

Predator control to increase breeding success of Chatham Island oystercatcher *Haematopus chathamensis*, Chatham Island, New Zealand

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SUMMARY

Following predator control, and in conjunction with other conservation initiatives, the number of breeding pairs of Chatham Island oystercatcher *Haematopus chathamensis* in a 14 km management area increased from 16 pairs to 35 pairs. These birds produced 18-35 chicks a year. In 1999 the entire global population was only 142 birds but it had increased to 320 birds by 2004.

BACKGROUND

The Chatham Islands are a group of small islands located 800 km to the east of New Zealand. Two of the islands are inhabited by humans who introduced cats *Felis catus* which are kept as domestic pets and from which a feral population has become established. The Chatham Island oystercatcher *Haematopus chathamensis* is an endemic endangered shorebird, and a severe reduction in its population is attributed, in part, to heavy cat predation. An oystercatcher will leave the nest upon the approach of a cat hoping that their well camouflaged eggs hidden amongst tidal debris will not be located. Unfortunately cats are good at detecting nests and upon doing so eat the eggs.

In addition to cats preying upon eggs and young, the weka *Gallirallus australis* (an endemic New Zealand rail introduced to the Chathams in the early 1900s) also eat oystercatcher eggs. Weka are less of a threat than cats as they cannot displace adult oystercatchers from the nest and only approach when they are absent. However, oystercatchers often leave the nest to feed, especially in the early stages of incubation, and this is the main period that weka are a threat. Other introduced potential predators include Norway rat *Rattus norvegicus*, ship rat *R. rattus*, Australian brush-tailed possum *Trichosurus vulpecula* and hedgehog *Erinaceus europaeus*. Due to the relatively large size of oystercatcher eggs however, these are not considered serious

predators. Naturally occurring predators include red-billed gull *Larus scopulinus* and southern black-backed (kelp) gull *L. dominicanus*.

Due to the decline in numbers of the Chatham Island oystercatcher it was decided to initiate a research and recovery programme. When this began in 1999 the entire global population of this species was only 142 individuals.

ACTION

Initial predator control: Prior to commencement of the formal research and recovery programme, a season of predator control was undertaken in 1998/99. Methods employed included hunting with a dog and shooting, and trapping with leg-hold traps.

Predator control area: In 1999, a 14 km stretch of beach supporting 16 pairs of oystercatcher on the north coast of Chatham Island was selected for predator control. After the 1998/99 predator control, it was considered that trapping was more efficient than hunting and trapping became the main method of control.

Predator control through cage-trapping: Cage traps to catch cats and other potential predators were set up along the coastline. The traps comprised a 1 m long x 30 cm high steel cage with bait placed on a hook inside - when the bait is taken the door of the cage is pulled

shut. The traps were set up at approximately 100 m intervals along the beach, concentrating around oystercatcher territories or at likely beach access points for predators, such as stream channels. Traps were checked daily and re-bated as required. As the main island is large (over 100,000 ha) and some cats are domestic pets, total cat eradication was not an option and trapping concentrated on feral animals. Leg-hold gin traps were also used at the start of the programme but were gradually replaced by cage traps.

Cat control through education: Community education has highlighted the problems caused by domestic cats and helped to reduce the problem posed by cats through community-led initiatives. For example, on neighbouring Pitt Island all the domestic cats have been neutered to make them incapable of reproduction. This creates the possibility of a cat-free island in the future, with eradication of feral cats at some point, when neutered animals have died naturally.

Video surveillance: Video cameras were installed at oystercatcher nests in northern Chatham Island (both at managed and unmanaged beaches) so that the causes of nest failure could be established.

CONSEQUENCES

Trapping success: The results of the predator control are summarised in Table 1. About 50 cats/year were caught for the first three years, dropping to about 30/year in the last three years. The thin line of traps on the coast 'soaked up' the immigration of cats that trickled in during the summer months. Where feral cats were present they were caught quickly and eggs were not usually lost in the managed

areas. Norway and ship rats, although not the main target species, were caught as a bycatch of the trapping mainly in leg-hold traps.

Weka control and releases: Halfway through the control period, weka were released from half of the trap line and this had little effect on oystercatcher productivity. These releases were initiated for two reasons. One, there was a local landowner concerned that the number of weka being killed might affect their annual winter harvest of weka, and two, weka were less of a threat to oystercatchers than cats, only occasionally predating eggs and then only usually very early in the incubation period when oystercatchers were absent from the nest.

Video surveillance: Conclusive evidence that cats were the main impediment to chick production came after three summers of video filming. A total of 19 nests were videoed. It was found that 13 of 19 nest failures were caused by cats eating the eggs, and these failures all occurred in unmanaged areas. In the unmanaged areas, eggs generally lasted only one or two days if there was a cat present. Of the remainder, weka were responsible for three failures, red-billed gull one failure, sheep-trampling one failure and sea wash one failure. Rats were occasionally captured on film at nests, including one that removed a damaged egg. However, due to the relatively large size of the eggs, rats are probably not a threat to intact eggs. Australian brush-tailed possum were also observed on film visiting nests and handling eggs but were presumably naive individuals as they did not know how to break the eggs. Elsewhere on New Zealand (where also introduced) possums are known predators of birds eggs of a similar size to that of oystercatchers.

Table 1. Predator control results in 1998-99 (a combination of trapping with leg-hold traps and shooting) and during the Chatham Island oystercatcher recovery programme, 1999-2005 (mostly cage-trapping but with some use of leg-hold traps; gulls controlled by shooting; half of weka released from 2002 onwards).

Year	Feral cat	Weka	Brush-tailed possum	Norwegian & ship rat	Hedgehog	Gulls
1998/99	47	654	133	0	39	23
1999/00	54	719	61	44	41	53
2000/01	47	495	68	71	56	116
2001/02	27	560	8	39	19	2
2002/03	26	660	16	21	11	11
2003/04	29	428	9	34	15	58
2004/05	31	261	15	19	16	4
Total:	261	3,777	310	228	197	261

Oystercatcher productivity: During the six years of management (1999-2004) along the 14 km stretch of coastline in northern Chatham Island, between 18-35 chicks fledged per year, whereas few chicks were produced in unmanaged areas. The survival of the fledged young was very high and birds started to breed as early as two years of age. When predator control started, there were 16 breeding oystercatcher pairs within the 14 km management zone, six years later this had risen to 35 pairs. New pairs derived from offspring reared in the managed zone have also established territories in other areas, showing that the intensive work in one area has helped boost the population over a wider area, although breeding success is undoubtedly much lower due to predation pressure.

Oystercatcher population census: The oystercatcher census was repeated in 2004 and the population size was estimated at up to 320 birds, more than doubling the 1999 population. The original management plan aimed for 250 birds by 2011, so this target was reached several years early.

Long-term management strategy: In 2005, management activity will shift to Pitt Island to help boost the oystercatcher population in the southern part of the species' limited range. It is expected that there will be a decrease in the production of chicks and the survival of juveniles in the currently managed areas on Chatham Island but it is considered that the survival of adults should be sufficient to withstand a period without predator control. Unfortunately budget constraints restrict continuous predator management on Chatham Island whilst undertaking work on Pitt Island. In a few years time it is planned to recommence predator management on Chatham Island to boost the productivity of the birds there once again.