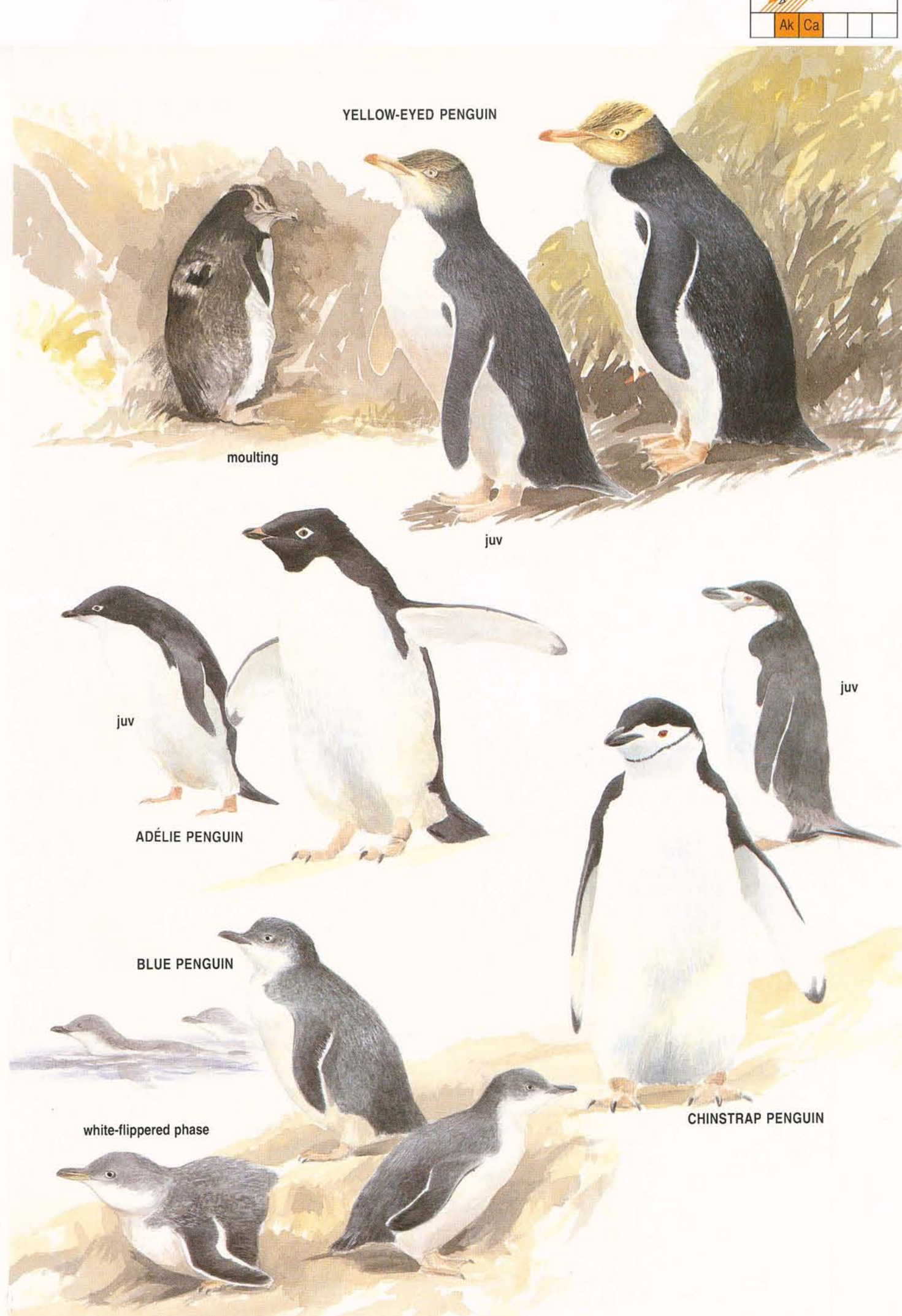
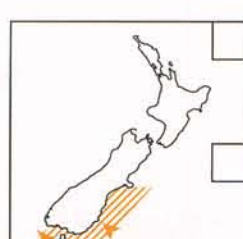


Flightless stocky seabirds with dark upperparts and white underparts. Wings modified into flippers. Robust bill. Short stout legs with webbed feet. Dense short and flattened feathers in adults; thick down in chicks. Swim low in the water, with head and upper back (occasionally tail) visible; some porpoise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

