

FEEDING STATIONS AND FOOD OF NORTH ISLAND SADDLEBACK IN MAY

By I. A. E. ATKINSON

Botany Division, Department of Scientific and Industrial Research,
Lower Hutt

INTRODUCTION

Further observations of the feeding stations and foods of North Island Saddleback (*Philesturnus carunculatus rufusater*) were made on Hen Island by a combined Wildlife Branch - O.S.N.Z. - D.S.I.R. party between the 11th and 21st May, 1965. The party, led by Mr. D. V. Merton, included Pamela J. Atkinson, Angela M. Campbell, Messrs. K. C. Atkinson, D. J. Campbell, A. M. C. Davis, D. R. Ellis, J. L. Kendrick, N. J. Ledger, R. H. Sibson and the writer. All members contributed observations so that this paper is again the result of a team effort. The method of recording is similar to that used previously (Atkinson, in press). The results can be compared with earlier studies on Hen Island made in August and January (Atkinson 1964, Merton 1966).

FOODS

As was found by previous parties, the bulk of food taken by Saddlebacks appears to be insects. In 42 cases it was possible to be reasonably certain of the type of food taken (Table I).

TABLE I—FOODS OF SADDLEBACK ON HEN ISLAND: MAY, 1965

Food	No. of observations
Caterpillars, beetle larvae	10
Cocoons of case moth	3
Flower buds of fivefinger (<i>Neopanax arboreum</i>)	3
Fruit of fivefinger (<i>Neopanax arboreum</i>)	8
Fruit of houpara (<i>Pseudopanax lessonii</i>)	1
Fruit of pate (<i>Schefflera digitata</i>)	4
Berries of inkweed (<i>Phytolacca octandra</i>)	1
Berries of nightshade (<i>Solanum nodiflorum</i>)	1
Seeds of rewarewa (<i>Knightia excelsa</i>)	1
Nectar (?) of puriri (<i>Vitex lucens</i>)	8
Water	2
Total	42

Saddlebacks feeding at puriri flowers visited each flower for a few seconds and probed into the flower centre with the bill, probably, but not certainly, taking nectar. The most abundant source of nectar on the island during May appeared to be kohekohe, the flowers of which were being visited frequently by Bellbirds and Tuis, but apparently not by Saddlebacks.

Following two or three days without rain, J.L.K. saw a Saddleback drinking droplets of water hanging from ripe fivefinger berries. However, during a wet spell, K.C.A. saw a bird drink twice from the bowled basal portion of a live karaka leaf; each time the head was first lowered and then thrown right back.

FEEDING STATIONS

Most of the observations could be classified according to the type of forest in which they occurred (Table 2). More than half were of birds feeding within a quarter of a mile of the camp-site at Dragon's Mouth Cove. The forest types in this area are pohutukawa, kanuka, pohutukawa-puriri and taraire-tawa. The figures suggest that pohutukawa and kanuka forests were preferred to the other forest types. Further evidence that this is the case is given by Atkinson and Campbell (in press).

TABLE 2 — OBSERVATIONS OF SADDLEBACK FEEDING IN
RELATION TO VEGETATION TYPES ON HEN ISLAND:
MAY, 1965

Type of Vegetation	No. of times when feeding observations were recorded
Kanuka forest	15
Puriri-kanuka forest	2
Tawa-kanuka forest	1
Puriri-taraire-tawa forest	5
Taraire-tawa forest	2
Pohutukawa-puriri forest	2
Pohutukawa coastal forest	14
Other types of vegetation	2
Total	43

A summary of the recorded feeding stations is given in Table 3.

TABLE 3 — FEEDING STATIONS OF THE SADDLEBACK
ON HEN ISLAND: MAY, 1965

Feeding Stations	No. of observations	% of Total
Aerial feeding	0	0
Live foliage of vegetation canopy (excluding tufted crowns)	30	12
Live foliage of cabbage tree and epiphytic collospermum	4	1
Live foliage of lower branches and understorey	8	3
Dead foliage and vine stems	9	4
Flowers	9	4
Flower buds	4	1
Fruit	19	8
Twigs (living and dead)	23	10
Bark of branches and limbs	59	24
Branch axils, fissures, holes	16	7
Dead branches and limbs	16	7
Bark of trunks	9	4
Ground	36	15
Total	242	100

There was nothing to suggest that the birds used different feeding stations at different times of the day, so far as could be detected from fragmentary observations of many birds.

