THE DISTRIBUTION OF BANDED RAILS AND MARSH CRAKES IN COASTAL NELSON AND THE MARLBOROUGH SOUNDS

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ABSTRACT

The distribution of Banded Rails and Marsh Crakes in coastal Nelson, Buller and the Marlborough Sounds was surveyed between October 1980 and December 1982. Banded Rails and Marsh Crakes were found only in saltmarshes in Nelson and the Marlborough Sounds, though Marsh Crakes were difficult to detect and could have been more widespread.

Banded Rails were found only in saltmarshes with a freshwater supply and with stands of sea rush and mixed stands of jointed rush and marsh ribbonwood. The Nelson - Marlborough Banded Rail population consisted of about 100 breeding pairs and is isolated from the Banded Rail populations further north and south.

INTRODUCTION

The Banded Rail (*Gallirallus philippensis*) is widespread in the south-west Pacific (Ripley 1977). The New Zealand subspecies (*G. p. assimilis*) was once widespread in New Zealand (Buller 1888) but has disappeared from many parts of the country (Cunningham & Wodzicki 1948, Stidolph 1926 & 1931 and Stead 1927). Since about 1930 it has been confined to wetlands on Great Barrier Island, the northern half of the North Island, Nelson and Marlborough. It is also on some forested and scrub-covered islands in the Three Kings, the Poor Knights and the Muttonbird Islands to the south-west of Stewart Island.

Although they are frequently reported from saltmarshes in the Nelson area, the distribution of Banded Rails in the South Island is not well known. Falla *et al.* (1979) and Fleming (1982) recorded Banded Rails only from north-west Nelson, and yet Kinsky (1970) recorded them from Pelorus Sound in Marlborough as well as north-west Nelson. Bull *et al.* (1985) recorded Banded Rails only from Tasman Bay. Records in the Classified Summarised Notes in *Notornis* note Banded Rails mainly in Tasman and Golden Bays, although there are a few records from Marlborough.

Though less conspicuous than Banded Rails, Marsh Crakes (*Porzana pusilla*) have been recorded throughout New Zealand (Bull *et al.* 1985). They are more often seen in the South than the North Island, and are in both coastal and inland wetlands. In Nelson and Marlborough they are known from scattered localities along the whole coastline.

As part of a larger study attempting to explain their peculiar distribution in New Zealand I investigated the effects of topography and vegetation on the distribution of Banded Rails in the northern South Island. Information on the distribution of Marsh Crakes was collected at the same time but was not the primary aim of my study.

METHODS

Between October 1980 and December 1982 I visited most of the saltmarshes and coastal freshwater wetlands in Nelson, the Marlborough Sounds, and Buller at least twice and searched them for Banded Rails, Marsh Crakes and Spotless Crakes (*Porzana tabuensis*).

I used three methods for detecting their presence: sightings, calls and sign such as footprints.

1. *Sightings:* All three species are very secretive, and in the thick vegetation of their habitats I saw few birds.
2. *Sound:* Apart from normal calling, Banded Rails often respond to tape-recorded calls by calling or by moving towards the tape recorder. However, their response is unreliable and I saw Banded Rails in places where there had been no response to taped calls.

   Both crakes are notorious for their unpredictable response to taped calls.

   I played taped calls of Banded Rails, Marsh Crakes and Spotless Crakes at most of the saltmarshes and swamps I visited, but because this method is not reliable, I did not take a lack of response to be conclusive evidence that a species was not present.
3. *Sign:* Banded Rails leave conspicuous and distinctive footprints in the mud of saltmarshes. Their footprints are 36-47 mm long, as are those of oystercatchers, Spur-winged Plovers, Pied Stilts, crakes and young wekas. However, the footprints of the waders are asymmetrical whereas those of rails are symmetrical; crakes have thinner toes and, being lighter, leave fainter impressions in the mud than Banded Rails; and wekas small enough to cause confusion are always with their large-footed parents.

   Other indicators of Banded Rails were their distinctive feathers and faeces and sometimes dead birds.

With the light impressions made by crakes in the mud, their very shy nature, and their small inconspicuous droppings, my attempts to define their distribution were far less reliable than for Banded Rails.

