Predation on the Wild Rabbit by the Australian Raven

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Despite the common occurrence of the Raven, *Corvus coronoides* Vigors and Horsfield, in Australia, only general references to its predation on rabbits (*Oryctolagus cuniculus* (L.)), are given in published information (Hill 1907, Le Souef 1908, and Bridgewater 1931).

During the course of an ecological study of the wild rabbit in an enclosure at Gungahlin, Australian Capital Territory, involving prolonged regular daily watchings, more detailed observations on the hunting and killing habits of the species were collected and are presented in this note.

The predation of the Raven on young rabbit kittens seemed to fluctuate, with a peak in October (the birds' breeding season) which coincided with the appearance above ground of a high number of kittens. Although there may be other reasons for the diminished intensity of Raven predation at the beginning of November, it was evident that the increased hostility of Magpies, due to emergence of their fledgelings from the nest, acted as a deterrent.

Unlike other birds recorded as preying upon the population under study, which secured their victims by sudden surprise attacks, the Ravens spent hours walking watchfully about the ground exploring burrow entrances, hollow logs, and any likely hiding places. Where kittens could be seen inside, the birds often reached into the hole or log with head and neck. They followed the movement of kittens from one end of hollow logs to the other.

Only very young rabbits up to 400 g. are vulnerable to attack by ravens. Older ones are quite undisturbed by their presence. Although usually attacks were carried out by single birds, on a few occasions up to five Ravens were seen to co-operate in cornering a kitten. The birds were seen to prey on kittens at any time of the day, but they were most active around late afternoon and dusk, when the greatest number of young kittens appeared above ground.

As Ravens do not manoeuvre easily in flight and are even slower on the ground, the young kittens allowed for only a short escape-distance when approached by them. On familiar ground with plenty of cover, indeed, the action between bird and kitten appeared as a game of hide and seek. Actually it was only under special circumstances that a kitten was killed. Usually that occurred when the victim was surprised on unfamiliar ground devoid of shelter.

The Ravens' hunting technique may be best illustrated by the following observations recorded on an October day in 1958.

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17.13 hr. A Raven landed in enclosure. Walked slowly from one area to another where newly-weaned kittens were above ground. Occasionally rose to top of fence. Sat and watched, and descended toward sighted prey. Kittens disappeared underground or sat just inside the entrance to burrows.

17.32 hr. Kitten was surprised at a distance from its burrow. Tried to force its way through wire-mesh fence, which slowed down its movements. Was caught by Raven, which dragged it by means of beak and right foot to open ground. Squealing kitten was held firmly around thorax with one foot and blows delivered to neck by beak. Other rabbits continued to graze unconcernedly nearby.

17.34 hr. Head was severed from body by repeated blows of beak. Bird opened abdominal cavity and commenced feeding.

17.42 hr. Piece of liver was carried away about 200 yards, hidden in grass and covered with vegetation.

17.43 hr. Raven back to carcass, around which, in the meantime, three Magpies had appeared. Magpies interfered, but without success. Raven continued feeding. (It was repeatedly seen that Magpies are helpless against the Raven when on the ground. Their attacks are, however, more succesful in flight).

17.46 hr. Second piece of carcass was carried off and hidden in same way as first.

17.47 hr. Back to prey.

17.49 hr. Head was carried away and hidden. On return Raven pursued kittens at seven different sites, but without success. Magpies interfering, but only when in flight. Raven returned to carcass and continued feeding.

17.55 hr. Raven flew to its nest with piece of carcass. Magpies around remnants of kill.

18.10 hr. Raven not back from nest. Darkness falling. The next morning the head of the kitten—with tattooed identification mark—was found hidden in a clump of grass with a piece of cow dung over the top of it. At the site of the kill there were no signs of the struggle apart from a small piece of gut.

Because of the rapid disappearance of kittens killed by Ravens, it was not always possible to state precisely the intensity of the birds' predation. It was evident, however, that at times predation was high, conclusive proof of four kills being collected in one day. Not all kittens were killed directly. Some escaped from the bird's clutches with mortal injuries and died later in burrows.

As the deliberate hiding of parts of the carcass was repeatedly seen, this would appear to be a constant feature of the birds' behaviour, and would account for the Ravens' 'desire' to kill again before consuming earlier prey.

Observations on the behaviour of a tame Raven that was taken as a fledgeling strengthen this belief. When offered its

daily ration of food, the Raven retained superfluous pieces of meat in its pharynx and hid them at a distance from the feeding place under available objects in the yard such as stones, pieces of wood, etc. (Hitchcock, personal communication).

On one occasion a Raven was seen feeding upon a carcass while two other carcasses were lying near by. Another kitten that appeared meanwhile was attacked and killed while forcing its way through wire-mesh fence.

It may be of interest to remark that, while attacks upon young kittens were generally treated with indifference by older rabbits, the mothers of the kittens always showed concern and made attempts to divert the attention of the bird—often with success. A case of mothers' interference is described elsewhere (Mykytowycz, 1959).

This and earlier reports suggest that on occasion Raven predation may become heavy, but there is no reason to believe that it has any significant effect on the rabbit population in Australia.

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By NOEL JACK, Brisbane, Qld.

The 1958 Annual Congress was held at the 'Canberra' Hotel, Brisbane, on October 6.

The following delegates attended the Congress—

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