SHORT COMMUNICATION

POST-RELEASE SURVIVAL OF HAND-REARED TAWNY OWLS (*STRIX ALUCO*)

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Abstract *Animal Welfare 2000, 9:* 317-321

The post-release survival of hand-reared tawny owls, Strix aluco, *was studied. Hand-rearing did not appear to affect the birds' instinctive behaviour or post-release survival. The recovery of several pellets confirmed that hunting in this species is an innate process. In terms of animal welfare, hand-reared tawny owls do not appear to be at a disadvantage when compared with wild juveniles, indicating that current rearing and release practices are effective.*

Keywords: *animal welfare, hand-reared, instincts, juvenile, survival, tawny owls*

Introduction

Royal Society for the Prevention of Cruelty to Animals (RSPCA) data indicate that there are around 800 wildlife hospitals and rehabilitation centres throughout England and Wales (T Thomas personal communication 1998). Like many of these facilities, the Wildlife Hospital at RSPCA Stapeley Grange in Cheshire receives a number of juvenile tawny owls (*Strix aluco*) for rearing each summer. Stapeley Grange deals with between 10 and 15 such birds each year. By extrapolation, the total number of tawny owls reared each year in the UK must be considerable. One estimate of breeding tawny owls gives a total of some 75 000 pairs (Mead 1987). Thus, although the effect of rearing and releasing juvenile birds will have a marginal effect on the overall population, there are important welfare considerations for individual birds being reared and released.

During the late summer and autumn of 1997, a total of four juvenile tawny owls which had been hand-reared at the RSPCA Stapeley Grange Wildlife Hospital were radio-tagged. Their post-release movements were monitored.

Previous studies have shown that tawny owl chicks leave the nest at about 30 days of age, but at this age are incapable of sustained flight (Southern 1970; Coles & Petty 1997). The wing is only some 60 per cent of its final length and, therefore, there is a period up to around day 90 post-fledging when the chicks are dependent on their parents (Coles & Petty 1997) and remain in the treetop environs of their nest.

During the early post-fledging period, the vulnerable appearance of the owlets, their approachability and their inability to fly well make them susceptible to 'rescue' by well-meaning but misguided people. They are handed over to wildlife rehabilitators. In some

instances it is possible to return the owlets to their parents' territory, but often relevant details are lost as the bird is passed along the line. On occasion, owlets which have sustained injuries, fallen or been ejected from the nest prior to reaching fledging age are found and passed on for rehabilitation. In all instances, the owlets have to be raised for release back to the wild when they are thought to be capable of independent survival.

Through the monitoring of the hand-reared owls after their release, we hoped to determine the survival rates of tawny owls reared from an early age in an artificial environment.

Methods

Hand rearing, housing and release techniques

Hand-rearing techniques are broadly comparable between the numerous rehabilitation facilities. At Stapeley Grange, young birds are initially housed on a towelling substrate over a sand-bowl in which there is a concavity to simulate a tawny owl nest. To mimic a wild clutch and to reduce the risk of imprinting, birds of a similar age and size are placed in groups of three or four. Human contact is, at all times, kept to an absolute minimum. The birds are initially fed four times a day using tweezers with pieces of day-old poultry chick or mouse dipped in water or oral rehydration fluid. Vitamin and mineral supplements, eg SA37 (Intervet UK Ltd, Cambridge, UK) or MVS 30 (Vydex Animal Health Ltd, Cardiff, UK) are routinely added to the food. As the birds grow, whole food items are offered thereby reducing the frequency of feeding. Small, dead, whole mice are taken by the owls as early as 2 weeks of age. The birds are encouraged to self-feed at the earliest opportunity. Weight gain and wing length are monitored. The frequency of feeding is reduced by increments to once daily in the evening.

At around 4 weeks of age, when the flight feathers are becoming well developed, the birds are introduced to an aviary. Aviaries are furnished with a variety of perches at different levels including swinging perches to stimulate balance responses. Some natural vegetation is permitted, but the upper half of the aviary is left free of obstructions to give a clear flying space. At the rear is a sheltered area with a solid screen behind which the birds roost during daylight. The birds are left alone to feed, exercise and 'harden-off'. Human contact is reduced to once daily for feeding, intermittent collection of biometric data and veterinary examinations.

Although young owls could be released once their flight feathers are fully-grown, normal practice is to retain them in captivity for a further few weeks to permit development of flying strength and skills.

A 4x6 m modular release cage made of 5cm weld-mesh is erected on site and furnished with roosting perches, a swinging perch, water bath and a box for shelter but with enough room for the owls to fly. These cages are far smaller than the permanent aviaries, but are as large as can be made for practical purposes. The intention is to allow time for the owls to acclimatize to the sights and sounds of the wild environment and to regard the cage as a safe refuge to which they may return for supplementary feeding. Pre-release feeding continues as before – once a day in the evening. After a period of 1–2 weeks the cage is opened at dusk. The owls can then leave of their own accord. Support feeding continues on top of the cage for a period determined by the circumstances at individual release sites.

Release site assessment

The release site habitat is crucial. It should be well wooded, with predominantly deciduous trees, and there should be adequate hunting perches. All potential release sites must undergo thorough surveys for prey availability and existing tawny owl populations. Abundant prey

will increase a bird's chances of early hunting success. The absence of existing territory holders will reduce the time spent on territorial disputes and maximize foraging time.

