

# KERMADEC ISLANDS EXPEDITION REPORTS: EUROPEAN PASSERINES IN THE KERMADEC GROUP

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## ABSTRACT

The history and status of European passerines on the Kermadec Islands are reviewed and supplemented by observations from the Ornithological Society of New Zealand's expedition to the group from 13 November 1966 to 27 January 1967 and by more recent unpublished data.

Of nine species of European passerine recorded from the group, four are established, all apparently self-introduced from the New Zealand mainland some 720-980 km distant.

Counts on Raoul Island in January 1967 showed that the more abundant passerines were, in order of relative abundance, Starling, Song Thrush, Tui, Blackbird and Yellowhammer.

Measurements of Song Thrush, Blackbird and Starling are recorded.

## INTRODUCTION

From 13 November 1966 to 27 January 1967 seven members of the Ornithological Society of New Zealand (OSNZ), a botanist and an entomologist were based on Raoul (Sunday) Island (2938 ha) in the Kermadec group to study birdlife and do biological surveys. The venture marked the 25th anniversary of the Society.

Each of the Herald Islets was visited, and a party was on North Meyer from 19 November to 20 January (Merton 1968). We did not land on the more southern islands of the group, but data from visits to these islands by NZ Wildlife Service (NZWS) parties in August 1966 and November 1970, and other records, have been included.

Merton (1970) gave a general account of the birdlife of the Kermadec Islands. This paper examines in more detail the history and status of European passerines recorded from islands in the Kermadec group.

The Guineafowl (*Numida meleagris*), introduced to Raoul Island by Thomas Bell in 1906 and last reported in 1909 (Oliver 1955), and domestic poultry are the only birds known to have been introduced to the Kermadec Islands. Nevertheless, nine species of European passerine, four of which are now established in the group, have been recorded (Table 1). The New Zealand Tui (*Prosthemadera novaeseelandiae*), the only common indigenous passerine, is on Raoul Island only.

Table 1 lists the islands of the Kermadec group and the known status of the European passerines on them.

TABLE 1 — Distribution of European passerines on islands of the Kermadec group

	Skylark	Song Thrush	Blackbird	Yellowhammer	Chaffinch	Greenfinch	Goldfinch	Redpoll	Starling
Raoul	S	Xb	Xb	X	-	V	V	S	Xb
N Meyer	-	-	-	-	-	-	-	-	Xb
S Meyer	-	-	Xb	-	-	-	-	-	-
Napier	-	-	-	-	-	-	-	-	Xb
Nugent	-	-	-	-	-	-	-	-	-
Dayrell	-	-	-	-	-	-	-	-	Xb
N Chanter	-	-	-	-	-	-	-	-	X
S Chanter	-	-	-	-	-	-	-	-	X
Macauley	-	V	X	-	V	-	V	-	X
Haszard	-	-	-	-	-	-	-	-	-
Curtis	-	V	V	-	-	-	-	-	X
Cheeseman	-	-	-	-	-	-	-	-	-
L'Esperance	-	U	-	-	-	-	-	-	-

KEY: X = Present, b = Breeding confirmed,  
 V = Vagrant, S = Status unknown,  
 U = Unconfirmed report

### SPECIES RECORDED

#### SKYLARK *Alauda arvensis*

This was first recorded in 1944, when Sorensen (1964) noted three on Raoul, one of which he collected. The 1964 OSNZ party recorded one (Edgar *et al.* 1965). T. Blake of the 1966/67 meteorological team reported two on the farm in early January 1967, but members of the 1966/67 OSNZ party did not record it. One was seen on the farm on 16 and 19 April 1973 (J. C. Smuts-Kennedy, pers. comm.).

#### SONG THRUSH *Turdus philomelos*

In 1908 Iredale (1910) found the Song Thrush firmly established on Raoul, and Oliver (*in* Sorensen 1964), of the same party, found it nesting in September. On Curtis Island, Guthrie-Smith (1936) recorded it during a brief visit in April 1929, but it was not found there or on Cheeseman Island (7.4 ha) in November 1970 (B. D. Bell, pers. comm.). A few were on Macauley Island in August 1966 (J. F. O'Brien, pers. comm.), but it was not recorded there between 20 November and 1 December 1970 (B. D. Bell, pers. comm.). In July 1969 W. R. Sykes (pers. comm.) saw what he thought to be a Song Thrush on L'Esperance Rock. It has not been recorded on the Herald Islets.