As rain and tides obliterate footprints, which proved the most reliable method of detecting rails, I did not try searching after rain or high tides.

RESULTS AND DISCUSSION

Banded Rails

Distribution: The places where I found Banded Rails are shown in Figure 1. The population of Banded Rails in Nelson and Marlborough seems to be an isolated one. I found no Banded Rails in the saltmarshes just south-east of the Marlborough Sounds, or in Buller. The most recent record of Banded Rails in Buller was of one found in 1978 (Morse 1981), and there have been no other recent reports of Banded Rails in the South Island outside Nelson and Marlborough. In the North Island they are rarely seen south of a line between Kawhia and Opotiki (Bull *et al.* 1985).

I found no Banded Rails in freshwater wetlands and, with one exception, all the Banded Rail sign I found was in saltmarshes. The one exception was sign found in rush-covered pasture adjacent to a very small saltmarsh.

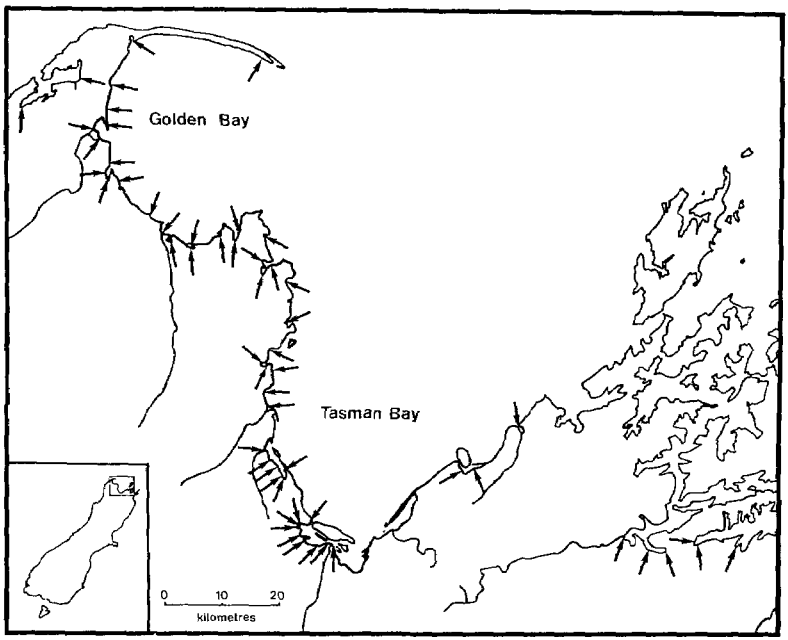

FIGURE 1 — Places where Banded Rails were found in Nelson and Marlborough

Elsewhere in New Zealand Banded Rails are found in freshwater wetlands, although never as commonly as in saltmarshes and mangroves. The Wildlife Service's Fauna Survey Unit recorded Banded Rails from many freshwater wetlands in the King Country, but most of the records were in wet, rush-covered pasture and scrubland, rather than in unmodified, raupo-dominated wetlands (Colin O'Donnell, pers, comm.). Few freshwater wetlands are left in Nelson and the Marlborough Sounds, and all of those that I checked for Banded Rails were raupo dominated. Furthermore, I found no Banded Rail sign in raupo adjacent to saltmarshes.

The lack of Banded Rails in raupo-dominated wetlands is consisitent with my conclusions in my study of the patterns of habitat use (Elliott 1987). I found that Banded Rails prefer vegetation which offers cover but does not hinder foraging movements (raupo is very tangled and dense at ground level).

Vegetation relationships: I found Banded Rails only in saltmarshes with stands of sea rush (*Juncus maritimus*) and mixed stands of jointed rush (*Leptocarpus similis*) and marsh ribbonwood (*Plagianthus divaricatus*). A requirement for sea rush is consistent with my observations (Elliott 1987) that Banded Rails are most active in vegetation dominated by sea rush, and though they are not active in stands of jointed rush and marsh ribbonwood, Banded Rails nest and roost there.

