

Little Ravens *Corvus mellori* feeding on pine seeds

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While conducting a three-monthly bird survey at Kooyonga Golf Course (KGC) on 24 May 2021, I observed a Little Raven *Corvus mellori* feeding on the ground under a pine tree and taking seeds from open pine cones on the ground (Figure 1). As I watched, a second bird that had been feeding nearby joined its presumed mate and began extracting seeds from open pine cones as well. The dominant pine tree species at KGC is the Aleppo Pine *Pinus halepensis* and the ravens were feeding on the ground under a pine of this species.

Barker and Vestjens (1990) recorded Australian Ravens *Corvus coronoides* feeding on unspecified parts of Radiata Pine *Pinus radiata* and other *Pinus* species, but there is no mention of Little Ravens feeding on pine seeds in any literature including HANZAB (Higgins *et al.* 2006). In the northern United States, Northern Ravens *Corvus corax* have been recorded occasionally feeding on the seeds of the Whitebark Pine *Pinus albicaulis* (Hutchins and Lanner 1982). There is a strong mutualistic relationship between the Whitebark Pine and Clark's Nutcracker *Nucifraga columbiana*, which belongs to the avian family Corvidae. The Whitebark Pine depends on the nutcracker to disperse its large wingless seeds through food caching, while the nutcracker uses fresh and stored seeds as a food source (United States Department of Agriculture 2012).

As well as the ravens, I made observations of two Australian Magpies *Gymnorhina tibicen* feeding on pine seeds at KGC on 24 May 2021. These were additional to my reports of this behaviour in November 1993 (Paton 1996) and August 2016 (Paton 2016). I did not note the sex of the birds on this occasion, but from photographs taken at the time, one bird was a female. Both birds were



Figure 1. Little Raven feeding on Aleppo Pine seeds, Kooyonga Golf Course, 24 May 2021. Image Penny Paton

extracting the pine seeds from cones lying on the ground.

I suggested in earlier notes that this pine seed eating was a learned activity and this may still be the case, despite observing the activity on several occasions and in different parts of the golf course. At the nearby Glenelg Golf Course, which has been surveyed in a similar manner for birds for over 30 years and where Aleppo Pines are also very common, I have observed two Australian Magpies feeding on seeds from broken pine cones on the ground on only one occasion, on 28 November 2018. One of these birds had half of the top mandible missing which may have made foraging difficult. This is despite magpies being abundant and ravens present at Glenelg Golf Course.

In cultivated stands of Aleppo Pines in Jordan, the seed content of fat, protein, ash and total carbohydrates were 32.1%, 29.8%, 5.5% and 32.6% (Tulkan *et al.* 2013). The health and productivity of Aleppo Pine trees are influenced by water availability, temperature, soil fertility and competition from other plants (Ayari and Khouja 2014). Plants at golf courses are generally well-spaced and enjoy constant watering and fertiliser application, leading to prolific and regular cone production. It is likely that their seeds are very nutritious although each seed is small for birds the size of magpies and ravens. Aleppo Pine seeds are 6 mm long with a 25 mm wing to aid in seed dispersal (Landscape SA 2021). Despite this Aleppo Pines are widely used by Yellow-tailed Black Cockatoos *Xanda funereus*, due to their prolific cone production (J. van Weenen, pers. comm.). Some birds at Kooyonga Golf Course appear to be consuming this very abundant resource at different times of the year as an adjunct to their regular diet.

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