Sorensen (1964) stated that it was "moderately plentiful" on Raoul in 1944, where the 1964 OSNZ party (Edgar *et al.* 1965) recorded it as "very plentiful". Counts of passerines on Raoul in January 1967 (Table 6) showed the thrush to be widespread, second in order of relative abundance, but perhaps less common in lower altitude coastal associations.

Two nests at the northern end of Denham Bay flat on 23 November 1966 contained four eggs and three eggs and a newly hatched chick. Recently fledged young were common at lower altitudes during the early part of our stay and two were recorded on the Denham Bay track on 10 and 14 December 1966. During the NZ Wildlife Service expedition of March-July 1973 one cat-eaten corpse was found.

Full song was heard throughout the day during November and early December 1966, after which it gradually declined. During January song was heard mainly in the early morning and the evening, with occasional full song and subsong during the day. At Smith Bluff full song began at 0410 hours on 13 January 1967, but it had become spasmodic by 0600 hours. J. Ireland (pers. comm.) noted that full song was general by early May 1973.

#### BLACKBIRD *T. merula*

Iredale (1910) found the Blackbird firmly established on Raoul in 1908. It was recorded on Curtis in 1929 (Guthrie-Smith 1936), but it was not seen there, or on Cheeseman Island, in November 1970 (B. D. Bell, pers. comm.). It was first reported from Meyer in 1944 (Sorensen 1964). On Macauley, a female was recorded in August 1966 (J. F. O'Brien, pers. comm.) and in November 1970 (B. D. Bell, pers. comm.).

In 1944 Sorensen (1964) considered it to be more commonly met with on Raoul than the Song Thrush and in 1964 it was "very common" there (Edgar *et al.* 1965). An early note in the camp log of the 1966/67 OSNZ expedition stated that Blackbirds were seen more often than Song Thrushes on Raoul, and mist-netting results of 39 adult Blackbirds to 12 adult Thrushes tend to confirm this observation. However, in contrast, data on relative abundance from counts in January 1967 (Table 6) show that, although Blackbirds were plentiful and widespread, they were less common on Raoul than Song Thrushes. The anomaly can perhaps be explained by the fact that Song Thrushes were more vocal than Blackbirds at that time and results may therefore be biased in favour of the Song Thrush. Furthermore, Song Thrushes seemed less common than Blackbirds at lower altitudes, where most previous observations have been made and the mist-nets were set.

A nest with four eggs was found on 5 December 1966, 0.5 m above the ground in a stunted ngaio (*Myoporum obscurum*) at Boat Cove, Raoul Island, and recently vacated nests were common at that time. Fledglings were plentiful in November and early December.

We found a few Blackbirds on both North and South Meyer but not on the other Herald Islets. Two used nests of the current breeding season were found on North Meyer. On 18 December 1966 a male on North Meyer was seen foraging in damp soil that Wedge-tailed Shearwaters (*Puffinus pacificus*) had scraped from burrows the previous night.

Song seemed the same as that of Blackbirds on mainland New Zealand, but the alarm call differed slightly. During November and early December full song was heard on Raoul and Meyer in the early morning, the evening and often throughout the day. Song then declined, and in January, Blackbirds were almost silent except for spasmodic full song and subsong in the early morning and evening.

**YELLOWHAMMER** *Emberiza citrinella*

E. B. Davidson (pers. comm.), who spent five months on Raoul in 1937, did not record this species. However, in 1944 Sorensen (1964) found it "moderately plentiful". The 1964 OSNZ expedition considered it well established and "fairly common in open areas". In 1966-67 we found it to be fifth in order of abundance among passerines (Table 6). It was in moderate numbers in more open areas and also occurred in small flocks near the meteorological station's fowl run and pig sty. It was singing well. Occasionally it frequented forest far from clearings. In June 1973, J. Ireland (pers. comm.) counted 60 on the farm and, also in 1973, J. C. Smuts-Kennedy (pers. comm.) saw it occasionally at Boat Cove and along the terraces towards Hutchinson Bluff.

It has not been reported from other islands in the Kermadec Group.

**CHAFFINCH** *Fringilla coelebs*

The only Kermadec record is one female seen on Macauley Island in November 1970 (B. D. Bell, pers. comm.).

**GREENFINCH** *Carduelis chloris*

This was first recorded by the 1964 OSNZ party, who saw a few near the meteorological station on Raoul in November (Edgar *et al.* 1965). J. Ireland (pers. comm.) found part of an old wing near the hostel on 11 March 1973. He also saw a live bird in the hostel garden on 21 and 27 May, three on the farm on 1 June, and one that visited the hostel garden throughout June and was seen again on 7 July 1973.

