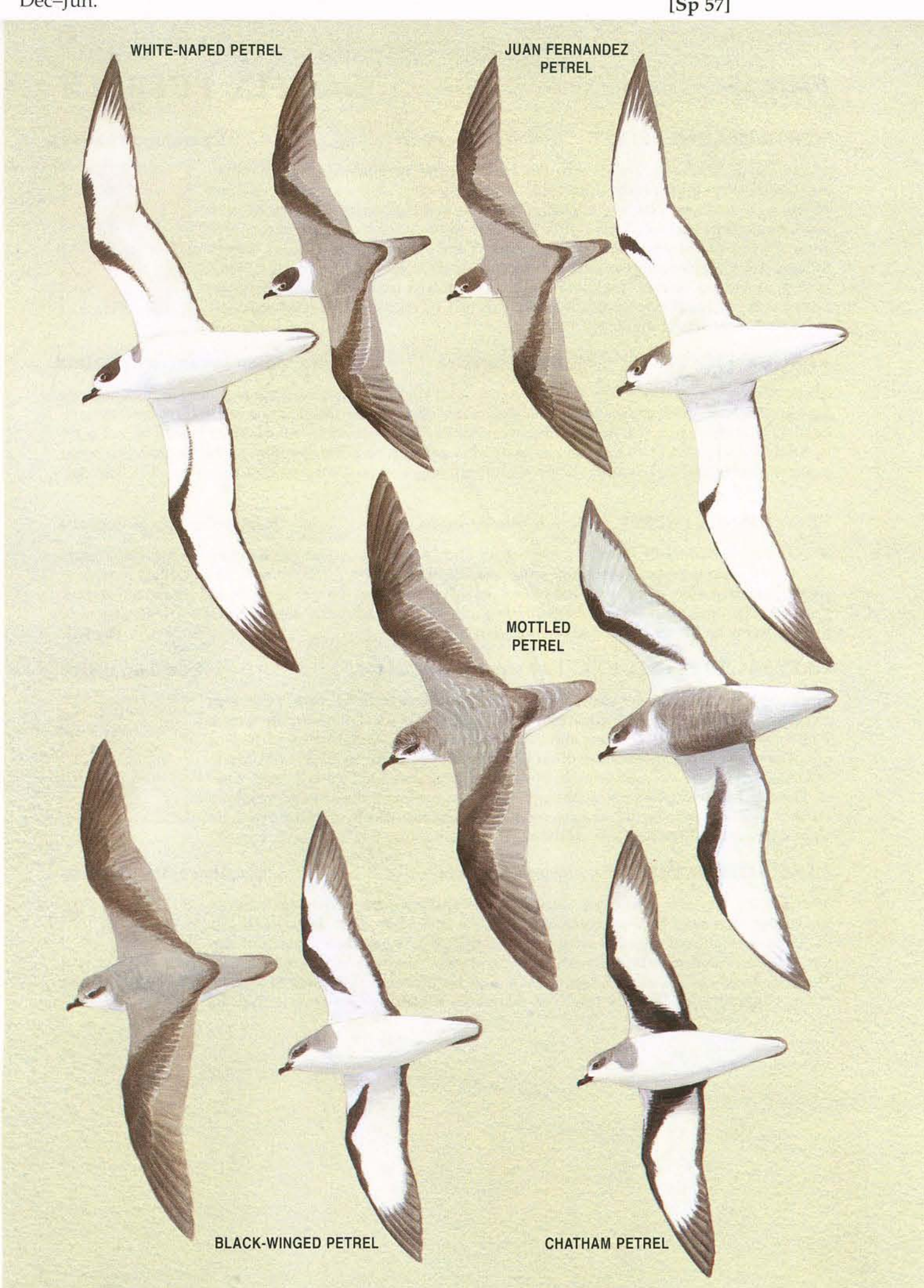
Plate 13

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.

WHITE-NAPED PETREL *Pterodroma cervicalis* **Uncommon endemic**

43 cm, 450 g. Forehead white; blackish cap on crown, nape and sides of face to below eye; *broad white collar across hindneck*; upperparts frosty grey with broad black M across wings; small grey tab in front of wings. Underparts and underwing white except for black patch at bend of wing extending towards tip and diagonally towards body. Bill sturdy (37 x 16 mm), black; feet and legs fleshy pink with black toes and ends of webs. **Habitat:** Breeds Macauley I, Kermadecs. Migrates to subtropical N Pacific, mainly in the west. A few vagrants reach waters off mainland NZ. **Breeding:** Dec–Jun. **[Sp 57]**



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.

57. WHITE-NAPED PETREL *Pterodroma cervicalis* Plate 14

Other names: White-necked Petrel, Sunday Island Petrel
Size: 43 cm, 450 g
Geographical variation: Birds collected near Vanuatu are smaller than those from the Kermadecs and may represent an undescribed subspecies.

Distribution: Since the extinction of White-naped Petrels from Raoul Island in the northern Kermadecs in the early 1900s, the only known breeding site was on Macauley Island in the southern Kermadecs, until a few were found recently on Philip Island off Norfolk Island. They may also nest on islands in Vanuatu. During the summer breeding season, they range within the southwestern Pacific, especially to the north and northeast of New Zealand south to the seas off East Cape and westwards into the northern Tasman Sea as far as eastern Australia. Some straggle to northern New Zealand (Mamaku Range, April 1968; off Muriwai Beach, February 1972; Gisborne, 1977; Hokianga Harbour, June 1982; and Karikari Bay, January 1986). In May–July, they migrate to the North Pacific Ocean, mainly to the southeast of Japan. They start returning in September, but some stay until November.

Population: Macauley Island, c. 50,000 pairs in 1988.

Conservation: Protected native. Many used to breed on Raoul (Sunday) Island, but by 1908 only about 500 pairs were breeding and were being ravaged by cats. As a result, they became extinct on Raoul Island before 1970. The Macauley Island population may be expanding now that the habitat has improved with removal of goats from the island, but the species remains vulnerable because it is largely confined to one island.

Breeding: Little information is available. Adults return to their colonies in late September and eggs are laid in December–January. They lay **1** white egg (66 x 47 mm) in a burrow. Eggs hatch in late February and chicks depart May–June.

Behaviour: At sea, White-naped Petrels are usually alone or in small flocks at food. They are noisy over their colonies, with a harsh 'ka-ka-ka' call. They respond well to war-whoops. On the ground, the main call is 'kukooowik-ka-ha', with variations on the number and pitch of the concluding notes.

Feeding: Diet is mainly squid, taken while sitting on the surface of the sea or by dipping from the air.

In the hand: The white collar is diagnostic, but this may not show up clearly in beach-wrecked specimens. White-naped Petrels can be separated from slightly larger Juan Fernandez Petrels (*P. externa*) by having a brownish-black cap, the outermost primary dusky, with little or no white on the inner web (rather than having a clear white wedge on the inner web), and the underwing has a broad black leading edge beyond the bend of the wing. In *P. externa* the leading edge of the outer underwing is only flecked grey or black. The wing is 299–**310**–323 mm cf. 302–**316**–336 mm, and the bill is 34.5–**36.2**–39 mm cf. 34.5–**37.3**–41 mm in Juan Fernandez Petrels.

Reading: Dowding, J. E. 1987. *Notornis* 34: 325–326. Falla, R.A. 1976. *Notornis* 23: 320–322.