Freshwater supply: I found Banded Rails only in saltmarshes with a regular freshwater supply. Most saltmarshes have streams or rivers flowing through

them, but those on the landward side of Rabbit Island, on Farewell Spit, and on the spits at the mouths of the Moutere, Motueka, and Aorere Rivers do not, and these saltmarshes have no Banded Rails. The vegetation of most of these saltmarshes differs from other saltmarshes in that it is dominated by the low-growing glasswort (*Salicornia australis*) and sparse sea rush, which alone could account for the lack of Banded Rails. However, the vegetation of the extensive area of saltmarsh on the inside of Farewell Spit is apparently the same as that of other saltmarshes with Banded Rails, and yet Banded Rails are in only a very small area near the seaward end of the spit where there is fresh water.

Two possible reasons for the Banded Rail's needing fresh water are that

1. It has a metabolic requirement for fresh water, or
2. It needs the snail *Potamopyrgus estuarinus* in its diet.

I frequently saw both wild and captive Banded Rails drinking fresh water, and a container of fresh water left on a lawn adjacent to a saltmarsh near my house was used by wild Banded Rails for bathing and drinking every day for a month. In parts of the Pacific, Banded Rails are on islands without fresh water (Warham 1961, Dunlop 1970, Blackburn 1971), and yet Carpenter & Stafford (1970) found that the Banded Rail's close relative, the Guam Rail (*Rallus owstoni*), needed to drink fresh or at least brackish water to maintain its salt and water balance. The case for a metabolic dependence on fresh water is inconclusive.

The small snail *Potamopyrgus estuarinus* is an important element in the winter diet of Banded Rails (pers. obs.), and Winterbourn (1970) wrote "*Potamopyrgus estuarinus* has a clearly circumscribed habitat, and is confined to brackish water." Clearly *Potamopyrgus* is only in saltmarshes with some freshwater input, and so lack of Banded Rails may be linked to lack of *Potamopyrgus*.

Banded Rails and domestic stock: I did not find any Banded Rails in saltmarshes or parts of saltmarshes that were extensively grazed by cattle. Cattle eat rushes, particularly the jointed rush, and the upper reaches of cattle-grazed saltmarshes had few, if any, mixed stands of jointed rush and marsh ribbonwood. Furthermore, trampling by cattle often reduced the amount of cover.

Density of Banded Rails: I was unable to estimate the number of Banded Rails at most saltmarshes, but at 11 saltmarshes I could tell the number of pairs of birds with fair accuracy. At eight saltmarshes, I estimated numbers from a 6-month trapping and breeding study. At one small saltmarsh I found little Banded Rail sign, and the number of nests I found was consistent with there being only one pair of birds. In two small saltmarshes, I found even less Banded Rail sign and no nests. I assumed that only one bird was at each of these saltmarshes.

Table 1 gives the areas of saltmarsh per pair or single Banded Rail at these 11 saltmarshes.

Size of the Nelson-Marlborough population: Having regard for the approximate density of breeding pairs of Banded Rails, the size of the saltmarshes, and the factors that affect the distribution of rails I estimate that about 100 pairs of breeding Banded Rails are in Nelson and Marlborough. In addition there is an unknown number of non-breeding birds.

TABLE 1 — Areas of saltmarsh vegetation in saltmarshes with known numbers of Banded Rails

Saltmarsh	Number of Pairs of Banded Rails	Area (ha) of Saltmarsh Vegetation per pair
Ngaio	<1	1.6
Milnthorpe	1	1.2
Hoddy	<1	1.4
Tasman	2	3.0
Dominion Road	1	0.6
Harley Road	1	0.8
Old Bridge	1	2.0
Trafalgar Road	2	0.8
Stringer's Creek	3	1.2
Kina	1	1.9
Moana	<1	1.5
Mean		1.5