YELLOW-EYED PENGUIN (Hoiho) *Megadyptes antipodes* Uncommon endemic

65 cm, 5.4 kg. Upperparts slaty grey; forehead, crown and sides of face pale golden yellow with black feather shafts; eye yellow. Adult has band of yellow feathers starting at eye and encircling back of head. Juvenile has greyer head and lacks yellow band. **Habitat:** Breeds and moults around southeastern South I, Foveaux Strait, Stewart, Codfish, Campbell and Auckland Is. Mainly sedentary, but some disperse northwards to Cook Strait, occasionally further. **Breeding:** Sep–Mar. [Sp 74]



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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74. YELLOW-EYED PENGUIN

***Megadyptes antipodes* Plate 19**

Other name: Hoiho
Size: 65 cm; male 5.5 kg, female 5.25 kg
Distribution: New Zealand only; breeding on the coast and some offshore islands of the southeastern South Island from Banks Peninsula to Bluff, Foveaux Strait islands, Stewart Island and its outcrops (particularly Codfish), Auckland Islands and Campbell Island. Most birds are sedentary and feed within 25 km of their colony while breeding, and return regularly throughout the non-breeding season to the vicinity of their breeding site. Stragglers (mainly juveniles) reach The Snares, Fiordland, the Chathams, the northern Canterbury and the Marlborough coasts, the southern North Island, and even as far north as the Bay of Plenty (1980). In some years (e.g. 1972 and 1977) moderate numbers are beach-wrecked in the southern North Island. Subfossil and midden remains from the South Island and subfossil remains from Chatham Island indicate a wider distribution in the past.

but in recent years major declines have been noted at a number of sites. The population in the Catlins may have declined 75% since the 1940s, and between 1985 and 1987 the number of pairs breeding on the South Island declined by 50%, because a shortage of food in two successive breeding seasons led to adults not attempting to breed and also increased adult mortality owing to starvation during the annual moult. Yellow-eyed Penguins are occasionally drowned in fishing nets.

Population: c. 6000: c. 2000 breeding pairs and c. 2000 non-breeders. Estimated numbers of breeding pairs: South Island 600–650, Stewart Island/Foveaux Strait 220–400, Auckland Islands 520–570, and Campbell Island 490–600 pairs.

On the Otago Peninsula, 30–40% of breeding adults and most chicks died during the 1989–90 breeding season, possibly as a result of an unidentified biotoxin, but the populations have recovered. On Campbell Island, the population declined rapidly between 1988 and 1992, attributed in part to an increase in disturbance from sea lions.

Conservation: Protected endangered endemic. The number of birds and their breeding success seem to fluctuate widely,

Intensive research on the ecology of Yellow-eyed Penguins is under way, focusing on the diet, feeding behaviour and breeding biology of the Otago coast population. Habitat management around breeding sites aims to exclude stock (which trample nests) and restore coastal scrub and forest. Because mammalian predators (especially ferrets and stoats) cause serious losses in some years, intensive predator control operates on parts of the Otago coast. Population changes on the mainland and the subantarctic islands are

being monitored regularly.

Behaviour: Breeding distribution is clumped because of a shortage of suitable nesting sites rather than a need to form colonies. Small groups form outside the breeding season, or to avoid sea lions, but apparently birds feed alone.

Breeding: Most birds return to the same area each year, but fewer than 30% of birds use the same nest site in successive years. Laying in Otago is in September–October, mostly the second half of September; the season is about a fortnight later on Campbell Island. They lay 1–2 pale bluish-green eggs (77 x 57 mm, 138 g) in a substantial open bowl, generally laid against a bank, flax bush or tussock, which provides shelter from direct sunlight and obscures the view to other breeding pairs. Incubation starts after the second egg is laid 3–5 days after the first. Both sexes incubate in spells of c. 2 days. Most eggs hatch within a day of each other, after 39–43–51 days.

Feeding: Yellow-eyed Penguins eat mainly small to medium-sized fish (up to 32 cm long), but squid, octopuses and some krill are also taken. One-year-old birds eat more squid and less fish than adults. They dive to 160 m below the surface to capture fish (and possibly squid) living on or near the ocean floor.

Chicks are brooded for the first 25 days, by which time they have developed a thick layer of secondary down. They start making short forays away from the nest site, and after 40–50 days they are attended only at night. Chicks sometimes form small crèches at sites where numbers are high. They fledge after 97–106–118 days in February–March and are immediately able to swim and be independent of their parents. First breeding is at 2–3 years in females, 3–4 years in males. Birds are monogamous and retain their partners from year to year. The oldest tagged Yellow-eyed Penguin lived over 20 years.

In the hand: Males are larger than females, but measurements overlap; over 85% of birds can be sexed correctly from a combination of skull length (from the back of the skull to bill tip) 135–143–150 mm cf. 130–137–149 mm, and foot length (from the back of the heel to the tip of the pad of the middle toe) 126–131–136 mm cf. 121–125–131 mm.

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