BREEDING BY FANTAILS (Rhipidura fuliginosa) ON TIRITIRI ISLAND

By IAN G. McLEAN

ABSTRACT

Breeding by 11 pairs of Fantails *(Rhipidura fuliginosa)* was studied on Tiritiri Island during the 1981/82 breeding season. All pairs observed attempted to breed in late September or early October, but only three pairs laid eggs before November. Eight pairs each produced only one successful clutch. No new nests were begun after early December. I conclude that Fantails may have a shorter breeding season and lower overall breeding success on islands than on mainland New Zealand.

Although two detailed studies of the breeding biology of Fantails *(Rhipidura fuliginosa)* have been published recently (McLean & Jenkins 1980, Powlesland 1982), in neither were individually identifiable pairs watched closely for the whole breeding season. Blackburn (1965, 1966) studied one pair which successfully reared five broods and 15 young in one season.

Fantails are generally described as breeding from August to January or February (Oliver 1955, McLean & Jenkins 1980, Powlesland 1982). This time period is based on first and last sightings of active nests and may not represent the breeding activity of most birds within populations. Here, I describe the breeding activity of 11 individually identifiable pairs of Fantails on Tiritiri Island in the breeding season of 1981/82.

METHODS AND STUDY AREA

I visited Tiritiri Island for about four days twice each month from 1 October 1981 to mid-January 1982. Suitable habitat for Fantails occurs in valleys on both sides of the island and around the cliff edges. The forested valleys are separated by grassland, which Fantails seldom crossed. In 1981/82, each valley contained 1-4 pairs of Fantails. Some birds were colour banded early in the study, and others were identifiable by unusual colour patterns, broken tail feathers, or song. Three pairs were studied in the largest valley, two in each of three other valleys, and one in each of two valleys. The birds studied represented about one-third of all the pairs on the island. Vegetation on the island has been described by Esler (1978) and West (1980).

On each visit to the island I determined the breeding status of each pair by searching for nests or checking nests that had been found previously. I may not have found all nests that were started but abandoned soon afterwards, but I believe that I found most nests in

which incubation was initiated. Parent birds are easily followed to nestlings and fledglings, and I am confident that I found most nests in which eggs hatched and that I found all groups of fledglings.

RESULTS

Ten pairs were watched closely enough through the entire season for me to be confident that I found most nesting attempts. One additional pair that fledged two broods is included in the data on time of breeding because two was the most broods fledged by any pair. Four nests of pairs other than these 11 were found and are included in Table 1.

Success and time of breeding

I saw no dependent or independent fledglings when I first visited the island at the beginning of October. Thus any nesting attempts made in August were not successful. In early October, most pairs were either performing prebreeding behaviour such as courtship feeding or were nest building, suggesting that little nesting activity had taken place earlier in the season.

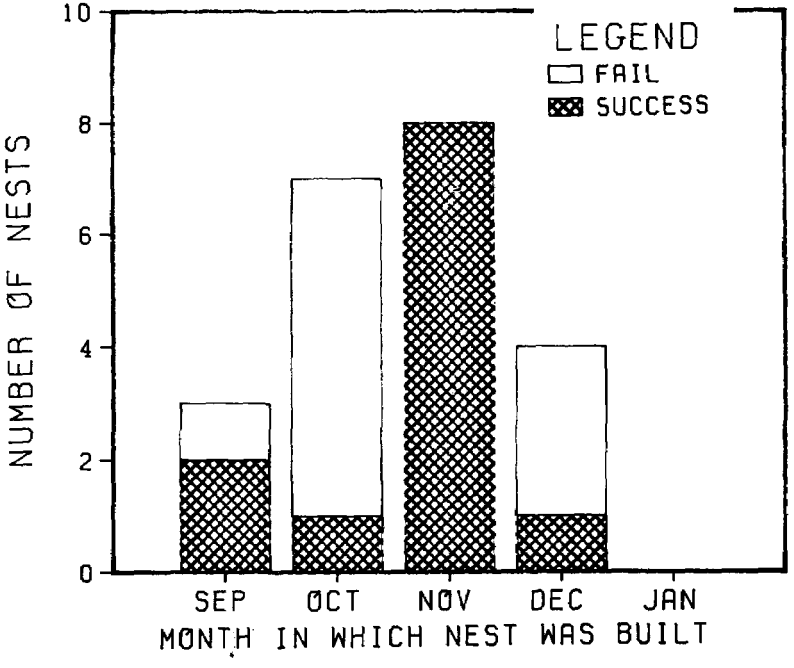

FIGURE 1 — Relationship between time of breeding and nest success for Fantails on Tiritiri Island

The maximum number of nesting attempts made by any pair was three. Four pairs made three attempts, of which one had no success and three had one success (defined as fledging at least one young). Six pairs made two nesting attempts, of which four had one success and two had two successes. One pair made only one nesting attempt, which was successful. The female of this pair had an injured leg when first seen in early October and, although the nest was completed in mid-October, she did not lay until late November. She also laid an unusually small clutch of 2 eggs.

