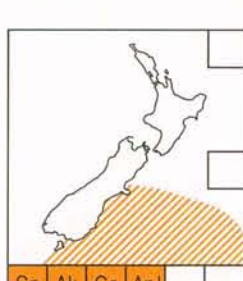


Flightless stocky seabirds with dark upperparts and white underparts. Wings modified into flippers. Robust bill. Short stout legs with webbed feet. Dense short and flattened feathers in adults; thick down in chicks. Swim low in the water, with head and upper back (occasionally tail) visible; some porpoise when swimming fast. Feed at sea by diving. On land, walk upright with waddling gait or short hops with flippers used to maintain balance. Toboggan on ice and mud. Visit land to breed and to moult. During the 2–6-week moult, birds look ragged while all feathers are replaced rapidly; birds fast and are unable to swim. Breed solitarily in burrows or under vegetation, or in large dense colonies on the surface. Lay 1–2 white eggs.

ROCKHOPPER PENGUIN *Eudyptes chrysocome*

Locally common native

55 cm, 2.8 kg. Smallest crested penguin and has much smaller bill. Upperparts slate, darker on head, sides of face and chin. *Thin golden-yellow eyebrow stripe from either side of forehead* extending to splay at crown; some droop towards neck, others forming a *plume at edge of crest on hindcrown*. Juvenile similar but shorter crest, eyebrow stripe less well developed, and chin and throat streaked with ashy white. Size of crest, colour of bare skin at base of bill and pattern of black at underside tip of flipper used to separate subspecies. **Habitat:** Breeds circumpolar subantarctic; in NZ region, at Campbell, Auckland and Antipodes Is, often near or with Erect-crested Penguins. Stragglers reach The Snares, Chathams and NZ mainland. **Breeding:** Oct–Mar.



PENGUINS

16 species confined to the Southern Hemisphere: 13 in the New Zealand region, including 4 endemic and 5 other breeding species.

Penguins are a clearly defined group of flightless, stocky seabirds standing up to a metre high. They are a primitive group dating back to the late Eocene, about 45 million years ago; fossils of three species have been found in the South Island from this era.

Penguins are covered with a waterproof coat of dense, short and flattened feathers; the wings are modified into flippers, and the tail is short and stiff. They have a large head and a powerful, short, stout bill. Their legs are short and stout, with webs linking the three forward-pointing toes. On land, they walk upright with an ungainly waddling gait, and hop over obstacles, using their flippers to maintain balance. On ice, they sometimes toboggan. In the water, they can swim rapidly, being propelled by their flippers only. Some species porpoise when travelling fast.

Penguins dive to catch food. The extreme example is the Emperor Penguin, which has been recorded diving to 450 m and staying submerged for 11 minutes. They feed on fish, crustaceans (especially krill), squid and a wide range of other marine invertebrates.

Penguins visit land to breed and moult, and some inshore species return to land on

Spheniscidae

most nights to roost. They have ritualised displays, and most give a variety of brays, trumpets and growls. Colonial breeders often engage in fights with neighbouring birds.

They usually lay a clutch of 1–2 whitish eggs each year; a few failed pairs attempt to re-lay. Nests vary from burrows for Little Blue Penguins and some Fiordland Crested Penguins to simple scrapes for most species. The King and Emperor Penguins build no nest and incubate the egg between the top of their feet and their body.

Penguins vary from solitary to colonial, some colonies being of millions of pairs. Eggs are small in relation to their body size, and have a long incubation period of 33–65 days depending on the species. Usually both sexes incubate, except that in the Emperor Penguin only the male incubates. Chicks hatch covered in thick down and are fed irregularly by both parents. In colonial species, chicks group together in crèches from about three weeks old until they have their natal moult into full feathers and leave the colony at 2–6 months old.

