

## Campbell Island Teal *Anas aucklandica nesiotis* bred in captivity

JEANNIE PREDDY

*One of the world's rarest ducks, the subantarctic Campbell Island Teal *Anas aucklandica nesiotis*, has bred for the first time in captivity. The successful captive breeding marks a major advance in the conservation of this teal. Captive breeding is an essential part of the recovery plan. The breeding behaviour of the captive teal was studied as part of a Masters thesis at Victoria University of Wellington, New Zealand.*

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Campbell Island Teal ducklings were seen for the first time in November 1994. Two broods, each of two ducklings, were raised in captivity from a wild caught pair at New Zealand's National Wildlife Centre. No nests, eggs or ducklings had ever been recorded in captivity or the wild before.

The Campbell Island Teal is considered 'critical' with the wild population estimated to be 30–100 individuals (Callaghan & Green 1993). In 1975 they were rediscovered on Dent Island, a 23 ha rock stack off subantarctic Campbell Island. Three males and one female were brought into captivity in 1984. An expedition in 1990 brought back three females and another four males (Goudswaard 1991). These birds joined the surviving two males from 1984.

The teal are small, flightless and highly territorial. In captivity they are semi-nocturnal, being active on fine nights with heightened activity at dusk.

For a decade, the captive teal were held as pairs in separate aviaries. Copulations were observed but females did not come into breeding condition. Since 1991, spare Campbell Island males have been partnered with captive-bred Auckland Islands Teal *A. a. aucklandica* females to assess their fertility and give them breeding experience. Four of the six Campbell Island males were given this chance and bred successfully. Eggs were either removed at two to three

weeks and fertility checked by candling them, or hybrid offspring were destroyed.

In 1992, following an extensive field study of Auckland Islands Teal, a new approach to teal aviculture was attempted. Three 6.5 x 13 m adjacent aviaries were converted into a single aviary to trial the flocking of three Campbell Island Teal males and three Auckland Islands Teal females. Two pairs established territories at either end of the aviary and bred successfully.

In 1993, three male and three female Campbell Island Teal were introduced to a large, specially built 20 x 23 m aviary, planted mainly in Red Tussock Grass *Chionochloa rubra*. The layout was a novel design with four mounds and four boggy creeks leading to a central pond. The dominant male, who had no breeding history with Auckland Islands females, controlled most of the aviary and paired with one female. This male showed territorial aggression and actively sought out the subordinate birds, whereas his mate did not interact with them. Copulations were observed but no eggs were produced.

The layout has since been modified by eliminating the central pond and planting extensively so that a dominant male can no longer gain such a visual advantage and control most of the aviary. The redesigned aviary was tested using three Campbell Island males and three



**Nine day old Campbell Island Teal ducklings.** *Photo credit: Peter Morton.*

Auckland Islands females in 1994. It supported two territorial males. The dominant male paired with two of the females. All three females were productive.

In June 1994, the three Campbell Island females and three of the Campbell Island males were flocked in an enlarged version of the aviary trialled in 1992. This time, five aviaries were opened out to each other. This provided a series of five ponds, each surrounded by reeds, flax, grasses and wetland plants. The teal diet was enhanced by offering two 20 litre buckets of windrowed seaweed twice a week. The teal were observed to eat Sea Lettuce *Ulva* spp. and to probe in the heaps of decaying seaweed for invertebrates. Courtship behaviour and copulations were observed in July so teal were put onto 18% protein 'breeder' pellets in winter rather than in the spring as usual. Out of the breeding season a 'maintenance' pellet is used which has a 16% protein content.

A male who had a breeding history with an Auckland Islands female became dominant. He was subordinate in the 1993 flock of Campbell Island Teal. The three females spent the first month, July, fighting over this new dominant male. He paired with the previous season's dominant female. The male roamed over all

five pens asserting his dominance by mounting aggressively the other teal, especially the males. The dominant female stayed in two of the end pens interacting only with her mate.

Courtship displays and copulations were observed. The terminology used follows Johnsgard (1965) and McKinney (1965). The observed copulations differed in some aspects of pre- or post-copulatory behavior. Generally the female approached the male nod-swimming. The male would then display by turning-the-back-of-head and leading the female. The pair then swam with several lead and direction changes or else the female then the male would dive. The female would adopt a prone position and the male would grasp her nape feathers from the side and mount. Copulations were generally on the water but sometimes progressed to land. Post-copulatory displays could involve both birds head-dip bathing, wing-flapping then tail-wagging and preening. The male often gave trill calls (Weller 1975) and the female sometimes gave an inciting call before or after the copulation.

Weights were monitored remotely from June to September 1994. The dominant female weighed 440 g in June and reached 645 g in September three days

before she started laying. The weights of the other two females decreased over this period. These captive weights are significantly higher than wild ones (average 292 g,  $n=3$ , in Goudswaad 1991).

In early October, one large, white egg was discovered in a nest amongst some *Juncus gregiflorus* rushes. The second egg was laid two days later. The third egg followed five days later, completing the clutch within eight days.

Two ducklings hatched, a male and a female. The third egg was diagnosed by a pathologist to be either infertile or a very early dead embryo. The duck made a brood nest in a clump of rushes within 1 m of the original nest. The dominant pair and their ducklings were separated from the other teal. Soon after this, the second most dominant male and female were observed copulating but no eggs were laid.

The hatchlings are very like those of the Auckland Islands Teal. They are precocial (seen to walk and swim soon after hatching) and covered in thick brown down. The duck would lead the young foraging while the drake was alert nearby. The ducklings started foraging independently and spending time apart from their parents at three weeks. The drake showed aggression towards his ducklings when they were one month old. The larger, male juvenile started hiding, so both were removed from their parents. Eight days after the juveniles were removed, the dominant female completed a second clutch of four eggs. The nest was among some grasses and weeds with lupin and rushes

along one side. The eggs were measured and candled after 17 days of incubation. Two eggs were rotten and were removed. These were either infertile or early dead embryos.

Two male ducklings hatched from the second clutch. The first of these ducklings was seen on the pond dabbling within three hours of hatching, apart from his mother, and before the second egg hatched. The drake started to attack this duckling. Because of repeated aggression towards both ducklings, he was removed the next day. The female raised these ducklings alone. They were separated from her once they reached independence and her mate was returned.

During the breeding season, maximum lengths and breadths of six out of the seven eggs were measured. The average length was 61.9 mm and average breadth 43.8 mm. The average egg weight was calculated to be 66 g (Rohwer 1988).

A productive captive population is an essential part of the Department of Conservation's Recovery Plan for Campbell Island Teal, with the aim of establishing a second wild population (McClelland 1993). This breeding season the captive population has increased from nine to 13 Campbell Island Teal. It is impractical to study the bird in the field, given its remote and fragile home. Close monitoring of the behaviour of the captive teal carried out over the last two breeding seasons is providing new understanding that will assist their captive management.

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- Jeannie Preddey**, 39 Anne Street, Wadestown, Wellington, New Zealand.