

genus *Laminalloptes* is ectoparasitic on tropicbirds (*Phaethon* spp.) and frigatebirds (*Fregata* spp.) but this species has only been found on the three tropicbird species *P. aethereus*, *P. lepturus*, and *P. rubricauda*. "Nothing has been documented from field work," but it is suspected "that these mites occur on the ventral surfaces of the flight (and possibly tail) feathers" (W. T. Atyeo).

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A case of co-operative rearing in wekas

Polygamous associations are frequent in some species of gallinules (Craig 1974, Garnett 1980), and polygamy or helping has been observed in other species, including the Inaccessible Island Rail *Atlantisia rogersi* (Watson 1975), the European Coot *Fulica atra*, the Red and White Crake *Latterallus leucopyrrhus*, and the Black Crake *Porzana flavirostra* (Krekorian 1978). Guthrie-Smith (1914) is the only author to report a non-monogamous association in wekas. He found a male with two females and thought that they might be raising chicks.

In the first four years of a study of the weka *Gallirallus australis* on Kapiti Island (Beauchamp 1986) no polygamous matings were found in the 36, 47, 48 and 49 bonds examined in the respective years. Breeding and parental care seldom overlapped and subadults generally deserted parental territories before their parents' later breeding attempts. Any chicks of the previous clutch that stayed in the parental territory were chased out by their parents when chicks appeared, precluding helping.

When I returned to the study area for a quarterly visit in December 1983 I found a trio of colour-banded birds together raising a chick 18 ± 3 days old. The male, which had occupied the territory for at least 6 years, was associated with two females. The older was a 4-year-old bird he had paired with in March-April 1980 and remained with since, raising a chick in the summer of 1981-82. The other female had entered the population as a subadult in January 1981 and thereafter maintained a home range which included part of this territory.

During December 1983, all three exchanged contact and territory calls together, performed the well-known evening-chorus spacing call as a trio and uttered contact and distress calls to the chick. The older female undertook most of the immediate parental care.

To my knowledge the adults had no close kin relationship. The younger female was not a chick of the older birds as they had not bred successfully the year she was raised. However, there is a slight possibility that the adults were fairly closely related, as my previous work has shown that some young take up territorial positions near their parents' territory. Most of the young dispersed further.

As I was not on the island when the bond was formed I can only speculate as to how it formed. All previous observations indicated that a male would tolerate the presence of a non-territorial female in his territory, especially if she assumed the normal submissive postures and gave submissive calls at his approach. The established female would not tolerate any other female in her territory, unless fights led to a situation where neither female was excluded. In all territorial challenges between females, the male played a subservient role until late in the challenge, when he would intervene to chase the challenging female away, often after the females had fought for up to an hour. If neither female was capable of excluding the other and the male did not intervene, a trio could result.

The mean expected condition, as expressed by weight for size, for the older female was 624 g and the younger 565 g (Beauchamp 1986).

During the period when the trio was formed, the territorial female was in poor condition (550 g) and was probably courting or incubating, while the non-territorial female was in slightly better condition (600 g).

When I returned in January 1984, the juvenile was at the stage of becoming independent (73 ± 3 days). Both females were present and moving around together, exchanging contact calls and territorial booms. Most spacing calls were still given as a trio. The older female was in slightly better condition (575 g).

When I returned for a week-long visit in February, I could not find the younger female. All spacing calls were given as a duet by the original pair. Both birds were in full moult. The male weighed 875 g, while the female was in better condition than throughout the trio period and was estimated from body size to be 650+ g. Food seemed to be plentiful within the territory, and three just-independent subadults were in residence. The pair was not trying to exclude them. If the younger female was resident I would have found her. It appeared that the trio had broken up.

In May 1984, I returned to the territory and found the trio was in existence again and looked forward to seeing whether they would breed in the summer and autumn of 1984-85. In two visits during this period I have been unable to find the younger female, and no breeding occurred in this territory.

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