

The use of nest boxes for blue penguins (*Eudyptula minor*)

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ABSTRACT

Some 300 wooden nest boxes have been used for blue penguins in the Oamaru area. Experience suggests that many blue penguins prefer nest boxes to natural nest sites. Reproductive success in nest boxes is high, and the use of tannalised timber appears to present no risk.

INTRODUCTION



FIGURE 1. "T" TYPE NEST BOX

illustrated in Figure 1.

FIGURE 2. BLUE PENGUIN NEST BOX



A small number of boxes of the same design were used in a portion of the Oamaru quarry around the same time after an unsuccessful attempt by the Borough Council to fence penguins out of the area.

After 1987, Kennedy installed a number of nest boxes at Pilots Beach on the Otago Peninsula, after blue penguin habitat there was largely destroyed by the construction of a picnic area.

Kennedy used boxes that were similar to that illustrated in Figure 2, except that they had smaller tunnel entrances and a non-removable lid. The boxes were covered externally in black polythene plastic as a precaution against tannalising chemicals leaching out of saturated timber onto the birds' plumage (E. Kennedy, pers. comm.). The boxes were dug into sloping ground and completely covered with soil, leaving only the entrance visible. Blue penguins promptly occupied

some boxes but little work was carried out at this time on monitoring the boxes and their inhabitants.

In 1989 a number of Kennedy-designed nest boxes were installed at Oamaru creek during a cleanup of an area adjoining a former timber treatment plant.

DESIGN REFINEMENT

It had been observed that the tunnel entrances to the boxes were too small for large pre-moult blue penguins. The small entrances also made it difficult for staff monitoring the boxes to get their hands inside to determine if penguins were present. It was decided to enlarge the internal size of the entrance to 150 x 150 mm. The development of the Oamaru quarry area as a blue penguin viewing area for tourists necessitated the placement of nest boxes to supplement the existing sites and to replace those under piles of wharf timbers and power poles, which were subsequently removed.

A monitoring programme was established to determine if the quarry penguins were adversely affected by the tourism development. In order to gain easy access to the nests, the front portion of the lid was left exposed and removable. Existing boxes at both sites were modified.

After the first breeding season of weekly monitoring of nest sites at the Quarry and Oamaru creek, it was noted that some boxes, mostly those with two chicks, became very wet and smelly. In an attempt to alleviate this problem two 25 mm ventilation holes were drilled in the sides of the boxes. While this has not eliminated the problem, it does allow the boxes to dry out more rapidly after the departure of the chicks.

TANALISED TIMBER

In 1990, it was discovered that the Oamaru creek site was extensively contaminated with heavy metals from the former timber treatment plant there. There was concern that the blue penguins nesting in the contaminated soil and sawdust may have elevated levels of the heavy metals. The livers of blue penguins killed by dogs were tested for arsenic and chromium by the Ministry of Agriculture and Fisheries (MAF) Invermay Laboratory.

MAF considered that the arsenic and copper levels were well below that found toxic in other species.

If the penguins nesting on high concentrations of tanalising chemicals did not have elevated levels of heavy metals in their tissues then it was reasonable to assume that the tanalised timber used in the construction of the nest box itself was of no danger.

REMOVABLE LIDS

While removable lids made the checking of the box and its contents easy; they were not without problems. Securing lids was a problem. Initially screws were used, but the time taken to open and refasten the lids was excessive, and there were problems with corrosion of the screws and warping of the timber.

Lids not securely fastened are prone to being dislodged by the penguins themselves during courtship and territorial defence. Most lids are currently held in place with stoppers (to stop them sliding off) and weighed down with a rock. A small number of boxes have had a one-piece lid fitted. In this way, the entire lid is removed to gain access to the nest. They have not, however, been well received by the monitoring staff who find them difficult to manage.

The use of removable lids means that the top cannot be protected from water infiltration by polythene plastic. This, however, has not proved to be a problem in the relatively dry Oamaru climate.

PLACEMENT

The optimum placement for nest boxes has proved to be placement into a slope. It is desirable to have the entrance as the lowest point so that any water finding its way into the box can escape.

Boxes should be placed no closer than 2 m apart, as blue penguins will vigorously defend their nest site out to a radius of about 1 metre.

BREEDING SUCCESS

Blue penguins using nest boxes at Oamaru have achieved reproductive success of up to 70% and fledging rates up to 2.06 per pair. Because of the difficulty of accessing 'natural' nests, no comparable data is available for non-nest box breeders in Oamaru.

It has been noted that several pairs of penguins have moved out of natural sites and into nest boxes, with some natural sites remaining vacant for 3 years now.

In a study of breeding success in at Taiaroa Head, Perriman and McKinlay (1995) observed that the mean number of chicks fledged per pair was 2.5 ± 1.35 ($n=10$) for pairs using nest boxes compared to 1.42 ± 0.96 ($n=52$) chicks per pair for pairs using burrows for breeding.