**GOLDFINCH** *C. carduelis*

The first record is that of Smith (1887) who, presumably upon information from the Bell family, stated that it was seen on Raoul two years before his visit in 1887, although neither Cheeseman of the same party nor Oliver and Iredale of the 1908 expedition mentioned Goldfiches in their accounts of birdlife. However, according to Oliver (*in* Sorensen 1964), R. S. Bell shot one on Raoul on 17 May 1909, and Sorensen recorded that three were seen there in 1940. Smuts-Kennedy (pers. comm.) reported that one occasionally visited the hostel garden during the first half of June 1973.

The Wildlife Service party on Macauley in August 1966 (J. F. O'Brien, pers. comm.) reported one seen with a flock of Silvereyes (*Zosterops lateralis*).

**REDPOLL** *Acanthis flammea*

Birds identified on Raoul in 1885 as "Linnets" (Smith 1887) were probably Redpolls.

According to Roy Bell's diaries of 1909 and 1910, small finches were common on Raoul in 1909 and some undoubted Redpolls were seen, one being shot by King Bell in May 1910; yet Oliver and Iredale did not record the species during 10 months on Raoul in 1908.

On 29 May 1944 Sorensen saw, in the crater on Raoul, a flock of small finches which seemed to be Redpolls only. Flight calls were heard near the meteorological station by the 1964 OSNZ party, and on 30 November 1966 DVM heard flight calls over D'Arcy Point ridge. The 1973 party reported scattered sightings of groups of up to five birds on Raoul Island (J. Ireland, pers. comm.).

The Redpoll has been reported only from Raoul Island.

STARLING *Sturnus vulgaris*

This was first recorded on Raoul by Iredale (1910), who in 1908 found it "firmly established", and on Curtis by Guthrie-Smith (1936), who in 1929 saw a flock of 10-12. In August 1966 the NZWS party on Macauley reported flocks of up to eight, and in November 1970 it was recorded on L'Esperance Rock, at which time small numbers were again noted on Curtis and Macauley. In 1944 Sorensen (1964) found it common on both Raoul and Meyer and breeding on Raoul. The 1964 OSNZ party found it common on Raoul and recorded it from both Meyer Islands and the Napier Islets.

Our counts of passerines on Raoul in January 1967 showed the Starling to be the most numerous species. In 1966-67 we found it widespread and most abundant in the parts of the crater disturbed by the 1964 volcanic activity, especially Blue Lake's islands and the coastal zone – particularly the north-eastern shore – where it fed on the prolific invertebrate life, mainly midges (*Chironomus* sp.) and their larvae. In wooded areas flocks fed in the canopy and in the crowns of nikau (*Rhopalostylis cheesemani*), presumably on insects and nikau berries. The pastoral farm (about 18 ha) was also a favourite haunt. J. C. Smuts-Kennedy (pers. comm.) counted 400 on the farm on 7 April 1973.

In the Herald group, the 1966/67 OSNZ party noted breeding on North and South Meyer, Napier and Dayrell Islets and recorded Starlings on both North and South Chanter Islets.

Occupied nesting holes in trees and cliffs were common in many parts of Raoul in November 1966. Most young had flown by the end of November and no occupied nest was found after the end of December. Fledglings were frequently seen early in our stay. The 34 Starlings mist-netted on Raoul between 27 November 1966 and 8 January 1967 had an adult:juvenile ratio of 1:2.4.

Flocks frequenting the crater and farm increased from a maximum of about 50 birds on 3 December 1966 to a maximum of about 1500 on 5 January 1967. The number of the birds flying to roosts on the Meyer Islands similarly increased and was still increasing when we left in late January. These evening flights were remarkably regular, all birds arriving within about 15 minutes. In mid-January, flights of 3-50 birds would begin to arrive on the western slopes of North Meyer at about 1830 hours and had all arrived by about 1845 hours. There were two lines of flight; most coming from the south-west, the direction of the crater and South Meyer Island, and the rest from the west, the direction of Low Flat and the Farm. The birds roosted on the leeward sides of the summit ridges of both islets. At 0600 hours on 26 December 1966 small flocks were seen to arrive at Low Flat from the direction of Meyer.

In December 1966 12 dead fledglings, which had apparently fallen from nesting holes, were found beneath Rayner Point cliffs on Raoul Island and a further 14 dead Starlings, mainly juveniles, were found on North Meyer. A composite sample of breast tissue from 21 birds from the crater, garden and farm on Raoul Island contained 0.2 parts per million DDE and 0.014 ppm DDD, but no DDT. These are sublethal quantities (report from

Wallaceville Animal Research Station). We therefore concluded that, with large numbers of young birds roosting on Meyer, deaths of this order from natural causes could be expected.

