

Seasonal Changes in the Behaviour and Abundance of Pied Currawongs *Strepera graculina* and the Consequences for Seed Dispersal

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Summary

Pied Currawongs *Strepera graculina* congregate within the city of Armidale, N.S.W. in autumn and winter. In spring and summer they disperse to wooded habitats. Daily counts of Pied Currawongs and behavioural observations were made throughout 1988 in the city of Armidale. Pied Currawongs were resident all year. Relative abundance was c. 16 times higher during autumn and winter than during spring and summer. During the cooler months birds flocked together in the city. They had communal roosts in the surrounding forested areas from which they flew in the morning to feed in town, predominantly on fruit of garden ornamental shrubs. In the warmer months birds dispersed into forested areas and fed almost exclusively on invertebrates. These seasonal differences are discussed in relation to potential for seed dispersal of exotic plant species.

Introduction

The Pied Currawong *Strepera graculina* (Cracticidae) is always present on the Northern Tablelands of New South Wales. Pied Currawongs have been discussed in relation to behaviour, breeding, seasonal movements, diet and longevity (Lea & Gray 1936, Walsh 1965, Strong 1966, Readshaw 1968, Wimbush 1969, Recher 1976, Buchanan 1978, Vellenga 1980, Frith 1984, Nicholls & Woinarski 1988). Little has been mentioned of the role of Pied Currawongs in seed dispersal (see Buchanan 1978, Mulvaney 1986) and how seasonality, behaviour and diet interplay.

Pied Currawongs live in wooded areas and tall eucalypt forests (Wimbush 1969) and move into areas of human habitation during the colder months (Readshaw 1968, Wimbush 1969). This may be related to changing food resources during cooler months when insect abundance is low (Readshaw 1968, Wimbush 1969). Large flocks of Pied Currawongs congregate around Armidale in autumn and disperse in spring and summer. This paper examines the seasonal abundances of Pied Currawongs around Armidale, documents their behaviour and discusses these in relation to seed dispersal of exotic plants.

Study area and methods

A daily count of Pied Currawongs was made during 1988, while driving along the same 6.8 km route between 0730 and 0900 h. All Pied Currawongs perching, feeding, flying and on the ground that could be seen through the front windscreen of the car were recorded and weekly (Monday-Friday) totals were calculated. This method sought to describe relative abundances. Observations of flight, feeding and community behaviour were made opportunistically throughout the year.

Results and discussion

Relative abundance

Figure 1 shows the relative abundance of Pied Currawongs in Armidale. As expected Pied Currawong abundance was lower in spring and summer than autumn and winter (Readshaw 1968, Wimbush 1969, but see Buchanan 1983 for high summer abundance).

A significant influx of birds was seen in the first week of May. During the cooler months (May-August, weeks 19-34), the average weekly total was 14.75 birds/week. During the warmer months (September-April, weeks 34-52 and 1-18), the average weekly total was 0.93 birds/week. As stressed above this is only a measure of relative abundance. Pied Currawongs were present in Armidale throughout the year.

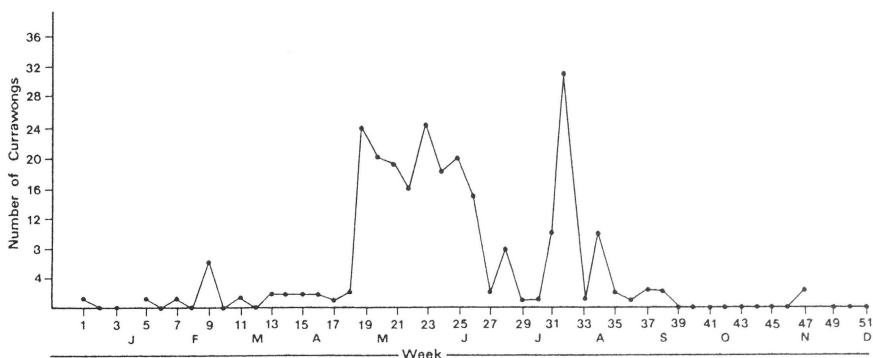


Figure 1. Relative abundance of Pied Currawongs, Armidale, N.S.W.

Flocking

During the cooler months large flocks of Pied Currawongs of 50 or more were common. They moved around Armidale in a nomadic fashion, probably in response to varying food availability from site to site. In the mornings and evenings loose flocks of Pied Currawongs were observed flying in and out of Armidale along numerous, more or less regular, flight paths. Two paths, one directly north and the other to the east, were used by 50-100 birds while a third flight path to the north-east had around 200-500 birds flying on it. This flight path was followed to a communal roost located in the Armidale State Forest (*Pinus radiata* plantation). Similar flocking behaviour was reported by Frith (1984).

In the warmer months large flocks dispersed. Only one or two birds remained in any one area. Fledglings appeared in mid summer (December) and family groups were occasionally observed. The parents showed aggressive territorial behaviour, calling loudly from nearby trees with one bird repeatedly diving at a human observer, at the last moment breaking away with loud clinking wing beats. The formation of mating pairs may be the principal reason for dispersal of large flocks in spring.

Feeding

During winter Pied Currawongs fed on berries of many garden ornamental shrubs, particularly firethorns *Pyracantha* spp., privet *Ligustrum* spp. and hawthorn *Crataegus monogyna*. Regurgitated pellets containing intact seeds of various species were found under Pied Currawong perches (trees, fences, power lines). Pied Currawongs also fed on ground invertebrates. During the warmer months Pied Currawongs ate mainly insects, especially beetles. Some fruit was eaten, particularly fleshy stone-fruit *Prunus* spp. and blackberries *Rubus fruticosus* but this tended to be a relatively small, occasional part of their diet.

Seed dispersal

The seasonal patterns of abundance and behaviour of Pied Currawongs may have significant effects upon the dispersal of seeds. In winter, nomadic movements during the day and diurnal movements in and out of Armidale along regular flight paths by large flocks aid the dispersal of seeds in the range of 0-5000 m. Plants that fruit in winter characteristically have fruits that are nutritious and remain on the plant for periods in excess of two months. This situation leads to an effective dispersal system and may explain why some woody exotics seem to be expanding their range, e.g. hawthorn at a rate of 120 m/year (Smith 1985). In summer the situation changes. Fewer Pied Currawongs are present and they are territorial. Summer fruit also tends to be less nutritionally rewarding and is only present on shrubs for a relatively short period (c. 1 month). Summer fruiting species do not appear as invasive as winter fruiting species, except for *R. fruticosus* which has a high degree of asexual reproduction as well as seed dispersal by vertebrates. Summer fruits are a relatively minor part of Pied Currawong diets, as insects are generally more attractive nutritionally and more abundant. When available, fruit may make up a significant part of the diet but this is usually for brief periods.

The consequence of seasonal variation in Pied Currawong abundance and flocking behaviour is that winter fruiting species in Armidale have more chance of long-distance dispersal than summer fruiting species.

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CORRIGENDUM

In Vol. 13 No. 2 of the *Australian Bird Watcher*, on page 49 the name of the Warringal Conservation Society has been mis-spelt, once on line 5 and twice in the last reference by the omission of the "n" in Warringal. The editorial staff apologises for these errors.