The need to radio-track the owls for this study put further constraints on the selection of release sites. Criteria for an 'ideal' site included unrestricted access within the area – to facilitate tracking, and high points – to aid the location of weak signals. While lack of public access allowed the researcher to work without interference, the fragmented nature of land ownership in Cheshire, particularly the mix of residential and agricultural land, meant this was not always achievable and imposed further constraints on radio-tracking.

The ideal site criteria were exacting, and it was impossible to fulfil them all. Thus, the ideal release site did not exist. In addition, all suitable habitats within Cheshire already contained resident tawny owls so releases could not be carried out in isolation. The two-way effects of interaction with the resident birds had to be addressed both in terms of behaviour and the impact of an extra clutch of owls on prey availability in the area. Finding suitable release sites is time-consuming but essential for a successful programme.

Radio telemetry

Following the method described by Kenward (1987), 9g TW3 radio tags (Biotrack Ltd, Wareham, UK) were tail-mounted to the central tail feathers. Antennae were tied and glued along the central shaft and trimmed to a total length of 25cm. A Mariner M57 receiver (Mariner Radar Ltd, Lowestoft, UK) with a three-element rigid Yagi antenna (Lintec Antennas Ltd, Goring-by-Sea, UK) was used for tracking. British Trust for Ornithology rings (British Trust for Ornithology, Tring, UK) were fitted to each bird.

Initially, positions were estimated by triangulation. As the birds moved apart it became necessary to fix each bird individually on a daily basis. It became more time-effective to follow the signal until the bird was seen or until the roosting tree was located. Positions or bearings were plotted on enlarged copies of 1:25 000 Ordnance Survey Pathfinder maps (Ordnance Survey, Southampton, UK).

Results

Four birds were radio-tracked in this study. These were the youngest birds admitted to Stapeley Grange and had, therefore, spent the longest time being reared in captivity. Their weights on admission ranged from 215–330 g and the youngest bird was estimated to be 13 days old.

Three of the birds, (birds 370, 628 and 669), were released together in mid-August, along with a fourth, non-tagged, bird with which they had been reared. At this stage they were aged between 17 and 21 weeks and had been reared in captivity for between 14 and 18 weeks. The supplementary food was untouched after the first night.

Bird 370 was not observed until day 8 post-release, when it was found to be roosting in dense cover within sight of the release cage. When seen flying, it had a ragged flight pattern. It was last observed during the study period on day 38, but on day 51 the radio tag and a moulted tail feather were found in wire on top of a fence post. One of the research assistants, being familiar with the bird's flight pattern, was certain that they observed the bird again in the following spring.

Bird 628 initially remained in the woodland near the release cage but then dispersed, apparently roosting in fragmented woodland and copses. It was found dead on day 30, 3.4km from the release site. Its weight, 404g, was almost identical to its release weight and it was in

good condition. Radiography and post-mortem examination determined that it had been the victim of a road accident. The radio tag was retrieved.

Bird 669 was very active after release and after 5 days the signals became weak. Contact was lost after 9 days, the bird not having been observed post-release.

Bird 811 was fitted with the radio tag from bird 628 and released in mid-September at an estimated age of 20 weeks. It was released with three other non-tagged birds. On the release night the bird flew about 0.7km, not utilizing the supplementary food. Thereafter, the bird roosted in one particular tree and eight pellets were recovered from below the roost. On day 56 the signal moved to a coniferous hedge in a nearby garden. Two pellets were recovered from below the hedge but the bird was not observed and the signal remained static until the tag lost power. Although not found, it is presumed that the radio tag had prematurely moulted out due to the added weight of the radio transmitter and had lodged in the hedge. On analysis, the collected pellets were found to contain the remains of five brown rats, *Rattus norvegicus*, three wood mice, *Apodemus sylvaticus*, one house mouse, *Mus domesticus*, leg bone fragments from a juvenile rabbit, *Oryctolagus cuniculus*, and earthworm chaetae.

Discussion

The objective of this study was to determine post-release survival rates of hand-reared tawny owl chicks. Three of the four birds released exhibited sufficient instinctive behaviour to survive the first month post-release. Loss of signal prevented us from determining the fate of the fourth bird.

No supplementary food was taken following release. Where pellets were available for analysis, it was determined that the owls could make the transition to natural food. Absence of pellets could be attributed to the owls feeding predominantly on earthworms and invertebrates, a feeding strategy not unusual for late summer and early autumn (Southern 1970).

Rearing in captivity may be perceived to reduce the opportunity for the owls to gain flying skills and strength pre-release but, in areas with no suitable hunting perches, tawny owls have been monitored hunting from ground level rather than on the wing (Redpath 1995).

Similarly, no live prey was provided during the rearing period. The released birds had to rely on instinctive behaviour. In a controlled study of tawny owls and barn owls, *Tyto alba*, Agostini (1994) determined that the predatory behaviour of tawny owls was unaffected by a period of captivity, thereby implying that prey capture in this species is an innate behaviour. Thus, the captive-reared birds should not have been disadvantaged on release. Timing of the release within the current rearing techniques coincides with the time when wild juveniles are at the end of their period of dependence (Coles & Petty 1997), and their hunting instincts should be strongest. This timing also coincides with the peak populations of prey species.

Only one mortality was recorded. This was due to a road accident. As it occurred 30 days after release and the bird was in good condition, this release was deemed successful.

Conclusions and animal welfare implications

From this preliminary study, it can be concluded that post-release survival of hand-reared tawny owls is good and that they readily catch wild prey. This is based on the results from three individual birds. The study has not highlighted any need for change in current rearing and release practices but further studies are being conducted.

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