During the moult of 2–5 weeks in summer or autumn, birds look ragged and 'sick', as almost all the feathers are replaced simultaneously. During this time, the bird fasts and is unable to swim without getting waterlogged. If you find birds moulting, leave them alone, and do not return them to sea; contact

the Department of Conservation if a moulting penguin is in danger from dogs or other predators. Many records of unusual species visiting the New Zealand region are of wandering birds forced to come ashore in autumn to moult.

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79. ROCKHOPPER PENGUIN

Size: 55 cm, 2.8 kg
Geographical variation: Three subspecies, all recorded in the New Zealand region: the Eastern Rockhopper *filholi* breeds at Macquarie Island and in the New Zealand subantarctic, whereas the Western Rockhopper *chrysocome* and Moseley's Rockhopper *moseleyi* are vagrants.
Distribution: Circumpolar, breeding on many subantarctic islands. In the New Zealand region, Eastern Rockhoppers breed on the

Eudyptes chrysocome **Plate 20**

Antipodes, Auckland and Campbell Islands. In late summer, up to 20 moult at The Snares, and some reach the Otago and Canterbury coasts and the Chathams. Western Rockhoppers have been seen at The Snares (1985–87, 1993), and Moseley's Rockhoppers have been seen at South East Island (August 1968 to November 1970), Wellington (January 1984), possibly at Gisborne (December 1976), Pitt Island (November 1998) and Star Keys (January 2004).

Population: The Eastern Rockhopper has c. 60,000 pairs in the New Zealand region: c. 3000 pairs on the Antipodes, 51,500 pairs on Campbell Island and 2700–3600 pairs on the Auckland Islands. The main breeding site for this subspecies is Macquarie Island (200,000 pairs).

Conservation: Protected native. Locally common on subantarctic islands, but they have declined 94% at Campbell Island from c. 800,000 pairs in 1942 to just over 50,000 pairs in 1985, perhaps because of rising sea temperatures affecting the penguins' food supply. A similar decline has been noted recently at the Antipodes, and a lesser decline at the Auckland Islands.

Breeding: Laying is in October–November, slightly earlier at the Antipodes than at Campbell Island or the Auckland Islands. They lay 2 white eggs, the first (64 x 48 mm, 80 g) being much smaller than the second (71 x 54 mm, 112 g), which is laid 4–5 days later. The nest is a lined scrape in a large colony on terraces, scree slopes and sometimes among tussock or in caves from near the coast to several hundred metres inland. Incubation starts before the second egg is laid, but the second egg usually hatches first. The first egg is often lost from the nest during squabbles or taken by Brown Skuas, and only rarely are two chicks reared. Both sexes incubate; the female takes the first long shift of 10–19 days, followed by the male for 7–13 days. The incubation shifts shorten until the eggs hatch after 33–34 days.

Chicks are brooded initially and guarded almost continuously by the male (which fasts for 5 weeks), and occasionally by the female

during daily feeding visits, until they are about 3 weeks old. Thereafter, they form small crèches and are fed only by their own parents. Chicks depart in February and early March at about 9–10 weeks old, and they are independent once they have left the colony.

Behaviour: Gregarious, breeding in colonies of over 10,000 pairs on Campbell Island, and they are seen in groups at sea. Moult usually takes place at the breeding grounds over 3–4 weeks during April, about a month after their chicks have fledged.

Feeding: At Campbell Island, the diet in the breeding season is mainly fish with some small crustaceans, squid, octopus and other marine invertebrates. Elsewhere, krill forms most of the diet. Rockhopper Penguins feed by pursuit-diving to depths of up to 100 m.

In the hand: Adult males have longer, deeper and wider bills than females, with little overlap at any single breeding site. At Campbell Island, males had a product (in mm) of these three bill measurements of over 8700, whereas females were under 7800; on the Antipodes the corresponding figures were 10,200 and 9400. Races are distinguished by underflipper pattern and the colour of skin at the base of the bill: in *filholi* it is pink, whereas in *chrysocome* and *moseleyi* it is black. Race *moseleyi* is larger, with much longer flippers (175–190 mm) than the other two races (160–175 mm).

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