

Aquatic birds with a small rounded head, short flattened bill, rounded body, short legs, webbed feet and a waddling gait on land. They fly strongly with neck outstretched. Sexes alike in swans and geese, but male ducks are usually more colourful than females. Lay large clutches. Chicks leave the nest within days but are guarded for several months until they can fly.

PARADISE SHELDUCK (Putangitangi) *Tadorna variegata*

Common endemic

63 cm; ♂ 1700 g, ♀ 1400 g. Large goose-like duck with orange-chestnut undertail and tertials. Male has black head with greenish gloss, body dark grey finely barred black. Female has brilliant white head, body bright orange-chestnut, obscured by darker fine barring in eclipse plumage. Juveniles like male, but immature females develop white patches around eyes and at base of bill. In flight, prominent white patches on upperwings. Often call; male a deep 'zonk-zonk . . .', female a shrill 'zeek, zeek . . .' Mostly seen as pairs or in large flocks, especially during the moult in Dec–Mar. **Habitat:** Farmland, lakes, ponds and high-country riverbeds. **Breeding:** Aug–Dec. [Sp 126]



WATERFOWL

Anatidae

Swans, geese and ducks are found worldwide in freshwater and marine habitats. There are about 160 species, of which 14 (4 endemic, 4 native and 6 introduced) breed or have bred in the wild in the New Zealand region since 1920. A further endemic species (*Mergus australis*) became extinct in the early years of the 1900s, and another 6 species are vagrants to the region.

In New Zealand, most introduced and some native species of waterfowl are legally harvested during a strictly controlled shooting season. Each year, Fish and Game Councils determine the length and timing of the season and the allowable bag for each species, and monitor the licensing of hunters and annual hunting statistics. A voluntary organisation, Ducks Unlimited, works to create and protect wetland habitats suitable for waterfowl and is also involved in captive breeding programmes for some threatened and rare species.

All species have webbed feet for swimming in freshwater rivers and lakes, or in coastal waters. Their bill is modified for filter-feeding; water and food is sucked in at the tip of the bill and expelled through fine comb-like lamellae at the sides, which catch minute seeds and invertebrates. Although most feed in this way, some species mainly graze on aquatic or terrestrial vegetation and pick seeds (e.g. peas or wheat) off the ground, and the mergansers have serrated bills for catching fish.

Reading Frith, H.J. 1982. *Waterfowl in Australia*. Sydney: Angus & Robertson. Madge, S. & Burn, H. 1988. *Wildfowl: An Identification Guide to the Ducks, Geese and Swans of the World*. London: Christopher Helm. Johnsgard, P.A. 1978. *Ducks, Geese and Swans of the World*. Lincoln: Univ Nebraska Press. Williams, M. 1981. *The Duckshooter's Bag*. Wellington: Wetland Press.

126. PARADISE SHELDUCK *Tadorna variegata* Plate 30

Other names: Putangitangi, Pari

Size: 63 cm; males 1700 g, females 1400 g

Distribution: Breed only in New Zealand and are widely distributed in hill-country pasture, arable land, tussock grassland and wetlands throughout the mainland and on offshore islands with lakes or farmland such as Great Barrier, Kapiti and Stewart Islands. Although they appear in subfossil and midden deposits in the Chathams, the only recent record is of one bird in January 1984. A male visited Raoul Island in October 1995, and five visited Lord Howe Island for over a month from March 1950. In the North Island, the main concentrations are in Northland, in hill country of Gisborne–Hawke's Bay and Wanganui–Rangitikei, on the Manawatu dune lakes and in the Wairarapa. In the South Island, most are along the eastern foothills of the Southern Alps and on the Southland plains.

the introduction of strict controls on their harvest in 1868 and liberations of Southland birds into the central North Island between 1916 and 1921 more than outweighed the effects of introduced predators and drainage of natural wetlands. They have increased greatly through the 1900s, despite periods of localised decline caused by overharvesting. Regional bag limits and seasons are now closely linked to productivity and movements of birds in each part of the country.

Breeding: Birds re-establish their territories in March–April; it is often centred on a rush-covered soak, small farm pond or part of a larger lake or riverbed with an open view. The male aggressively defends the territory and maintains a lookout for predators while the female incubates. The nest is in a hollow log, under fallen logs, in a hayshed, or in a hole in the ground, but in forest patches some birds nest up to 25 m above the ground in a tree-hole.

Adult Paradise Shelduck are generally sedentary, but movements are complex and depend in part on the habitats being used; those breeding in tussock grasslands tend to be more mobile than those breeding in hill-country farmland. All birds vacate their territories and flock sites for the annual moult. Large flocks of 1000+ birds gather in December–February at traditional moulting sites on farm ponds, lakes, streams and riverbeds. Individuals stay for 6–8 weeks and the big flocks break up in March–April. Juvenile females tend to return to breeding in their natal area, but juvenile males disperse widely and often settle over 100 km away from their natal area.

Laying is mostly in August–September, but a few clutches are laid into November. The clutch is of 5–9–15 white eggs (67 x 49 mm, 85 g), laid daily, but clutches of 10+ eggs are probably laid by more than one female. Clutches are only rarely replaced, but two pairs can use the same area of water, giving the false impression that Paradise Shelducks are double-brooded. The female incubates for 30–35 days, during which she leaves the nest 2–3 times a day for about an hour at a time. The eggs hatch about the same time, but late-hatching eggs are often abandoned when the female leads the brood of ducklings to open water, which can be over a kilometre away.

Population: In 1981, the pre-shooting season population was estimated at c. 120,000 birds; 70,000 in the North Island and 50,000 in the South Island.

The ducklings have a striking pattern of brown and white down, but when they fledge at c. 8 weeks old they resemble adult males, except females have white patches around the eyes and base of the bill. These patches expand to the whole head after another couple of months and the body colour gradually lightens.

Conservation: Partially protected endemic. During the summer moult, they were important food for Maori and many were killed at traditional moulting sites. Paradise Shelducks were uncommon in the 1800s and largely restricted to the eastern and southern South Island. The conversion of native forest to exotic pasture, the construction of farm ponds, same nesting area each year. If one bird dies, the mate occupies the same territory and re-mates again. About 35% of breeding adults die each year, giving a life expectancy of 2.3 years; however, some birds live much longer, with the oldest banded bird living at least 23 years.

Most Paradise Shelducks start breeding when 2 years old, but females often delay until they are 3 years old. Pairs remain together from year to year and return to the female's shrill, penetrating 'zeek, zeek . . .' Both sexes give a piercing flock call when flying to join a flock or when flying birds are approaching.

Behaviour: Paradise Shelducks are usually in pairs, but non-breeders flock during the breeding season, when they start their moult, and large flocks of 1000+ breeders and fledglings form for a couple of months during the summer moult. Pairs are alert, and from a high point on the ground or while circling overhead they duet their loud alarm calls: the male's deep 'zonk-zonk . . .' and the

Feeding: Graze on grass and clover, and also feed on grass and weed seeds and stubble or standing crops of peas or grain. Aquatic vegetation is obtained from the surface or by up-ending. Flocks can sometimes cause considerable damage to young pasture and hay and grain crops, especially near major moulting sites.

Reading: Barker, R.J. 1990. *Notornis* 37: 173–181. Williams, M.J. 1972. *Wildfowl* 23: 94–102. Williams, M.J. 1979. *Notornis* 26: 213–272. Williams, M.J. 1979. *Notornis* 26: 369–390.