

SHORT NOTE

Feeding on fruits and flowers by insectivorous forest birds

It has been generally assumed that many species of native forest passerine in New Zealand are entirely insectivorous (Oliver 1955, Falla *et al.* 1979, Reader's Digest 1985). However, some reputedly insectivorous forest passerines have occasionally been seen feeding on fruit or from flowers (Riney *et al.* 1959, St Paul 1976, Willoughby 1976, Henderson 1977, Child 1978, Gill 1980, Powlesland 1981, Moeed & Fitzgerald 1982, Wardle 1984, Elliott & Ogle 1985). The death of some "insectivorous" birds during 1080 poisoning operations is also an item of evidence for common feeding on vegetable matter, although it has not been certain whether birds ate baits or poisoned insects (Harrison 1978, Spurr 1979). No-one has tried to find out how widespread or significant is this use of fruits and flowers.

While investigating habitat use by forest birds in South Westland, we recorded the foods of 25 forest bird species. We found that six "insectivorous" passerines – Rifleman (*Acanthisitta chloris*), Brown Creeper (*Finschia novaeseelandiae*), Yellowhead (*Mohoua ochrocephala*), Grey Warbler (*Gerygone igata*), Fantail (*Rhipidura fuliginosa*), and Yellow-breasted Tit (*Petroica macrocephala macrocephala*) – occasionally fed on fruit and from flowers.

METHODS

We made 24 405 feeding observations on the six "insectivorous" species in the Windbag Valley, South Westland. We recorded the use of plants and food types by instantaneous sampling along line transects in the valley (O'Donnell & Dilks 1986). The transects were walked daily for 10 days every 2 months between October 1983 and December 1985, usually by four observers.

A full description of the Windbag Valley is in O'Donnell & Dilks (1986). This inland montane valley is dominated by mixed podocarp-hardwood and beech forests comprising mainly rimu (*Dacrydium cupressinum*), kahikatea (*D. dacrydioides*), mountain totara (*Podocarpus cunninghamii*), miro (*Prumnopitys ferruginea*), kamahi (*Weinmannia racemosa*), southern rata (*Metrosideros umbellata*), and silver beech (*Nothofagus menziesii*).

RESULTS

Feeding from flowers

Only three species were observed feeding from flowers. These observations represented less than 1% of the total feeding observations for each species. We recorded Brown Creeper gleaning from *Pseudopanax simplex* flowers on only one occasion (0.04% of 2353 feeding observations). We recorded Yellowheads at mistletoe (*Peraxilla colensoi*) flowers on six occasions (0.8% of 712 observations). On each occasion the birds visited many flowers, foraging within their long tubular tepals. Single records of Fantails feeding from *Fuchsia excorticata* and *Coprosma rotundifolia* represented 0.04% of 5161

feeding observations. The Brown Creeper and Yellowhead observations were made in February and the Fantail records in October. We could not tell what the birds were actually eating from the flowers. They could have been taking invertebrates or nectar.

TABLE 1 — Plants used as fruit sources by insectivorous passerines in South Westland

	Altitude	Rifleman	Brown Creeper	Yellowhead	Grey Warbler	Fantail	Yellow-breasted Tit	Observations		
								n	%	
Trees										
<i>Dacrydium cupressinum</i>	L	-	-	-	1	-	1	2	2.5	
<i>D. decrydiodes</i>	L	-	2	-	-	-	-	2	2.6	
<i>Weinmannia racemosa</i>	L	-	-	-	1	-	1	2	2.5	
Shrubs										
<i>Ascarina lucida</i>	L	-	-	-	-	8	7	15	18.5	
<i>Coprosma astoni</i>	H	-	1	-	-	-	-	1	1.2	
<i>C. pseudocuneata</i>	H	-	-	-	-	-	1	1	1.2	
<i>C. foetidissima</i>	H	-	-	-	-	1	-	1	1.2	
<i>Fuchsia excorticata</i>	L	-	-	-	-	2	-	2	2.5	
<i>Griselinia littoralis</i>	H	-	-	3	1	-	-	4	4.9	
<i>Pseudopanax crassaifolius</i>	H	-	5	-	-	-	10	15	18.5	
<i>P. edgerleyi</i>	H	8	-	-	8	2	1	19	23.5	
<i>P. simplex</i>	H	6	4	-	6	-	1	17	21.0	
Total			14	12	3	17	13	22	81	100.0
No. of feeding obs. for each bird sp.			2073	2353	712	6997	5161	7109		
% feeding on fruit			0.7	0.6	0.4	0.2	0.3	0.3		

L = Characteristic of lower altitudes (<500 m) in the Windbag Valley

H = Characteristic of higher altitudes (>500 m) in the Windbag Valley

Feeding on fruit

Single birds and small groups from all six species ate fruit, but these items represented less than 1% of the diet of the six species over the year (Table 1). However, both Rifleman feeding on *Pseudopanax* and Tit and Fantail on *Ascarina* consumed dozens of fruits during each observation. Both plants have large clusters of fleshy fruits, usually less than 5 mm in diameter. Birds ate green as well as ripe fruits.