### MEASUREMENTS

At irregular intervals between 18 December 1966 and 9 January 1967 mist nets were operated at seven sites on North Meyer Island and at the Crater, the meteorological station and Low Flat, Raoul Island. All birds caught, as well as any fresh dead specimens found, were measured by the methods described by Baldwin *et al.* (1913). Song Thrush measurements are summarised in Table 2; Blackbird in Table 3, and Starling in Table 4. A comparison with Blackbirds and Starlings measured by us and others on mainland New Zealand indicates some possible minor size differences.

TABLE 2 — Summary of measurements (mm) of Song Thrushes

	Number	Mean	SD	Range
Exposed culmen	11	18.6	0.8	17.0- 20.0
Bill width	11	9.2	1.4	7.0- 11.5
Bill depth	12	6.5	0.5	6.0- 7.0
Wing	12	111.3	3.4	104.0-119.0
Tarsus	12	32.2	1.4	30.2- 35.0
Mid toe & claw	12	26.2	1.8	23.0- 29.0
Tail	11	81.0	5.0	72.0- 89.0

### RELATIVE ABUNDANCE

During three planned walks in January 1967 over similar distances, we counted birds to assess their relative abundance.

We made one-minute pauses every 4 minutes on the transects to record all birds seen or heard within c.100 metres. We also recorded all birds within c.100 metres of the transect lines between stations and added them to those noted at the subsequent station. We were careful not to record the same bird twice. Table 5 gives the physical conditions encountered on these transects and Table 6 the numbers and relative abundance of species.

We considered that, because the song of some species was subdued in January, our results are biased in favour of the more vocal species, Song Thrush and Yellowhammer. Starlings were heard more often than seen as they fed noisily in the canopy or in nikau crowns.

Song Thrushes were less common in the dry coastal associations; Tuis preferred the lower altitude forests; Yellowhammers recorded were all on the open seaward slopes; Blackbirds and small flocks of Starlings were widespread throughout

TABLE 3 — Summary of measurements (mm) of Blackbirds

MALES	Number	Mean	SD	Range
Exposed culmen	12	22.1	1.1	20.5- 24.0
Bill width	12	9.9	0.8	8.0- 11.0
Bill depth	12	8.2	0.6	7.0- 9.0
Wing	11	125.2	3.1	120.0-130.0
Tarsus	12	33.7	1.5	30.0- 35.5
Mid toe & claw	12	28.4	1.6	25.5- 31.0
Tail	11	107.2	3.1	101.0-113.0
FEMALES	Number	Mean	SD	Range
Exposed culmen	27	21.7	1.1	19.2- 23.5
Bill width	27	10.4	1.1	8.9- 13.0
Bill depth	27	7.6	0.6	6.5- 8.5
Wing	27	121.2	3.1	116.5-129.0
Tarsus	27	33.7	1.1	31.4- 35.0
Mid toe & claw	27	28.1	1.6	24.0- 30.0
Tail	27	101.9	4.2	91.0-109.0

TABLE 4 — Summary of measurements (mm) of adult Starlings

	Number	Mean	SD	Range
Exposed culmen	10	24.8	1.5	22.0- 26.5
Bill width	10	8.7	1.0	7.5- 9.5
Bill depth	9	8.6	0.6	8.0- 11.0
Wing	10	120.9	6.3	110.5-127.0
Tarsus	10	28.7	1.9	24.5- 31.0
Mid toe & claw	10	26.3	1.8	24.0- 30.0
Tail	6	61.5	4.5	57.5- 69.0

TABLE 5 — Physical conditions on transects

Transect	1	2	3
Date	12/1/67	14/1/67	14/1/67
Time	0805-1110	0700-1010	1435-1720
Locality and topography	Mt Prospect to Smith Bluff via Mt Mahoe and intervening ridge tops	Smith Bluff to D'Arcy Pt via Mt Mahoe and intervening ridge tops	Boat Cove to Low Flat via formed road; NE aspect
Altitude	300-480 m	240-450 m	70-240 m
Habitat	Pohutukawa, nikau, <u>Ascarina</u> rainforest	Pohutukawa, nikau, <u>Ascarina</u> rainforest	Pohutukawa, nikau, <u>Myrsine</u> coastal forest and grass road verge
Weather	Fine and cool with light northerly wind	Fine and warm with light northerly wind	Overcast, mild with light northerly wind