In many of the foliage observations the birds appeared to be taking insects, sometimes by hanging upside down and searching the undersides of leaves. D.J.C. saw one bird use its bill in the manner of a paper knife while removing a caterpillar from a rolled leaf of *Coprosma macrocarpa*. N.J.L. saw a bird hold a rolled dead leaf in its foot while the bill probed inside. Three or more observations of feeding among foliage were made with each of the following species:—cabbage tree (*Cordyline australis*), kanuka (*Leptospermum ericoides*), kawakawa (*Macropiper excelsum*), mapou (*Myrsine australis*), pohutukawa (*Metrosideros excelsa*), and taraire (*Beilschmiedia taraire*). Caterpillars were moderately abundant in the upper foliage of kanuka at this time of the year.

Of the birds feeding in holes and fissures, and under bark of branches, limbs or trunks, five or more were recorded in each of the following species:—*Coprosma macrocarpa*, fivefinger (*Neopanax arboreum*), kanuka, mahoe (*Meliclytus ramiflorus*), mapou, pohutukawa, puriri (*Vitex lucens*), and taraire. Several birds were seen using their upper mandibles as levers. One bird picked up a piece of bark with its foot and examined it (D.J.C.; A.M.C.) and I saw a bird use its foot to lever out a piece of bark from a kanuka trunk.

Twenty-five of the 36 birds feeding on the ground were in litter and, of the 21 cases where the forest type was determined, 13 were in pohutukawa coastal forest, i.e. in litter consisting of a varying mixture of pohutukawa, karaka (*Corynocarpus laevigata*), coprosma, whau (*Entelea arborescens*), mahoe, kawakawa and sometimes pukunui (*Meryta sinclairii*) leaves. A.M.C. saw a bird flicking aside leaves with its bill until a patch of bare soil was exposed, some 3 in. in diameter, and A.M.C.D. noted a bird probing into the soil. No birds were seen feeding in the litter of the mature taraire forest.

Five other observations of ground feeding were of birds feeding on logs. N.J.L. saw a male bird hack systematically through a 6 in. diameter rotten log, 12 in. long, until it was reduced to a heap of debris.

Table 4 summarises the results of the timed observations made of Saddleback feeding. Timed observations were begun only after the birds appeared to be taking little notice of the observer and the times recorded are approximate. Two birds timed at the same station were considered as two separate observations and the times for each bird added.

TABLE 4 — TIMES SPENT BY SADDLEBACKS IN THREE GROUPS OF FEEDING STATIONS ON HEN ISLAND: MAY, 1965

Feeding Stations	No. of birds observed	Total time of observations (min.)	Percentage of total
Among upper foliage, fruit and flowers	20	137	34
Among lower foliage and bark of branches, limbs, etc.	23	137	34
On ground	11	124	32
Total	54	398	100

DISCUSSION AND SUGGESTIONS FOR FURTHER STUDIES

The observations of Saddleback feeding stations made on Hen Island by the 1963, 64 and 65 parties are compared in Table 5.

TABLE 5 — COMPARISON OF SADDLEBACK FEEDING STATIONS: 1963 - 65

Feeding Stations	% of Observations		
	May 1965 (Data from present paper)	August 1963 (Data from Atkinson 1964)	January 1964 (Data from Merton 1966)
Canopy foliage	13	17	30
Understorey foliage	3	6	5
Dead foliage	4	8	5
Fruit	8	1	14
Branches, limbs, twigs	34	29	18
Branch axils, holes, dead branches	14	4	5
Trunks	4	11	5
Ground	15	21	18
Other stations	5	3	0
Total	100	100	100
	242	205	88
	observations in 10 days	observations in 10 days	observations in 28 days

The study of August 1963 did not separate twigs from branches, nor branch axils and holes from dead branches. It would seem worthwhile to do this in future so that food sources can be localised (see Atkinson 1966).

These figures suggest trends in the use of several groups of feeding stations that may be related to seasonal variation in the distribution of insects. However, repeated observations at these and other times of the year will be necessary before definite conclusions are possible.