Three species of canopy plant (7.5% of observations) and eight of understorey plant (92.5%) were used. The most favoured plant was *Pseudopanax* with 63% of the fruit-feeding observations coming from three species in this genus (Table 1). Most observations (72%) were of birds using plants characteristic of higher altitudes (>500 m a.s.l.). Only the Tit and the Fantail used lowland plants to any extent. Most fruit eating occurred in autumn and winter (Table 2), just over 70% of observations being made in June and August.

TABLE 2 — Seasonal occurrence of fruit feeding by insectivorous passerines in South Westland

	Rifleman	Brown Creeper	Yellowhead	Grey Warbler	Fantail	Yellow-breasted Tit	n	TOTAL *
February	-	-	3	2	3	-	8	9.9
April	4	-	-	1	-	2	7	8.6
June	10	4	-	8	9	11	42	51.9
August	-	3	-	2	1	9	15	18.5
October	-	5	-	4	-	-	9	11.1
December	-	-	-	-	-	-	0	-

DISCUSSION

There may be no obligate insectivorous passerines native to New Zealand forests. Nevertheless, the six species discussed in this note are still accurately described as insectivores because their fruit and flower feeding represented such a small proportion of their total diets. As most of the fruit eating occurred on plants characteristic of higher altitudes during autumn and winter, insectivores may feed on fruit when invertebrates are scarce and the weather is harsher. Moeed & Fitzgerald (1982) recorded fruits and seeds in the faeces of Fantail, Pied Tit, Rifleman and Whitehead (*Mohoua albicilla*), mainly in autumn and winter. They suggested that fruit may make an important contribution to the birds' energy budgets. More vegetable food may be eaten when not enough animal food is available (Powlesland 1981), and in South Westland invertebrate numbers in winter are 6-7 times lower than in summer (Robertson *et al.* 1986). Even the brief bouts of intensive fruit eating, such as we saw with Rifleman, could be important in maintaining the birds' daily energy in winter.

All native insectivorous forest passerines have now been recorded eating fruit, and from a wide variety of plant genera (21 genera, Table 3). However, given the low proportions in their diet, these species are not likely to be important seed dispersers, in contrast to some other New Zealand forest birds (Clout 1982, Norton 1982).

Feeding from flowers is negligible among the few insectivorous species for which it has been recorded. These birds may actually be feeding on small invertebrates in the flower, as Elliott & Ogle (1985) suggested for Yellowheads.

TABLE 3 — Plant genera recorded as fruit and flower sources for insectivorous forest passerines in New Zealand

Plant Genera	Rifleman	Brown Creeper	Yellowhead	Whitehead	Grey Warbler	Fan-tail	Yellow-breasted Tit	Robin
<i>Ascarina</i>						*	*	
<i>Astelia</i>			*					*
<i>Dacrydium</i>	*	*		*	*	*	*	
<i>Carpodetus</i>				*				*
<i>Coprosma</i>		*				*	*	*
<i>Coriaria</i>								*
<i>Corokia</i>								*
<i>Cyathodes</i>				*			*	*
<i>Fuchsia</i>				*	*			
<i>Freycinetia</i>				*				
<i>Geniostoma</i>				*			*	
<i>Griselinia</i>			*	*	*		*	
<i>Meliccytus</i>				*				*
<i>Muehlenbeckia</i>								*
<i>Myrsine</i>				*				
<i>Pittosporum</i>				*				*
<i>Peraxilla</i>			*					
<i>Pseudopanax</i>	*	*		*	*	*	*	*
<i>Pseudowintera</i>			*					
<i>Rubus</i>								*
<i>Weinmannia</i>					*		*	

Sources: this study, Riney *et al.* 1959, St Paul 1976, Willoughby 1976, Henderson 1977, Child 1978, Gill 1980, Powlesland 1981, Moeed & Fitzgerald 1982, Wardle 1984, Elliott & Ogle 1985

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Establishment of the Black-fronted Dotterel in Southland

Colonisation in Southland by Black-fronted Dotterels (*Charadrius melanops*) began in the lower reaches of the Aparima River and in the Te Anau area in or before 1980 and in the lower reaches of the Oreti River in 1985. The status of the species on the Mataura River is unknown but one pair was seen on the lower reaches in 1982 and 1985. On the Aparima River by 1985, 24 birds, mostly in pairs, were widely distributed between Gummies Bush near the coast and Wrey's Bush 50 km inland. Small winter flocks have occurred inland on the rivers.

Patterns of establishment in New Zealand by the Black-fronted Dotterel have been described by N. B. Mackenzie for Hawke's Bay, B. D. Heather for Wairarapa and P. & M. Child for Central Otago. In Southland all but two of the early records from 1962 to 1980 were coastal sightings of birds in ones and twos. Breeding was first suspected in 1980 on the Aparima River, and in the same year two birds were reported from the lower Mararoa River in the Te Anau area. By 1985 the species had established itself on those waterways and was breeding also on the lower Oreti River and probably the lower Mataura River. This account summarises the status of the species in Southland.

LOCALITY SUMMARIES

Aparima River: First recorded at Thornbury 13.1.80, 3 birds, probably then breeding. Two nests found 26.10.81. On monthly checks of this site between February 1982 and December 1983, Owen Linscott found 2 birds