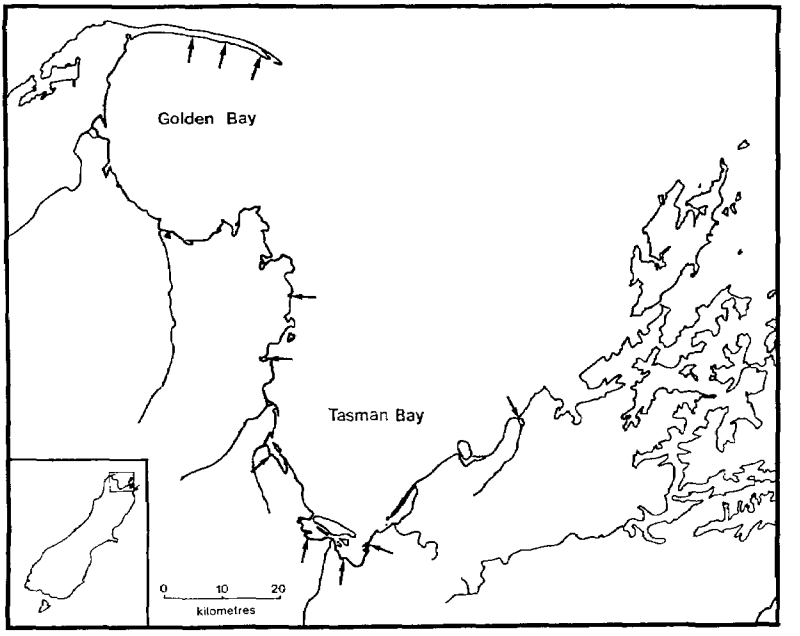

FIGURE 2 — Places where Marsh Crakes were found in Nelson and Marlborough

Crakes

Figure 2 shows the places where I found crakes. The three crakes I saw were Marsh Crakes, and all the sign I found was in saltmarsh. As Spotless Crakes rarely occur outside raupo-dominated freshwater wetlands, I assume that all were Marsh Crakes.

Marsh Crakes apparently have different habitat requirements from those of Banded Rails because

1. They were found in some of the saltmarshes that were apparently too small for Banded Rails
2. They were quite common in the Farewell Spit saltmarshes despite the lack of fresh water.
3. They were in some saltmarshes that had no stands of sea rush.

CONCLUSION

The Nelson - Marlborough Banded Rail population is vulnerable because it is small, dependent on unmodified saltmarshes, and scattered along the coastline. Many saltmarshes have only one resident pair of rails, and the long-term presence of Banded Rails is probably dependent on occasional colonisation from neighbouring saltmarshes. The disappearance of Banded Rails from only a few saltmarshes along the coast increases the isolation of parts of the population and thus makes the whole population even more vulnerable. Of particular concern are the Banded Rails in Marlborough Sounds. I estimate that only about 13 pairs of Banded Rails are east of Nelson City, and these birds and those west of Nelson are already separated by 35 km of unsuitable coast.

The only saltmarshes in the region with legal protection are those in Abel Tasman National Park and in the Farewell Spit Flora and Fauna Reserve, but probably too few Banded Rails are in these saltmarshes alone to sustain a population. There is clearly a need for more saltmarsh reserves in the region. A series of saltmarsh reserves equally spaced along the Nelson - Marlborough coast would keep the population from becoming unduly fragmented, but only the reservation of all saltmarshes could guarantee its long-term survival.

ACKNOWLEDGEMENTS

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SHORT NOTE

Grey-backed Storm Petrel at Doubtful Sound, Fiordland

On the night of 2/11/88 a Grey-backed Storm Petrel *(Garrodia nereis)* flew aboard RV Munida moored in Deep Cove, Doubtful Sound. The bird was presumably attracted by the lit-up vessel. The weather was overcast with rain. Moderate westerly winds had predominated for some days. The bird was given to me next morning by the crew, A. Heineman and P. Meredith. It was released on 4/11/88.

The lack of plankton-feeding birds plus very low surface salinity at the time suggested low available zooplankton. It is therefore unlikely that the storm petrel had been feeding in Doubtful Sound. Potential food abundance in Doubtful Sound would have been even lower in August, when Cooper (1980) recovered two *G. nereis* under similar circumstances. Breeding grounds are not known in the Fiordland region.

Similar recoveries were reported by Wright (1973), Esler (1978), Cooper (1980), and Morrison (1981, 1983). All were from the southern South Island remote from food sources. Seventeen birds have been recovered by beach patrols since 1953, mostly on the North Island west coast and all between May and December.

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