

DIETS OF NESTLING STARLINGS AND MYNAS AT HAVELOCK NORTH, HAWKE'S BAY

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ABSTRACT

Nestling foods of Starlings (*Sturnus vulgaris*) and Mynas (*Acridotheres tristis*) from an orchard, in North Island, New Zealand, are compared to determine the extent of overlap in the use of food resources during the breeding season.

INTRODUCTION

Starlings (*Sturnus vulgaris*) and Mynas (*Acridotheres tristis*) compete for nest sites in Hawke's Bay (Wilson 1973). The larger and more aggressive Mynas destroy most of the accessible Starling nests within their territories. However, it is not known if these two sturnids also compete for food, especially during the breeding season; to take different foods would have some survival value for both. Starlings are open country birds capable of probing for food, whereas Mynas prefer to feed near human habitations, do not probe as much, and scavenge. It seemed likely therefore that these two species, which breed and feed in the same area, would gather different foods.

To test this hypothesis the nestling foods of both species were determined by examining the gizzard contents of 19 Starling and 16 Myna nestlings collected on the afternoon of 23 December 1974 from nest boxes at the DSIR Research Orchard in Havelock North (39° 39'S, 176° 53'E). Some of the boxes had small (45 mm diameter) entrances which admitted Starlings but not Mynas.

MATERIALS

The ages of the nestlings ranged from 3-16 days for Starlings and 3-18 days for Mynas, and came from 7 broods (1, 2, 3, 3, 3, 3, 4) and 10 broods (1, 1, 1, 1, 1, 2, 2, 2, 2, 3) respectively. The gizzard contents were preserved immediately in 70% alcohol and examined later under a stereomicroscope. Arthropods were counted and earthworms, fruits, and other materials were noted if present.

RESULTS AND DISCUSSION

Table 1 shows that while both species fed their nestlings a wide range of foods, Coleoptera, Lepidoptera, Dermaptera, and Isopoda were eaten more by Starlings than by Mynas, and Hemiptera, Diptera, Odonata, Hymenoptera, spiders, and snails more by Mynas than by Starlings. Orthoptera were recorded only in Starlings, and millipedes in Mynas.

TABLE 1 — Frequency and percentage occurrence of insects, spiders, isopods, millipedes, and snails in Starling and Myna nestlings.

Food items	Starling n = 19		Myna n = 16	
	Freq.	%*	Freq.	%*
Coleoptera	19	61.3	11	32.5
Hemiptera	13	11.3	15	24.8
Diptera	10	6.6	10	14.2
Lepidoptera	15	11.3	6	9.6
Odonata	1	0.5	5	3.6
Hymenoptera	4	1.2	2	5.0
Dermaptera	4	1.4	1	0.4
Orthoptera	2	0.3	0	0.0
Spiders	3	1.4	4	3.6
Isopoda	7	2.1	2	1.8
Millipedes	0	0.0	1	0.9
Snails	9	2.1	6	3.2

* Derived from total numbers in Table 2.

Earthworms (Table 2) were present in all Starling gizzards but in only 7 Mynas. Remains of apple (*Malus sylvestris*), peach (*Prunus persica*), and nightshade (*Solanum nigrum*) fruits were recorded in several Mynas but not in Starlings. Cherry (*Prunus cerasus*), maize (*Zea mays*), and grass seeds were recorded only in a few Starlings but in no Mynas. Pieces of egg shell and rubber bands were found only in some Mynas (Table 2).

Although the diets of Starling and Myna nestlings overlapped considerably, there were differences in proportions and also in species composition of food eaten (Table 2). Mynas are more prone than Starlings to feed near taller grass (e.g. road verge), and this difference is reflected in the diet. Open pasture species such as *Hypharpax* sp., *Macylthorax* sp., *Saprosites* sp., *Costelytra zealandica*, *Hyperodes* sp., *Listroderes* sp., *Graphognathus leucoloma*, staphylinids, *Nysius huttoni*, and earthworms were recorded more in Starlings than Mynas. On the other hand *Rhodopsalta* sp., *Crambus* sp., *Xanthocnemis* sp., and flies of the families Calliphoridae and Muscidae were usually, but not exclusively, associated with taller grass, and were recorded more in Mynas than Starlings.

It is theoretically possible for the resources of the habitat to be divided between different species by each having a different breeding season, but the breeding season of Starlings and Mynas overlaps. Mynas are territorial and establish spatial separation from Starlings as well as from each other. Nest boxes with narrow entrances excluded Mynas and allowed Starlings to breed in Mynas' territories. The two species were thus separated in the use of nest sites, but this did not divide the food resources. The data presented here suggest that, although there is overlap in the diet, Starlings and Mynas use different components and proportions of food, thereby reducing competition for food during the breeding season.

