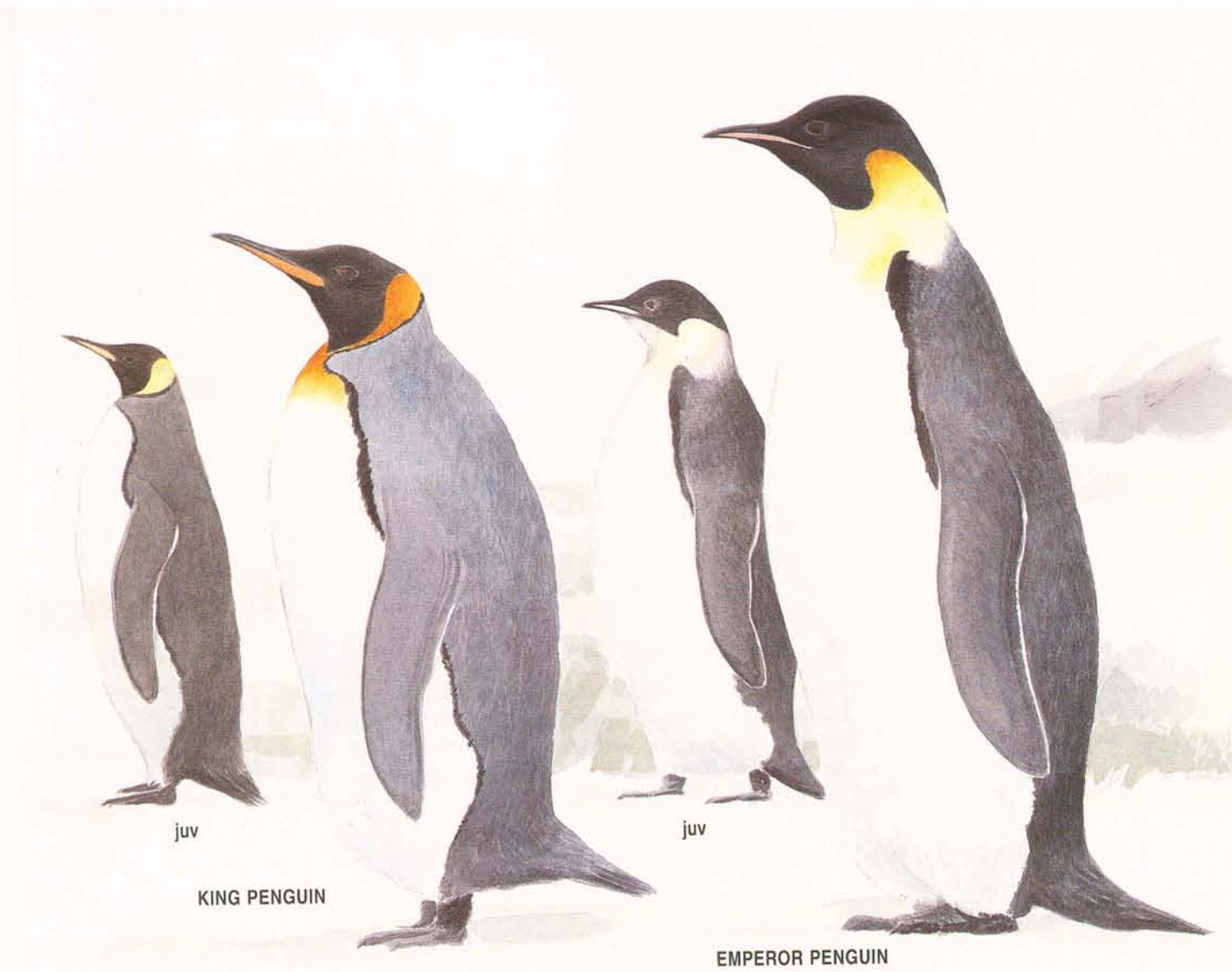
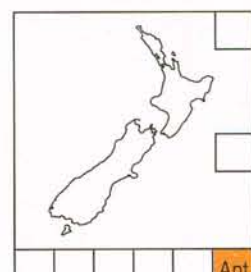


Flightless stocky seabirds with dark upperparts and white underparts. Wings modified into flippers. Robust bill. Short stout legs with webbed feet. Dense short and flattened feathers in adults; thick down in chicks. Swim low in the water, with head and upper back (occasionally tail) visible; some porpoise 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.

