AVIAN VECTORS OF THE SEEDS OF THE EUROPEAN OLIVE *OLEA EUROPEA*

DAVID C. PATON, JAMES R. TUCKER, JOAN B. PATON AND PENELOPE A. PATON

The European Olive *Olea europea* was introduced into South Australia primarily for the production of olive oil. The first olives were introduced to Adelaide as early as 1836, with further importations occurring in 1844, 1876-7 and 1883 (Crompton 1958). These olives were mainly planted on the foothills around Adelaide, particularly from Magill to Beaumont. Further plantings occurred at Blackwood, Minnipa, Pt Lincoln, Renmark, Bordertown, and McLaren Vale as late as 1941, with commercial production of olive oil continuing until the 1960s (Crompton 1958). Olives have spread from these plantings into neighbouring areas, and now run wild in the Mt Lofty Ranges, particularly over the foothills southeast of Adelaide (e.g. Glen Osmond, Cleland 1952). Birds are held responsible for this dispersal, particularly the introduced Common Starling *Sturnus vulgaris* (Cleland 1952, Black 1980).

Olives are a good source of energy for birds, being rich in oil, and a wide variety of European birds from thrushes to finches consume the fleshy fruit in the Mediterranean (Levinson & Levinson 1984). In this note we list the species of birds seen feeding on olives in South Australia and assess the ability of these birds to disperse olives.

Twelve native species and four introduced species of birds, including the Common Starling, have been observed feeding on olive fruits (Table 1). Of the native species only the Black-faced Cuckoo-shrike *Coracina novaehollandiae*

TABLE 1. List of bird species seen feeding on olives in South Australia with additional notes on their ability to disperse seeds. Scientific names given in Appendix.

Species	Details and source of observations
Crested Pigeon	Tearing flesh from fallen olives, not dispersing seeds. Paton & Paton (1987).
Spotted Turtle-Dove	Tearing flesh from fallen olives, not dispersing seeds. Paton & Paton (1987).
Sulphur-crested Cockatoo	Consuming flesh, dropping stones under tree. P. A. Paton pers. observ.
Galah	Eating flesh off fallen olives, dropping stones. Not dispersing seeds. D. C. Paton pers. observ.
lorikeet sp.	No details. Listed by Forde (1986).
Crimson Rosella	Cracking open stones and eating immature seeds. Also feeding on flesh of fallen fruit, not dispersing stones. J. B. Paton pers. observ.
Eastern Rosella	Consuming flesh, dropping stones under tree. P. A. Paton pers. observ.
Red-rumped Parrot	Consuming flesh off fallen olives, dropping stones. D. C. Paton pers. observ.
Black-faced Cuckoo-shrike	Snatching whole fruits off trees, usually while in flight, depitting on a perch and dropping stone. Dispersing seeds. J. R. Tucker and D. C. Paton pers. observ.
Blackbird	Pecking flesh off fallen olives, not dispersing seeds. D. C. and J. B. Paton pers. observ.
Golden Whistler	Pecking flesh off fallen olives, not dispersing seeds. J. B. Paton pers. observ.
Silvereye	Pecking flesh off olives both from tree and on ground. Not dispersing seeds. Cleland (1952) and D. C. and J. B. Paton pers. observ.
Red Wattlebird	Shredding flesh off fallen olives and feeding to fledged young. Not dispersing seeds. J. B. Paton pers. observ.
House Sparrow	Tearing flesh off fallen olives, not dispersing seeds. D. C. and P. A. Paton pers. observ.
Common Starling	Pecking flesh off fallen olives, also taking whole olives away in bill. Dispersing seeds. D. C. and J. B. Paton pers. observ.
Australian Magpie	?Consuming whole fruit. Cleland (1952), Forde (1986).

is likely to disperse seeds. Black-faced Cuckoo-shrikes usually swoop in and snatch a ripe olive off the tree and fly to a convenient perch. The olive is then beaten against a perch whilst held in the beak. This continues until the pit (stone containing the seed) drops out. The remaining flesh is then eaten. Presumably the size of ripe olive fruits (*ca* 10-15 mm long by 6-10 mm in diameter) is too large for cuckoo-shrikes to swallow whole, or the stone too large to pass through the alimentary canal. All the other species of native birds only consumed the flesh, either from fallen olives (e.g. Paton & Paton 1987) or from olives taken from the tree. In both cases the stones were dropped or left under the tree. Common Starlings also consumed olive flesh in this way, but also carried whole olives away in their bills. These whole olives were probably depitted in the same way that cuckoo-shrikes depitted olives and in that way the seeds were dispersed. This mechanism differs from Cleland (1952), who suggests that the whole fruit is consumed by starlings and the stone then voided in the faeces. The faeces of Common Starlings feeding amongst olive trees in winter are purplish black, consistent with feeding on olives, but we have never found them containing olive stones.

In addition to starlings and cuckoo-shrikes, the European Fox *Vulpes vulpes* is probably a major distributor of olive seeds. During winter fox scats in the Adelaide Hills frequently contain several to many olive stones.

REFERENCES

Black, J. B. 1980. **Flora of South Australia. Part IV.** Second edition. (Revised by E. L. Robertson.) Government Printer: Adelaide.

Cleland, J. B. 1952. The dispersal of plants by birds. **S. Aust. Orn.** 20: 72-77.

Crompton, A. R. 1958. Olive cultivation. In A. H. Chisholm (ed.) **The Australian Encyclopaedia. Volume VI.** pp. 397-399. Angus and Robertson: Sydney.

Forde, N. 1986. Relationships between birds and fruits in temperate Australia. In H. A. Ford and D. C. Paton (eds). **The Dynamic Partnership: Birds and Plants in Southern Australia.** pp. 42-58. Government Printer: Adelaide.

Levinson, H. Z. and Levinson, A. R. 1984. Botanical and chemical aspects of the olive tree with regards to fruit acceptance by *Dacus oleae* (Gmelin) and other frugivorous animals. **Z. ang. Ent.** 98: 136-149.

Paton, D. C. and Paton, P. A. 1987. Olives and their effect on the plumage of Spotted Turtle-Doves *Streptopelia chinensis* and Crested Pigeons *Ocyphaps lophotes* in suburban Adelaide. **Corella** 11: 111-115.

David C. Paton, Penelope A. Paton: 47 Gilbert Street, Gilberton, S.A. 5081
James R. Tucker: c/- Electrolytic Refining and Smelting Company of Australia Limited, P.O. Box 42, Port Kembla, N.S.W. 2505
Joan B. Paton: 1 Dashwood Road, Beaumont, S.A. 5066
Accepted 16 November 1987.

APPENDIX

Appendix: Scientific names of species cited in Table 1. Crested Pigeon *Ocyphaps lophotes*, Spotted Turtle-Dove *Streptopelia chinensis*, Sulphur-crested Cockatoo *Cacatua galerita*, Galah *Cacatua roseicapilla*, Crimson Rosella *Platycercus elegans*, Eastern Rosella *Platycercus eximius*, Red-rumped Parrot *Psephotus haematonotus*, Black-faced Cuckoo-shrike *Coracina novaehollandiae*, Blackbird *Turdus merula*, Golden Whistler *Pachycephala pectoralis*, Silvereye *Zosterops lateralis*, Red Wattlebird *Anthochaera carunculata*, House Sparrow *Passer domesticus*, Common Starling *Sturnus vulgaris*, Australian Magpie *Gymnorhina tibicen*.