

# Anti-predator behaviour of flightless Kerguelen Pintail *Anas eatoni* moulting in a cave on the Kerguelen archipelago

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*The Kerguelen Pintail is an endemic species which lives on the Crozet and Kerguelen archipelago. During the post-breeding moult, it loses its flight feathers and is unable to fly. The Kerguelen Pintail is then very vulnerable to the Brown Skua, and the ducks tend to lurk in the dense vegetation to escape predation. Where there is no tall primeval vegetation, moulting Kerguelen Pintail find protection in a cave.*

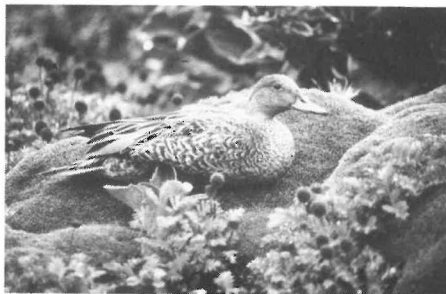
**Keywords:** Kerguelen Pintail, Moult, Predation, Anti-predator Behaviour

The Kerguelen archipelago is made up of 400 islands or islets. Some of them, such as the Ile du Port (49°15'S-69°30'E), are not well-known. This small (32 km<sup>2</sup>) island is mainly dry and stony. There are some wetlands in the form of peat bogs and little glaciated lakes near the rivers or on the basaltic plateaux. There are also wallows of Elephant Seal *Mirounga leonina* close to the seashore, where the Kerguelen Pintail *Anas eatoni* likes to feed. Nowadays, the island is partially covered by thin vegetation of *Acaena ascendens*. The island is free from the mammalian predators that have been introduced elsewhere.

On the eastern side of the island, near Point Bats, we discovered a natural cave at ground level in a basaltic cliff 50 m high. The entrance of the cave was sheltered from the dominant west wind and the cave itself was 8 m wide, 3 m high and 10 m deep. Its roof sloped to the back and ended at the bottom in a horizontal fissure which was about 20 cm high across the wide span of the cave. The first 9 m of the cave was occupied by a shallow (30 cm) turbid pool of slightly saline water with no aquatic vegetation in it. The last 1 m at the bottom of the cave was dry. The entrance of the cave was about 50 m from the shore, sheltered in the Anse Risler; near by the rocky shore was broken by sandy beaches and by the wallows of the Elephant Seal.

## Observations

Around the entrance to the cave three or four Brown Skuas *Catharacta skua lonnbergi* circled. About one hundred Kerguelen Pintail of both sexes were roosting in the cave. When we approached, half of the ducks left, flying inland. Of the fifty or so remaining, one bird attempted to leave the cave walking and fluttering with difficulty. It was immediately but unsuccessfully attacked by a Brown Skua; it reached the sea and found final refuge among the kelp and algae *Macrocystis pyrifera*. The other Kerguelen Pintail, which were frightened by our presence and by the attack of the skua, retreated to the fissure at the bottom of the cave staying there until the end of the disturbance. We did not find the remains of any ducks near the cave, so it was difficult



Kerguelen Pintail *Anas eatoni*

to estimate the importance of predation from skuas. For two hours, we remained at some distance and observed the group of birds. Five flying ducks rejoined the group in the cave. We saw no feeding behaviour during the time of our observations.

## Discussion

The Kerguelen Pintail is a diurnal bird all year round (Prevost & Mougin 1970) but, because of the constant threat of skuas in daylight and the small size of the pool as a feeding place, it is likely that the birds leave the cave to feed during the night. The Kerguelen Pintail feeds on invertebrates, insects, plants and intercotidal crustaceans (Kidder 1875, Sclater 1880, Loranchet 1915, Paulian 1953, Halls 1990). It finds this food mainly in the wallows of the Elephant Seal, on the seashore and in the peat bogs (Stahl *et al.* 1984). These three feeding habitats were available near the cave. Loranchet (1915) observed Kerguelen Pintail ducklings abandoned by their parents, forming large gatherings while they were still covered in down and unable to fly. This is not the same situation as that of the adult ducks gathered in the cave some of which were able to fly. We concluded that the ducks remaining in the cave were adults in the post-breeding moult. Flightless adult Kerguelen Pintail have been recorded before (Goodridge 1841), and Milon & Jouanin (1953) also observed Kerguelen Pintail without their flight feathers in April taking refuge along river banks.

It was difficult to give an explanation for the hundred or so ducks occupying the cave. We thought at first that the birds might have come from the largest (6675 km<sup>2</sup>) island of the archipelago called "la grande terre", which is separated from the Ile du Port by an inlet of about 6 km. However, according to Stahl *et al.* (1984), isolation between different populations of the same archipelago is common. Also, during three years of observation, no Kerguelen Pintail had been noticed in flight between the two

eastern islands (a distance of 18 km) of the Crozet archipelago.

The second hypothesis was that the birds could be a part of the indigenous population of the Ile du Port. We estimated this population at about 150 to 200 individuals by applying the density found on the Ile de l'Est at Crozet to the 36 km<sup>2</sup> of the Ile du Port. If so, the major part of the population of the Ile du Port was gathered in the cave, and this was the reason why we observed only a few ducks on the rest of the island.

It is also hard to say how long this gathering might last. We know only that the post-breeding moult lasts from April to July (Stahl *et al.* 1984). Assembly during the post-breeding moult is a well-known phenomenon among waterfowl, especially Anatidae, and such seasonal flocks, of a few adult individuals to several thousands, have been described, for instance, of Pochard *Aythya Ferina* and Shelduck *Tadorna tadorna* (Cramp & Simmons 1977). Ducks generally gather on safe areas of land or open water, free from disturbance and predation (Madge & Burn 1988). Little data are available on the behaviour of endemic, sedentary ducks of remote islands during this post-breeding period. Delacour (1954) reported of the Hawaiian Duck *Anas wyvilliana* that "after breeding, small moult gathering are formed". Moulton & Weller (1984) described similar behaviour of Laysan Duck *Anas laysanensis* which congregate "in large flocks to moult after breeding". For the Kerguelen Pintail, the risk of predation increases during the wing moult, partly due to a change in the prey available to the skuas after a massive departure of nesting penguins and petrels. The only places to escape predation are river banks (Milon & Jouanin 1953) and the tall vegetation of the Kerguelen cabbage *Pringlea anti-scorbutica* and *Azorella selago*. There is a scarcity of such protection on the Ile du Port, where the introduction of rabbits at the end of the 19th century led to the disappearance of the tall primeval vegetation. The Kerguelen Pintail, therefore, has been forced to adapt and to adopt an unusual moulting site.

*This research was supported by Terres Australes et Antarctiques Françaises, and is part of the programme of the Research Group on Antarctic Bird and Mammal Ecology directed by P. Jouventin. I am indebted to O. Chastel, M. Furuta and V. Schricke (French Hunting National Office) who improved the manuscript and the English.*

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