

SHORT NOTE

Survey of Fiordland Crested Penguins on Codfish Island

Fiordland Crested Penguins (*Eudyptes pachyrhynchus*) breed only in South Westland, Fiordland and western Stewart Island (Bull *et al.* 1985) but there is little information on their distribution or breeding status throughout that range. Recent surveys in the northern part of the penguins' range, from Doubtful Sound to Milford Sound in 1990 (McLean & Russ 1991) and in Dusky and Breaksea Sounds in 1991 (Russ *et al.* 1992) yielded a minimum total estimate of 451 birds and 136 nests. In addition to these surveys, two other Fiordland Crested Penguin colonies, on Taumaka Islands and at Jacksons Bay (both in South Westland) have been surveyed or monitored in the 1990s by Department of Conservation and University of Canterbury personnel. McLean & Russ (1991) estimated that 120-150 nests were on Taumaka Islands, then thought to be the largest breeding population known. McLean & Russ suggested that the Fiordland Crested Penguin may well be one of the rarest penguins in the world, having as few as 1000 nests annually.

In this note we present the results of a similar survey of Fiordland Crested Penguins on Codfish Island, Stewart Island region. To make the searches as consistent as possible with other Fiordland Crested Penguin surveys, we used the methods described by McLean & Russ (1991:185). Two to four observers (usually three) would slowly cover the rocky shore area, listening and searching for signs of penguin trails entering the bush and checking all likely rock crevices and caves for breeding birds. Each penguin trail would be followed up through the vegetation to a nest-site, scrape or penguin colony. As both Yellow-eyed and Little Blue Penguins were also landing on Codfish Island during our visit, we were often following fresh Yellow-eyed Penguin runs (only one Yellow-eyed Penguin was seen ashore during daylight hours on this trip). Whenever we found Fiordland Crested Penguins breeding we adopted a methodical search pattern, either by starting on the shore at 10-15 m spacings and working our way slowly up the hillside counting penguins and nests until all sign of the birds stopped (usually within 50 m a.s.l.), or by spacing observers within 5-10 m of each other and working across the hillside in a series of sweeps through a colony area. During searches we examined all likely areas (banks, overhangs, dense vegetation, root cavities, rocky areas) and counted the number of birds and nests. Nest contents were checked only if a bird was accidentally disturbed from the nest.

One colony in Sealers Bay was surveyed at the start of the trip and was surveyed again at the end of the trip. This allowed us to estimate changes in penguin numbers during the visit and provided additional data on nesting dates.

Results and discussion

Most sites on the northern and western sides of the island and all areas where penguin colonies have previously been seen were surveyed. In total, of the approximately 20 km of coastline on Codfish Island, about 65% was thoroughly searched or considered not suitable for penguins (e.g. cliffs). A

further 12.5% (2.5 km) may have been suitable but was not checked, while the remainder of the island was not visited.

Three colonies of Fiordland Crested Penguins were found during the survey, with a total of 259 penguins and 134 nests counted. In most cases both birds of a pair were together at the nest site, standing on a well-formed nest bowl, but by the end of the visit some of the birds had one or two freshly laid eggs. Numbers of penguins were divided fairly evenly between the three colonies. Details of the numbers of birds, nests and eggs found for each colony is given in Table 1, and the exact location and description of each colony are available from the authors.

TABLE 1 — Numbers of birds, nests and eggs found in each of the Fiordland Crested Penguin colonies surveyed on Codfish Island in 1992

Status Survey Date	Sealers Bay 6/8/92 ^b	Big Bight 1/8/92	NW Bay 2/8/92
1 pr with nest ^a	36	17	27
1 pr with nest (1e)	3	1	1
1 pr with nest (2e)	4		
1 bird with nest ^a	20	2	4
1 bird + nest (1e)	2		1
new nest - no bird ^c	15		
nest - no bird (1e)	1		
birds - no nest	10	36	7
Total nests	81	20	33
Total birds	117	74	68

^a Nest contents not checked (could contain 0, 1 or 2 eggs).

^b Earlier survey of this colony on 31/7/92 found 70 birds and 23 nests (no nests with eggs seen).

^c Some of these nests may belong to birds that were recorded as "birds - no nest".

One additional colony was found on the western side of the island on 18/11/92 by Simon Torr and Bill Mulla. This colony contained 22 adults and at least seven large chicks. These birds are not included in the totals as they may have been counted in August in one of the other colonies.

Codfish Island is an important breeding island for Fiordland Crested Penguins. The minimum total number of nests that we found on the island was 134, which is similar to the estimated nesting populations on Taumaka Islands in South Westland, the Shelter Islands in Doubtful Sound and Breaksea and adjacent islands (c. 215 nests in 1992, McLean *et al.* 1993). No other localities surveyed to date have had similar numbers of nests.

As we did not survey the whole island, our counts represent the minimum numbers of penguins and nests present. Fiordland Crested Penguins have been seen ashore on the unsurveyed southwestern coast of the island in the late 1970s (R. Nilsson pers. comm.) although a later Department of Conservation internal report (Stewart Island files) made no mention of penguins in this area.

The colonies covered only a small portion of the coastline and, except for the North West Bay colony (which was centred on an unusually large rock pile), there was no obvious geographical feature that might be used to predict the position of further colonies. As there appears to be abundant suitable nesting habitat near the present colonies, habitat is probably not a limiting factor in the distribution on Codfish Island.

Acknowledgements

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RICHARD MALONEY, NIKKI WELLS, SIMON ELKINGTON,
Department of Conservation, Private Bag, Twizel
 LINDSAY CHADDERTON, *Department of Conservation, P.O. Box 3,*
Stewart Island



SHORT NOTE

Waders at Suva Point, Fiji, during a cyclone

The waders of the Suva Point area of Viti Levu have been well described (Morgan & Morgan 1965, Smart 1971, Miles 1982, Skinner 1983), including their numbers and arrival and departure times. Suva Point has large areas of sheltered intertidal mud and sand flats and a few isolated stands of mangroves. It is the only suitable wader feeding ground for many kilometres in each direction.

During periods of residence in Suva during 1992 and 1993 I made regular observations of waders from Suva Point as far north-east as Vatuwaqa Beach. Of particular interest were land counts made at the time Cyclone 'Fran' was closest to Suva in March 1992.

As Skinner (1983) stated, Pacific Golden Plover (*Pluvialis fulva*), Turnstone (*Arenaria interpres*) and Bar-tailed Godwit (*Limosa lapponica*) roost at high tide on a string of playing-fields adjacent to the shore. On 8 March 1992, between 0830 and midday (over high tide), when Cyclone 'Fran' was causing higher than usual tides and the onshore wind was E to NE at Force 7 to 9, I made counts at all known playing-field or lawn roosting sites. Waders were found roosting and sheltering at eight sites (Stella Maris School rugby field, Institute of Marine Science lawns, FINTEL lawns Vatuwaqa, rugby field opposite Golf Club, rugby field opposite IMR, Corpus Christi College