17. POST-RELEASE SURVIVAL OF CAPTIVE-REARED MALLEEFOWL IN WESTERN NEW SOUTH WALES

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Abstract

Malleefowl populations have undergone serious declines as a result of habitat loss and predation by introduced predators. Since 1990 a successful captive breeding program has been supplying chicks for release into Nature Reserves in western NSW. However, early studies indicated that post-release survival of the captive-bred chicks was low, mainly as a result of predation by foxes. In addition movement patterns of sub-adults following release is poorly known, making selection of optimal release sites difficult. This study investigated the survivorship of captive-bred Malleefowl following the introduction of aerial fox baiting. After behavioural and radio-transmitter attachments trials on captive birds, data on mortality and movement patterns of 14 sub-adult birds were collected using radio telemetry after release from November 2005 to April 2006. Survivorship in the first four months following release was relatively high with only one mortality confirmed. The majority of birds dispersed from the release site. However, variation in movement patterns between individuals was high, with some individuals moving large distances each day and others remaining in the vicinity of the release site. The results of this study suggest that fox baiting has been successful in improving survivorship of released Malleefowl.

Introduction

Malleefowl populations have undergone serious declines as a result of habitat loss and predation by introduced predators. Since 1990 a successful captive breeding program at Western Plains Zoo has been supplying chicks for release into nature reserves in western New South Wales. However, early studies (Priddel & Wheeler 1990) indicated that post-release survival of captive-bred chicks was low, mainly as a result of predation by foxes. In addition movement patterns of sub-adults following release is poorly known. Since that preliminary work with the release program no monitoring of these released birds has been done in the last ten years. This study aimed to see what was actually happening after the young birds were released and left to their own devices.

The study was done at Nombinnie Nature Reserve (Figure 1), which, with the adjoining Yathong and Round Hill Reserves, is the part of the largest continuous remnant of mallee in New South Wales, totalling 250,000 ha. There are mound counts in Yathong and Round Hill Nature Reserves, but none in Nombinnie, so releasing the birds there should not affect the mound counts at Yathong and Round Hill. The vegetation at Nombinnie is mainly mallee-spinifex with a shrub understorey of *Acacia* and *Eremophila*.

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Figure 1. The site of the study area in western New South Wales.

Work by Priddel & Wheeler (1994) indicated that there was significant predation by foxes on captive-bred Malleefowl when they were released; the effect of cats was unknown, but they do occur on Nombinnie as well as foxes. Foxes were considered the main mortality factor affecting Malleefowl in this study and to combat them an intensive fox baiting program is running. The park is baited from the air three times a year; 12,000 baits are dropped each time and three to five thousand additional baits are given to neighbours to distribute along roads and tracks. Park staff also distribute baits along tracks, so a large area is baited. Park staff report that the number of sightings of foxes on spot-lighting surveys have reduced over time, so the baiting appears to be having some effect. Many feral goats still occur in the park and graze the ground cover and shrubs, thereby competing for food with Malleefowl and destroying shelter. Goat traps have been installed at some water points and thousands of goats have been removed, but currently goat control is exercised by shooting them from a helicopter.

Methods

Of the 35 captive-reared birds released at Nombinnie in 2005, 14 were equipped with 12 gram transmitters. The transmitters had mortality sensors in them that doubled the rates of signal transmission if the transmitter did not move for ten hours. The transmitters were attached to anaesthetized birds in the scapular region between the shoulder blades following the methods of Goth & Jones (2001). Transmitters were only attached to birds that appeared to be less timid than others. Observations in the captive colonies indicated that the transmitters had a negligible effect on the behaviour of these birds. The birds weighed just over one kilogram (mean 1043g), at an average age of 286 days, when they were released.

All the birds with transmitters were released in November 2005 at one spot in Nombinnie; those without transmitters were released 6 km away. In 2006 we released another eight birds equipped with transmitters at Nombinnie. The released birds were tracked using an aerial mounted on a five metre pole to raise it above the mallee canopy. Compass readings were taken of the direction of the bird, almost simultaneously from two points a known distance apart and the position of the bird given by the intersection of these two directions, using the Arc Macro computer program. Another program ArcView enabled us to plot the movement path of each bird and its home range.

We were interested in the effect of vegetation density on the distribution and movement patterns of the birds. We used satellite imagery to map the density of vegetation in the reserves, classifying the

density as low, medium and dense. Some ground truthing was undertaken to check the classification the satellite imagery presented to us.

Results

Patterns of movement

The transmitters lasted well. A few dropped off soon after release, but the average tracking time was 40 days and it was 137 days after release before we lost the last bird. There was only one confirmed death during the course of the study. The birds moved mostly east or west of the release point; only a few went south or north of it. Many moved a considerable distance at first, but then settled down and remained in one area for some time.

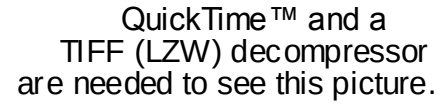

Figure 2. The mean distances moved by individual birds released in 2005.

The distances moved in one day ranged from 187 m to 713 m, but most of the long moves were in the days shortly after release. Having moved away a few birds then returned to the release point (Figure 2). The pattern of movements resembled those shown by the Ongerup birds (van der Waag 2008), even to the point where some birds formed small groups and moved together. Figure 3 illustrates the observed movements of the birds in the 2005 release. The birds released in 2006 showed a similar pattern of movement but were not tracked for as long as the 2005 release. For the 2006 birds the first transmitter cut out after 17 days, the average tracking time was 21 days and the longest a bird was tracked was 22 days when tracking ceased.