DISCUSSION

The nest box design in Figure 3 is the result of several modifications of the original design. Its tunnel was designed to allow the bulk of the box to be buried and also to restrict the access of dogs and cats.

Nest boxes are useful where it is desirable to gain easy access to nests for research purposes. They are an effective way of increasing the number of available nest sites in areas where nest sites are at a premium. They may be used to replace existing nests that have been destroyed.

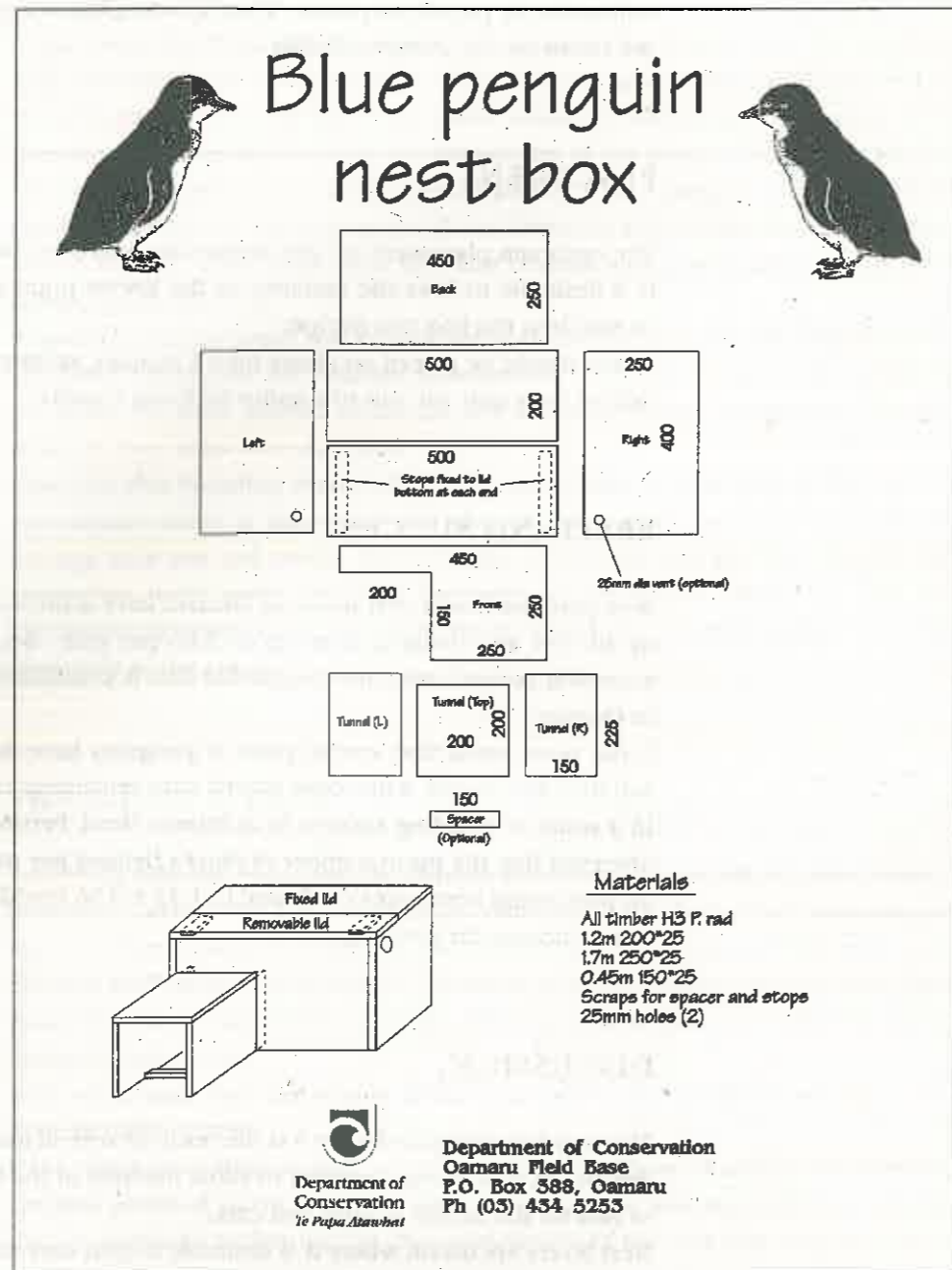
CONCLUSION

Over 300 nest boxes are now in place in Oamaru, and the majority are occupied. Their use has assisted in the dramatic growth of the Oamaru blue penguin population and enabled many of the nests to be monitored closely with minimal disturbance.

The use of tanalised timber in the construction of the boxes presents no risk to the penguins.

Breeding success in nest boxes is superior to that in 'natural' sites.

FIGURE 3. BLUE PENGUIN NEST BOX PLAN



ACKNOWLEDGEMENTS

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Finally, thanks to Bruce McKinlay who prompted me to write this and offered critical comment.

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