

# BIRDS IN AN APPLE ORCHARD

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## ABSTRACT

Eleven bird species were recorded in an apple orchard at the Levin Horticultural Research Centre (HRC). Observations showed that only Blackbirds and Starlings damaged growing apples. Other species which fed on fallen or previously damaged fruit were Goldfinch, Greenfinch, House Sparrow and Silvereye. Birds inhabiting the orchard, but not feeding on apples, were Chaffinch, Fantail, Hedge Sparrow, Song Thrush and White-backed Magpie.

## INTRODUCTION

Any fruit grower, whether on the commercial or home garden scale, is well aware of the damage which birds may cause to crops. Apples are no exception and considerable losses may occur in certain varieties, particularly if they are left to "tree-ripen" (Jensen 1974, Baker 1980).

Two studies of birds in orchards in New Zealand have been reported during the last decade. From a questionnaire submitted to fruitgrowers Dawson & Bull (1970) noted that seven species caused damage to apples. These were Myna (*Acridotheres tristis*), Eastern Rosella (*Platycircus eximius*), Blackbird (*Turdus merula*), Song Thrush (*Turdus philomelos*), House Sparrow (*Passer domesticus*), Silvereye (*Zosterops lateralis*) and Starling (*Sturnus vulgaris*). In an Auckland orchard, only Blackbirds and House Sparrows were seen to damage apples and only Blackbirds caused initial damage (Jensen 1974). Other species noted by Jensen were Starling, Myna, Chaffinch, Silvereye, Song Thrush and Goldfinch.

There is, therefore, conflicting evidence concerning the species causing damage to apples. Because of this, observations were made in an orchard at Levin, particularly to ascertain the bird species making the initial attacks on growing fruit.

## METHODS

The research orchard at Levin HRC is well suited for study of bird behaviour because it is bounded on two sides by thick phebalium hedges, offering good, if uncomfortable, concealment for an observer. Apple cultivars in the study area, grown in blocks with 5 or 6 rows of trees per block, were Oratia Beauty (48 trees), Cox's Orange Pippin (162 trees), Golden Delicious (42 trees), Red Delicious (90 trees), Sturmer (162 trees) and Scarlet Pimpernel (5 trees). Observations through 10 x 50 binoculars were made of the birds in each block, for periods of approximately 30 minutes, generally between 6 and 9 a.m.

when human activity was low. Records of the birds' feeding habits were made. Studies were continued, two or three times weekly, through two seasons, January to April 1978 and December 1978 to April 1979. The total number of apples on each tree was recorded after thinning, but before bird damage was noticed. Numbers of damaged apples on the trees were recorded three times each week.

## RESULTS AND DISCUSSION

Eleven bird species were seen in the orchard, all of them common and recorded on most days. Populations remained fairly constant throughout the apple growing season except for Starlings, which became more abundant as fruit ripened, and Silvereyes which were not often seen before March.

### HEDGE SPARROW *Prunella modularis*

Often seen feeding around the base of tree trunks but never on fruit. Never more than two at any one time.

### SONG THRUSH *Turdus philomelos*

One or two usually present in most blocks, on the ground, but never seen to feed on fruit. Highest number recorded together was five. Very easily disturbed, flying off close to the ground into the nearby hedges.

### BLACKBIRD *Turdus merula*

Always present with up to 20 birds per block. Usually on the ground where they fed mainly on fruit. They tended to progress via the low-growing fruit into the trees where they caused enormous damage to ripening fruit. When disturbed they usually ran for cover of the hedges and returned to resume feeding within two minutes.

### FANTAIL *Rhipidura fuliginosa*

Seen at irregular intervals feeding on small flies around the trees.

### SILVEREYE *Zosterops lateralis*

More common later in the season, although small flocks were sometimes present in the unsprayed Cox's Orange trees feeding on the apple leafhopper (*Typhlocyba frogatti*) during January and February. Apples also formed an important part of the Silvereyes' diet, as reported by Moed (1979), and they seemed particularly partial to Sturmers remaining on the ground in early winter. Silvereyes were never seen to make initial damage to growing fruit.