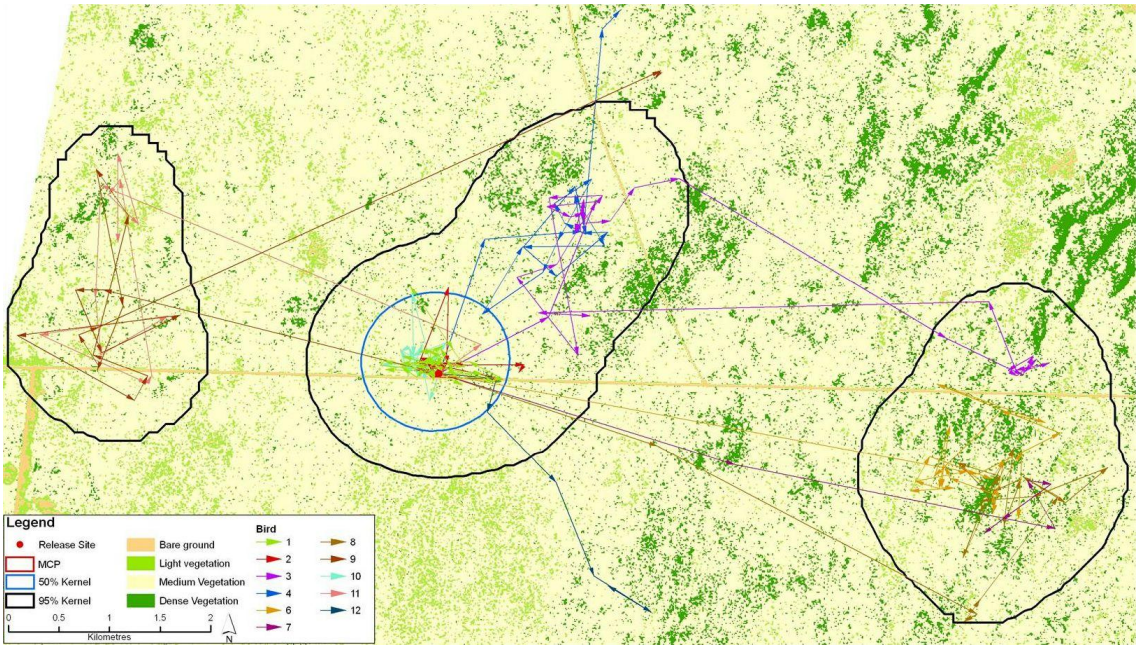

Figure 3. The movements of radio-tracked Malleefowl chicks released at Nombinnie in 2005.

Habitat selection

Figure 4 shows the distribution of the birds at the end of tracking, for both the 2005 and the 2006 release, overlain on the vegetation classification. It shows that the birds tended to favour medium to low density vegetation and avoid the densely vegetated areas. At the conclusion of tracking the birds had settled in three areas, encircled by the polygons in Figure 4, drawn by the ArcView program. One interesting aspect of the tracking was a time when a number of mortality sensors were set off together. This happened over 36 hours when a change-over of tracking teams was taking place. The second team went out in the morning to recover the transmitters from a number of dead birds, but when they located them the birds jumped up and ran off. Apparently a thunderstorm on the previous day had forced the birds to stay where they were at the time it broke and remain there for so long that the mortality sensors were activated.

Discussion

The behaviour of the released birds was very variable. Some stayed close to the release site, others moved considerable distances and then settled in an area, sometimes in a group with other birds. Some birds moved gradually away from the release site and continued moving for the duration of the study. Other birds remained as individuals, some returning to areas they had previously occupied. The patterns were similar to those recorded at Ongerup by van der Waag (2008). Survival was good over the period of tracking, with only one confirmed death.

We observed a lot more wildlife at Nombinnie than we expected and we attributed that to the success of the fox baiting program that has been running and to the removal of goats that would enable more resources to be available for Malleefowl.

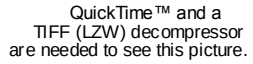

Figure 4. Final distribution of 2005 and 2006 releases at Nombinnie Nature Reserve in relation of vegetation density.

The study showed us that released Malleefowl do disperse, some considerable distances, showing that they are not going to remain in one spot, exhaust the resources there and die of starvation. One of the big questions is what effect do feral cats have once the foxes are removed and it would be worth doing more work to find that out. Are they serious predators of Malleefowl? The other big question is are these released birds, that appear to have survived well during the study, living to join the breeding population?

Acknowledgements

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References

Goth, A. & Jones, D. N. (2001). Transmitter attachment and effects on Australian brush-turkey chicks. *Aust. Wildl. Res*. **28**:1-6.

Priddel, D. & Wheeler, R. (1994). Mortality of captive-reared malleefowl, *Leipoa ocellata*, released into a mallee remnant within the wheat-belt of New South Wales. *Wildlife Research* **21**: 543-552.

Van der Waag, J. (2008). How to support the recruitment of Malleefowl *Leipoa ocellata* in small remnants :an overview of project findings. Curtin, Environmental Biology Bulletin No. 28.