TABLE 6 — Relative abundance of passerines

	Starling	Song Thrush	Tui	Blackbird	Yellowhammer	Total
TRANSECT 1 (38 stations)						
No of birds	25	23	10	10	4	72
Positive stations	14	18	10	9	4	
TRANSECT 2 (39 stations)						
No of birds	56	19	9	14	4	102
Positive stations	18	17	8	13	4	
TRANSECT 3 (27 stations)						
No of birds	28	8	23	11	1	71
Positive stations	9	8	17	9	1	
TOTAL BIRDS	109	50	42	35	9	245
Relative abundance (%)	45	20	17	14	4	100



## DISCUSSION

Three of the four European species now so plentiful on Raoul were well established there in 1908 (Iredale 1910), the year in which Hull (1909) visited Norfolk Island (1380 km west of Raoul) and Lord Howe Island (2200 km west of the southernmost islands of the Kermadec group) and did not record any exotic species. The first did not reach Norfolk and Lord Howe Islands until about 1913 (Hindwood 1940), thus ruling out those islands as sources for the Kermadec birds. At that time European passerines had not colonised the Tongan Islands, 850 km north of Raoul (Mayr 1945), or Fiji, 1300 km north-north-west of Raoul (Watling 1982). Some may have come from Australia, 3000 km west of the Kermadecs, but the distance seems too great. Furthermore, the Yellowhammer, Chaffinch and Redpoll could have originated only in New Zealand because they are not in Australia, Tasmania, Norfolk, or Lord Howe. They have all been widespread and common in New Zealand since soon after their introduction in the 1860s (Thomson 1922) and probably found their way to the Kermadecs, helped by prevailing south-westerly winds (Williams 1953). In this regard it is of interest to note Jenkins' (1967) report of a Song Thrush which came aboard a ship 579 km south-west of Raoul, from where it had apparently flown, aided by a 24 knot north-easterly wind.

Although Cape Brett, 983 km south-west of Raoul, is Raoul's nearest New Zealand landfall, L'Esperance Rock (5 ha), the southernmost of the Kermadec group, is only 720 km NNE of Cape Runaway, and birds reaching L'Esperance Rock could readily disperse to other islands in the group: Curtis Island (42 ha) is 97 km NNE of L'Esperance, Macauley Island (236 ha) is 35 km NNE of Curtis, and Raoul (2938 ha) 120 km NNE of Macauley.

Smith (1887) recorded the first European passerines at the Kermadecs, when he visited Raoul at the time of its annexation in 1887. Apparently on information supplied by the resident Bell family, he stated: "Strange to say some Linnets and Goldfinches found their way here two years ago, but have not been seen since." The "Linnets" were probably Redpolls because Linnets (*Acanthis cannabina*) did not become established in New Zealand or Australia and have not been recorded from the Kermadecs by any other observer. Redpolls, which are abundant in New Zealand, and have colonised most outlying islands of New Zealand, are often called "brown linnets" and Greenfinches are often called "green linnets". Redpolls were apparently common on Raoul earlier this century (Sorensen 1964), whereas Greenfinches have only recently been recorded (Edgar *et al.* 1965). Strangely, Cheeseman (1887, 1888, 1890), Oliver (1911, 1912) and Iredale (1910, 1912) did not comment on Smith's statement, although they did discuss other species reported by settlers. Cheeseman recorded no European passerines in 1887, but Iredale (1910) found three species well established in 1908. Apparently only one further species, the Yellowhammer, has successfully colonised the islands since.

Like Iredale (1910), we found the European passerines unusually "wild", especially Song Thrushes and Blackbirds, but we could not confirm Iredale's surmise that this may have resulted from bullying by New Zealand

Kingfishers (*Halcyon sancta vagans*) and Tuis. We have seen similar behaviour by Blackbirds in remote parts of New Zealand.

Measurements from Raoul Island Blackbirds and Starlings suggest that they may differ slightly in size from those of mainland New Zealand. However, further work is needed to confirm this.

Transect counts and general observations indicate that Starlings comprise at least 50% of the passerine population while Song Thrushes, Tuis and Blackbirds are in about equal abundance. The relative abundance of Tuis and Blackbirds in forested areas of Raoul Island, which at that time were heavily modified by goat browsing, are similar to those of modified forests of the North Island, New Zealand (Diamond & Veitch 1981). However, Song Thrushes seem to be much more abundant in Raoul Island forests.

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