### CHAFFINCH *Fringilla coelebs*

Less common than the other finches and usually seen singly. Chaffinches were seen to take moths while in flight and did not feed on apples.

**GREENFINCH** *Carduelis chloris*

Adults were often seen feeding their young on insects during the summer. Also partial to apples, particularly Scarlet Pimpernel and Golden Delicious, but they fed only on previously damaged fruit.

**GOLDFINCH** *Carduelis carduelis*

Their abundance and behaviour was very similar to the Greenfinch; they also fed on weed and grass seeds.

**HOUSE SPARROW** *Passer domesticus*

Not as common as the Greenfinch or Goldfinch, although occasionally up to 12 birds were seen at one time. Fed mainly on moths but also on some previously damaged apples.

**STARLING** *Sturnus vulgaris*

Numbers increased as the season progressed, with few present before the first apples ripened. Flocks of up to 100 came in from roosts to the south-west and usually alighted directly in the apple trees. Unlike the Blackbirds, they fed mainly on apples in the trees and when disturbed flew upwards into a row of poplars bordering the orchard. From there they usually resumed feeding within five minutes.

**WHITE-BACKED MAGPIE** *Gymnorhina tibicen hypoleuca*

Always a few present, particularly in early morning, when they foraged about in the sward between the trees, but were never seen to eat fruit.

Bird activity in the orchard began soon after dawn, although magpies often began calling at least half an hour earlier. Birds flying into the orchard always approached from a south or south-westerly direction, but this had little effect on the distribution of apple damage in the orchard. Two of the 24 rows of trees suffered less damage than others, one being adjacent to, and on the east side of, a phebalium hedge and the other being on the east side of a plastic wind break. Birds seemed to be deterred from feeding on the east side of the plastic wind break, but fed readily on the west side.

As recorded in more detail elsewhere (Baker 1980), Golden Delicious apples were heavily damaged with 23% of fruit lost, compared with Oratia Beauty (15%), Red Delicious (7%), Cox's Orange (5%), and Sturmer (5%), during the 1978-79 season. In the previous season, however, when the rainfall was extremely low from January to March, losses were much higher with 20% of the Red Delicious and 15% of the Cox's Orange crop being taken. This suggests that apple eating by birds may be related to the amount of moisture available.

Feeding on apples by Blackbirds and Starlings continued throughout the day. Detailed observations on four Scarlet Pimpernel trees (which produce an early maturing bright-red apple much favoured by birds) showed that significantly more feeding occurred in late afternoon

than at other times (Table 1). Jensen (1974) observed that feeding was greatest between dawn and 10 a.m., a disagreement which might simply reflect differences in human activity in the orchards concerned.

TABLE 1 — Apple loss from four Scarlet Pimpernel trees during a single day (26/1/79).

Time	No. of apples damaged by birds				Mean per tree
	Tree 1	Tree 2	Tree 3	Tree 4	
6.00-9.00	11	2	4	1	4.50
9.00-12.00	8	5	7	6	6.50
12.00-15.00	8	6	4	7	6.25
15.00-18.00	12	12	10	7	10.25*
18.00-21.00	5	4	3	4	4.00
TOTAL FRUIT LOST	44	29	28	25	31.50
TOTAL FRUIT YIELD	572	400	431	368	443
% of crop lost	7.7	7.3	6.5	6.8	7.1

- \* Statistically different from the other mean values at the 5% level of significance.

### CONCLUSIONS

From the observations made during two seasons at Levin it seems clear that only Blackbirds and Starlings can be regarded as harmful as they are the only species which actually puncture unblemished growing fruit. Silvereyes, Greenfinches, Goldfinches and House Sparrows will eat apple but only after the fruit has already been damaged. All birds seen in the orchard were beneficial in varying degrees as predators of harmful insects and other pests.

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