I determined the month in which a nest was begun by observation of nest building, by backdating from known events using known periods of incubation or nestling stage (McLean & Jenkins 1980, Powlesland 1982), or by estimating fledgling age from tail size (see McLean & Jenkins 1980). The injured female is included in Fig. 1 as a November breeder as she did not begin incubation until late November.

All 11 pairs attempted to breed in October. Three nests were begun in late September and 12 nests had been started by the end of October. (Two more nests, which were not completed, were begun in October or November but a definite month could not be assigned). Only three of these nests were successful (Fig. 1), and seven of the 11 pairs had laid no eggs by the beginning of November. All eight nests in which clutches were laid in November were successful. Only one of four nests begun in December was successful. No nests were begun after the first week of December.

Clutch size and success per pair

Nine nests containing eggs were found: one (belonging to the injured female) with two eggs, seven with three eggs, and one with four. These values are minimum clutch sizes because no nests were checked immediately after all eggs were laid and so I could not determine the total numbers of eggs produced.

I determined the number of fledglings produced for all 12 successful nests. Three young fledged from each of two nests begun in late September; two young fledged from one nest begun in October; of the eight nests begun in November, one young fledged from one nest, two fledged from four, three fledged from two, and four fledged from one; three young fledged from the nest begun in December. Mean $\pm$ SD of young produced was 2.5 $\pm$ 0.80. There was no obvious relationship between when nest building started and the number of young produced.

Heights of nests and tree species used

Nest height and tree species used were determined for 25 nests (Table 1). All nests were built in species common in the forest understorey on Tiritiri Island except for one nest that was built in a macrocarpa near the lighthouse station. All but one were built in

TABLE 1 — Tree species used and nest heights for Fantail nests on Tiritiri Island

Tree species	Number of Nests	Height range(m)	Mean height	Use of each species (%)
Cyathea/Dicksonia sp.	6	1.2-3.0	2.0	24
Coprosma sp. (large leafed)	4	1.4-3.2	2.0	16
Coprosma rhamnoides	3	1.5-3.0	2.0	12
Melicytus ramiflorus	3	1.6-2.0	1.8	12
Dysoxylum spectabile	2	1.8-8.0	4.9	8
Macropiper excelsum	2	1.8-2.0	1.9	8
Leptospermum sp.	2	1.2-1.6	1.4	8
Metrosideros excelsa	1	1.2		4
Cupressus macrocarpa	1	2.0		4
Unknown	1	2.6		4
Totals	25	1.2-8.0	2.2	100

the lowest 3 metres of the forest. The high nest (8 m) was not successful. The mean (± SD) height of the other 24 nests was 1.9 ± 0.63 m. There was no significant difference between the heights of nine nests known to be successful (1.8 ± 0.65 m) and 13 nests known to be unsuccessful (2.4 ± 1.77 m; $p > 0.1$, Mann Whitney U test).

DISCUSSION

These results support the contention of McLean & Jenkins (1980) that " the start of breeding probably varies considerably between years and locations in this species." Fantails on Tiritiri Island did not attempt to breed until late September, most pairs did not lay eggs until November, most pairs had only one successful nest, and nests were not begun after early December.

The nest sites, nest heights, and clutch size reported here are typical for Fantails (McLean & Jenkins 1980, Powlesland 1982). Thus,

if the short breeding season and lack of success before November found in 1981/82 were unusual, weather may have been a factor. September and October were cool, wet and stormy, November was warm, and December and January were hot and dry. The areas of forest on Tiritiri are small, and four of the six valleys in which I worked are exposed to the prevailing southwesterly winds. Further study is needed to show whether the 1981/82 pattern of breeding is typical for Fantails on Tiritiri Island. Dennison *et al.* (1979) suggested that Fantails on the Chatham Islands have a shorter breeding season than do mainland New Zealand birds. A shorter breeding season and lower overall breeding success may be typical for island populations of Fantails compared with the mainland.

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IAN G. McLEAN, *Department of Zoology, University of Auckland*

SHORT NOTE

HELPER AT A GOLDFINCH NEST

At Queen Charlotte Sound on 24 December 1982, I noticed a pair of Goldfinches *(Carduelis carduelis)* nesting in a kowhai tree outside a window. I tied back some branches to give a clear view of the nest, which was 2 metres from the ground and 3 metres from the window. The nest was too close for binoculars to be effective, or needed.

Observation of the nest was usually from 06:45 to 07:30 and at irregular times during the day. One day I watched for most of the day.

I could tell the birds apart by some variation in the colour of