**EMPEROR PENGUIN** *Aptenodytes forsteri*

Uncommon native

115 cm, 30 kg. Head, chin and throat blackish blue; orange patch extending downward from behind eye towards the back, connected to lemon-yellow upper breast; upperparts bluish grey with darker border along flanks; underparts white. Bill long and decurved towards tip; tapering panel of lilac-pink at base of lower mandible. Juvenile lacks yellow and has white chin and throat. **Habitat:** Breeds circumpolar in large colonies around Antarctica, including Ross Dependency. Rare vagrants reach NZ mainland. **Breeding:** Apr–Jan.



**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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**72. EMPEROR PENGUIN** *Aptenodytes forsteri*

Plate 18

**Size:** 115 cm, 30 kg

**Distribution:** Circumpolar, breeding on the coast, islands and sea-ice of the Antarctic continent. In the Ross Sea sector of Antarctica, there are at least six colonies: Cape Roget, Coulman Island, Cape Washington, Franklin Island, Beaufort Island and Cape Crozier. They seldom venture north of the Antarctic Circle, but a single bird came ashore at Oreti Beach, Southland (April 1967).

**Population:** 50,000 pairs in the Ross Sea sector in 1983, which is c. 30% of the estimated total breeding population in Antarctica. Main colonies were at Coulman Island (21,708 pairs) and Cape Washington (19,364 pairs).

**Conservation:** Protected common native. Significant declines have been noted at several colonies in the Ross Sea sector in recent years, perhaps as a result of human disturbance or changing food supplies. Cape Roget has dropped from 17,000 pairs in the 1950s to 3777 pairs in 1983, and the Cape Crozier colony dropped from 256 pairs in 1974 to 78 pairs in 1983.

**Breeding:** Laying is from late April to June; the mean laying date is about a month later at the southern colonies. They lay 1 white egg (123 x 82 mm, 442 g), which the male then incubates on the top of his feet for 62–64–67 days. The male also broods the chick for c. 10 days and feeds it an oesophageal secretion before the female returns and broods and feeds the chick on demand for the next 3–4 weeks. Meanwhile, the male goes to sea to recover from his three-month fast, during which he has lost about 40% of his body weight. The male and female then alternate their attendance of the chick until it joins a crèche at c. 8 weeks old, and then both parents

depart for sea and return about every 10 days.

In December–January, the chicks depart independently of their parents at c. 150 days old, when they average <50% of the normal adult weight. At some colonies, the chicks have to travel over 50 km to reach the sea, and mortality on this journey is high. First breeding is at 3–5–9 years old. Birds are monogamous, but most change partners each year. At Point Geologie, to the west of Ross Sea, annual adult survivorship was 95.1%, so life expectancy was 19.9 years.

**Behaviour:** Breed in colonies and feed in groups outside the breeding season. When preparing to breed, the pair vigorously defends the space around them, but once incubating, the males often huddle together to keep warm.

**Feeding:** Diet is mainly fish (60–250 mm long) and squid (up to 280 mm long), but krill and a wide range of other marine invertebrates are taken. They feed by diving to great depths (up to 450 m below the surface) to capture large fish (and possibly large squid) living on or near the ocean floor, or feed on immature squid, fish and krill in shallow water near icebergs and floes. About 30% of dives are beyond 100 m deep. Most dives last 2–8 minutes and are at speeds of 10–15 km/hr.

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