

Storm surge protection of Chatham Island oystercatcher *Haematopus chathamensis* by moving nests, Chatham Islands, New Zealand

Moore P. & Williams R.

Department of Conservation, PO Box 10420, The Terrace, Wellington 6143, New Zealand

SUMMARY

Introduced marram grass *Ammophila arenaria* has changed the beach profile so that for Chatham Island oystercatchers *Haematopus chathamensis* the flooding of nests is now a serious problem. From 1998 to 2004 nests were routinely moved upshore to save them from storm surges and high tides. During this period the oystercatcher population increased from 16 to 34 pairs.

BACKGROUND

The Chatham Island oystercatcher *Haematopus chathamensis* is only found on the Chatham Islands situated 800 km east of New Zealand. A census in 1999 found there to be only 142 birds left. There was a desperate need for a recovery programme, and a research project commenced in 1999 to help guide management.

Marram grass *Ammophila arenaria* was introduced from Europe in order to help stabilise sand dunes degraded by introduced livestock (sheep and cattle). Marram however, has changed the profile of the natural native dunes. The native dune plant community is much less dense and creates a flatter wider dune system (suitable for beach-nesting oystercatchers) in comparison with the dense marram tussocks which create a steep dune system with sand 'cliffs' at their seaward face. Marram gradually takes up more and more of the beach as the foredunes edge towards the high tide mark, leaving little room for nesting oystercatchers and putting the eggs (which take about 28 days to hatch) and young at increased risk of being washed away by storm surges and high tides. In some years, many eggs were washed away and the birds would not breed successfully without human intervention, such as the provision of artificial nest platforms or gradually moving nests up the beach by hand.

The moving of nests (detailed below) was only part of the Chatham Island Oystercatcher

Recovery Plan, initiated in 1999, which also entailed dune restoration (Moore & Davis 2005), stock fencing and enclosures (Moore 2005a), tyre nest-platforms (Moore 2005b), and predator control (Moore 2005c).

ACTION

Chatham Island Oystercatcher Recovery

Plan: In 1999 a 14 km stretch of beach on the north coast of the main Chatham Island was selected to be managed in order to attempt to enhance the breeding success of Chatham Island oystercatchers. At this time there were 16 pairs holding territories in this area.

Moving nests by hand: When tyre nest-platforms were introduced in 1999 as a way to protect oystercatcher eggs from being washed away by high tides and storm surges (Moore 2005b), it was discovered by a fieldworker, Rex Williams (who conducted most of the oystercatcher management work over several seasons), that oystercatcher eggs could easily be moved little by little up the beach by shifting them to a new hand-made scrape. The new scrape was simply scooped out of the sand to form a shallow hollow and the eggs (one or two depending on the clutch size) carefully removed from the original scrape and placed into the new one. The new nest was furbished with tidal debris, such as driftwood and kelp that was present around the original scrape.

Creation of open areas for nests: In many

Table 1. Average distance Chatham Island oystercatcher nests were moved up beaches and number of nests raised-up on sand mounds, 1998-2004.

Year	Pairs	Nests	Distance moved (m)	Standard deviation	Range (m)	Number moved	Raised
1998 /99	16	23	6.2	2.6	2-10	11	0
1999 /00	16	21	5.25	4.2	2-15	12	0
2000 /01	20	26	8.8	7.8	2-32	23	3
2001 /02	24	33	6.2	4.3	1-18	14	4
2002 /03	28	32	4.9	2.8	2-10	12	2
2003 /04	34	43	4.8	4.0	1-12	6	3

oystercatcher territories, an alcove or ledge on the seaward edge of the marram dunes was created removing the marram by hand-pulling an approximately 5 x 5 m square and subsequently keeping the area open by yearly application of herbicide (knapsack spraying with Roundup or Gallant). The aim of this was to provide a safe site to which to gradually move the nests. This was especially important in areas where the beach had become very constricted by advancing marram dunes and thus eggs being particularly vulnerable to sea surges and high tides.

CONSEQUENCES

Moving nests by hand: Creating artificial scrapes and moving eggs up the beach was found to be just as effective as using tyre nest-platforms (Moore 2005b). Therefore, less reliance was placed on the use of the platforms as the Recovery Plan progressed. Where there was no safer site to move a nest, they were also raised on mounds of sand. After adjustments to the nest site (furbishing with tidal debris etc.), so long as the movement of a nest was small (no more than about a metre per day), the birds obliged by returning to their eggs and incubating as before. Of the 78 nests moved over six breeding seasons (1998-2004), the average total distance each was moved was approximately 6 m. A summary of the average distances that nests were moved in each of the six breeding seasons, the number moved and the number of nests raised on sand mounds, is shown in Table 1.

In 1998/99, 11 nests were moved but still six of these were washed away. In 1999, 12 nests were moved and three were washed away. In the following years there were no losses to the sea until 2003 when two were washed away. The increasing success in nest protection was partly due to increasing boldness of the interventions i.e. rising and moving nests as a matter of course and creation of alcoves in the

marram. Fortunately also, most years were not very stormy. In the 2004/05 season when there were 33 pairs present along the 14 km managed stretch, there were very high stormy seas that regularly washed through the beaches. No data is available (at time of writing) for number of nests moved but 26 nests were washed away. Some pairs lost more than one clutch and several made three or four nesting attempts during the season - pairs will often attempt to re-nest, up to four times per season, if clutches are repeatedly lost.

Creation of open areas for nests: Creation of open areas for nests generally proved very beneficial, providing a safe end point for which to move nests. Some pairs (whose previous nesting attempt had been successful) chose to nest in these clearings of their own accord in following years.

Conclusions: The raising of oystercatcher nests onto nest platforms (Moore 2005b), moving nests up the beach and raising them on sand mounds indisputably helped to protect many eggs from storm surges and high tides - original nest sites were usually washed over at least once during the breeding season. In some years, more than half of the clutches were still washed away, despite best efforts to move the nests to as safe sites as possible. As experience has been gained, techniques have been improved upon and breeding success has gradually increased.

REFERENCES

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