

From the mid-70s onwards, frequent concern has been expressed that probably the rarest penguin in the world — the yellow-eyed penguin — has been gradually disappearing from its traditional nesting grounds on the Otago Peninsula. In order to gauge the accuracy of this feeling, a dedicated group of Otago people has been doing its arithmetic. John Darby, vertebrate zoologist of the Otago Museum, reports on the findings of this penguin census.

Since October 1981, dozens of Otago and Southland people from all walks of life have spent a total of 846 hours sitting motionless gazing out to sea. From windswept, often wet, and mostly cold vantage points on the Otago and Southland coasts they have patiently counted yellow-eyed penguins as they come ashore. During this time 5,014 birds have been recorded leaving the sea, of which 473 were juveniles. Three hundred and sixty nine birds were recorded entering the sea, mostly from midday onwards. In fact penguins have been counted every hour of the day and two nights were spent counting them with the aid of a zeniscope.

So why this counting exercise on the grand scale? The fact is that for some time now people have believed the penguin is disappearing, particularly on the Otago Peninsula. Geoff Harrow, writing in *Notornis* in 1971, suggested that one of the reasons why the yellow-eyed penguin had established on Banks Peninsula was because humans were disturbing them on the Otago Peninsula.

In 1981 the Otago Peninsula Trust sponsored a penguin seminar which brought together interested groups to discuss the problem. It was this seminar that acted as the catalyst for the present programme. Counting was not thought at the time to be an activity that would become a major part of the programme, but it was soon to become almost a pastime in local circles.

Anti-social penguins

The yellow-eyed penguin is a secretive nester. It does not fit into the traditional penguin image of hundreds of squawking birds crowding together with two or three nests per metre. In fact, their nesting strategy appears to be that the further they can get away from their next door neighbours during the breeding season, the better. We have now followed nearly 500 nests over the last four years and only on three occasions have we found birds nesting within sight of their next door neighbour. Of those six nests only one has succeeded and only one bird has returned to its original nest site.

A little more than half of the birds use the same nest site from year to year. Frequently they alternate between two and some may even select a different nest site each year. Perhaps it was because many people considered that penguins use the same nest site from year to year that they thought birds were disappearing from the Peninsula. While many nests are fairly easy to find, most of them are not. In our first year it took us an average of 1.4 hours, often clambering through very difficult terrain, to find each nest.

Birds use almost every type of cover available: from traditional coastal forest habitat to flax; nettle; hebe; scrub; tussock; under logs and rocks. All nests have two things in common. Firstly all have a back to them — the base of flax plant is highly favoured — and secondly, the nesting pair must not be able to see the adjacent pair of birds. We have found nests nearly 600 metres inland and only time will tell us how far penguins will go into forests to nest; from the signs we have found, probably at least one kilometre. All of this suggests that nests are not easy to find, especially if you are trying to find every single one.

An early suggestion for carrying out the penguin census was simply to count

their footprints in the sandy shores that they are supposed to favour. Two disadvantages soon showed: counting footprints makes no distinction between adult and juvenile birds and secondly, there is no evidence whatsoever (despite popular belief) that the yellow-eyed penguins prefer sandy shores. In fact we have found more penguin colonies near rocky shores than we have sandy ones. The remaining option left was to sit down and count penguins at different stages of their annual cycle. It is reasonable to assume that the number of birds nesting in an area bears some relationship to the number of birds that cross the beach into the breeding area. Counting penguins this way allowed us to make the impor-



Flax planting by many voluntary organisations such as Forest and Bird has helped to provide a greater area of nesting grounds for the yellow-eyed penguin.