What is clear is that the North Island Saddleback uses several feeding methods to eat a wide range of foods from a wide variety of feeding stations distributed through all levels in the forest. There is no clear indication of how food might limit the numbers of Saddlebacks on Hen Island or elsewhere but a few suggestions that may help to answer this question are as follows:—

1. Results to date have been based on fragmentary observations of many birds and much useful information can be collected in this way. It would be of value also, by colour-banding, to examine the daily pattern of feeding in particular pairs of birds. Measuring the proportion of day spent feeding could indicate the times of year when food is most scarce (see Gibb 1954).
2. We do not yet know the foods fed to nestlings; these may differ from those eaten by the adult. Use of an artificial nestling (see Betts 1954, 1956) could answer this question.
3. Judging by the number of instances (42 in May) when it was possible to identify the type of food taken, a party concentrating on this aspect could achieve valuable results.
4. Sampling for invertebrates. By sampling feeding stations that are visited frequently by Saddlebacks as well as sampling particular places in the litter, branches, or foliage where Saddlebacks have been seen feeding, it may be possible to understand why particular stations are visited more frequently at one time of the year than another.

ACKNOWLEDGEMENTS

I am indebted to Dr. J. A. Gibb, Mr. D. J. Campbell and Dr. E. J. Godley for helpful criticisms of the manuscript of this paper.

REFERENCES

- ATKINSON, I. A. E., 1964: Feeding Stations and Food of North Island Saddleback in August. *Notornis* 11: 93-97.
 ———, 1966: Identification of Feeding Stations of Forest Birds in New Zealand. *Notornis* 13.
 ATKINSON, I. A. E.; CAMPBELL, D. J. (in press): Aspects of the Habitat of Saddlebacks on Hen Island. *Proc. N.Z. Ecol. Soc.* 13.
 BETTS, M. M., 1954: Experiments with an artificial nestling. *British Birds* 47: 229-231.
 ———, 1956: Further experiments with an artificial nestling gape. *British Birds* 49: 213-215.
 GIBB, J. A., 1954: Feeding Ecology of Tits, with notes on Tree Creeper and Goldcrest. *Ibis* 96: 513-543.
 MERTON, D. V., 1966: Some Observations of Feeding Stations, Food and Behaviour of the North Island Saddleback on Hen Island in January. *Notornis* 13: 3-6.



SHORT NOTE

STRONG HOMING INSTINCT IN A SPOTLESS CRAKE

Near Pirongia, in the Te Awamutu district there are several swamps which contain Spotless Crakes (*P. tabuensis*). One of these birds was caught and killed by a cat on a farm two miles south of Pirongia. This led to further inquiries being made and it was found that this small shy rail was quite common in a swamp on Mr. H. R. de Thierry's property. However, this swamp was shortly to be burned and cleared.

In order to try to save some of these birds from almost certain destruction, it was decided to catch as many of them as possible, band them, and then release them in a suitable swamp near the Hamilton Junior Naturalists' Club Lodge at Oparau. With the aid of a party from the Club, mist-nets were set up across the swamp and the vegetation systematically beaten towards the nets. Two birds were caught and, after banding, released. They were in excellent condition; and after being in captivity for only five hours, they immediately disappeared into cover. The date of this operation was 5/12/64.

On 22/1/65, about six weeks later, Mr. D. V. Merton, Wildlife Officer, Auckland, assisted with another netting operation in Mr. de Thierry's swamp. This time only one bird was captured; and to the amazement of all it was found to be banded and to be one of two birds previously caught. By the shortest route, it had travelled at least 15 miles from the point of release back to precisely the same spot where it was first captured and now had been recaptured.

Reports of the Spotless Crake in previous issues of *Notornis* indicated that the bird was a weak flier, as flights were of short duration before the bird dropped into cover. Oliver quotes R. S. Bell as having seen a longest flight of nine and a half yards. Buddle records a flight of twenty yards.

It is hard to imagine that this bird would have managed to return in such a short time across country abounding in various predators, and including in the terrain the bush covered range of Mt. Pirongia, unless capable of sustained flight. Perhaps this species flies more during night time.

When the bird was released on the second occasion it flew and glided about seventy yards, down into a valley. When last sighted it was still flying strongly.

— JOHN KENDRICK