TABLE 2 - Frequency and number of food items in Starling and Myna nestlings

Food item	Starling n = 19		Myna n = 16	
	Freq.	No.	Freq.	No.
Coleoptera				
<u>Lacon variabilis</u> Adult	5	6	3	8
<u>Aemona hirta</u> Adult	0	0	3	4
<u>Cilibe</u> sp. Adult	2	4	0	0
<u>Hypharpax</u> sp. Adult	7	16	4	7
<u>Macylothorax</u> sp. Adult	11	16	1	2
<u>Saprosites</u> sp. Adult	7	9	4	9
<u>Costelytra zealandica</u> Adult	11	34	8	15
<u>Coccinella undecimpunctata</u> Adult	2	8	0	0
<u>Paropsis</u> sp. Adult	4	6	0	0
<u>Hyperodes</u> sp. Adult	8	27	2	8
<u>Listroderes</u> sp. Adult	10	41	1	4
<u>Graphognathus leucoloma</u> Adult	18	147	4	11
<u>Creophilus oculatus</u> Adult	1	2	0	0
<u>Leptacinus</u> sp. Adult	1	2	0	0
Staphylinidae Adult	8	23	2	3
Hemiptera				
<u>Rhodopsalta</u> sp. Adult	12	28	15	40
<u>Dictyotus</u> sp. Adult	7	12	5	14
<u>Nysius huttoni</u> Adult	4	23	0	0
Diptera				
<u>Sarcophaga milleri</u> Larva	4	23	0	0
Calliphoridae Adult indet.	0	0	2	5
Muscidae Adult indet.	4	14	8	26
Lepidoptera				
<u>Crambus</u> spp. Adult	0	0	2	9
<u>Crambus</u> spp. Larva	4	9	1	2
<u>Coleophora</u> sp. Larva	1	2	0	0
Noctuidae Adult indet.	6	15	1	3
Noctuidae Larva indet.	15	35	3	7
Noctuidae Pupa	2	2	0	0
Odonata				
<u>Xanthocnemis</u> sp. Adult	1	3	4	8
Hymenoptera				
Ichneumonidae Adult indet.	4	7	3	11
Dermaptera				
<u>Forficula auricularia</u> Adult	4	8	1	1
Orthoptera				
<u>Phaulacridium marginale</u> Adult	2	2	0	0
Spiders				
Lycosidae indet.	3	8	4	8
Isopoda indet.	7	12	2	4
Millipedes indet.	0	0	1	2
Snails indet.	9	12	6	7
Earthworms indet.	19	-	7	-
Egg shell indet.	0	0	3	-
Fruits				
<u>Malus sylvestris</u>	0	0	4	-
<u>Prunus persica</u>	0	0	4	-
<u>Prunus cerasus</u>	2	-	0	0
<u>Solanum nigrum</u>	0	0	3	-
Seeds				
<u>Zea mays</u>	1	-	0	0
Gramineae indet.	1	-	0	0
Rubber band	0	0	2	-

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REFERENCE

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SHORT NOTES

DISPLAY OF THE EYELINE BY THE CHATHAM ISLAND

WARBLER, *Gerygone albofrontata*

On 3 February 1973 I observed a brief chase between two Chatham Island Warblers (*Gerygone albofrontata*) in open, low forest on Little Mangere Island. The two birds landed on the side of a vertical trunk about 2.5 m off the ground. The attacking bird landed above and almost touching the pursued warbler. The former was hanging facing the lower bird and displaying its prominently expanded white line above the eye. The degree to which this normally thin white area was expanded was impressive. The lower bird was facing down and away from the upper bird, and held its wings approximately half opened, in the plane of its body. Its eyeline was not displayed. These positions were held for less than a minute before the birds flew away.

I have made numerous visits to this and other islands where this species is common, but I have not observed another instance of eyeline display. However, this species is often obscured in canopy foliage where it feeds and nests. On Little Mangere Island warblers are abundant in the scrub and low forest, and appear to rear two broods with good success, and in the absence of the Shining Cuckoo (*Chalcites lucidus*). By January and February large numbers of independent juveniles are seen amongst moulting adults. The age of the birds involved in the display was not known, but moulting was not noticeable on either bird.

This observation is recorded for interest in comparing it with displays of the white eyebrow line of *Rhipidura* (Hough, *Emu* 68: 282; Ives, *Emu* 75: 40-42) and the white frontal spot of *Petroica* species (Flack, *Notornis* 23 (2) in press). In addition, it is of interest that the eyeline and associated display are absent in the reputedly closely related Grey Warbler (*G. igata*).

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