

Post-release survival of hand-reared tawny owls (*Strix aluco*) based on radio-tracking and leg-band return data

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Authors: K Leighton, D Chilvers, A Charles and A Kelly

RSPCA East Winch Wildlife Centre, East Winch, Norfolk PE32 1NR, UK.

Stapeley Grange Wildlife Centre, London Road, Stapeley, Nantwich, Cheshire CW5 7JW, UK.

IBLS, Division of Environmental and Evolutionary Biology, Graham Kerr Building, University of Glasgow, G12 8QQ.

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Contact for correspondence and requests for reprints: ankelly@RSPCA.org.uk

AIM

This research aimed to establish the post-release survival rates of hand-reared tawny owls from RSPCA wildlife rehabilitation centres using leg-band return data and radio-tracking. The results could then be combined with other studies and compared with the survival of wild counterparts (in order to assess the 'success' of rehabilitation of juvenile tawny owls).

CONCLUSION

Post-release survival of hand-reared tawny owls from RSPCA wildlife rehabilitation centres was considered to be sufficient (66% still alive after 6 weeks) to justify the process in terms of animal welfare, as in previous studies. However, further research is required to reduce the proportion of birds that fail to survive after release.

MATERIALS AND METHODS

The following study comprises two sections. In one, tawny owls were reared and leg-banded (or rung) at RSPCA East Winch Wildlife Centre, released in 2002, 2003 and 2004 and monitored by radio-tracking. In the second, leg-band return data was studied from 112 tawny-owls reared and released from all four RSPCA wildlife centres (East Winch (EW) Mallydams Wood, East Sussex (MW), Stapeley Grange, Cheshire (SG) and West Hatch, Somerset (WH)) between 1995 and 2003.

Hand-rearing and housing of birds (for radio-tracking) at East Winch:

- initial housing in cages 35(length) x 30(width) x 55cm(height)

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- newspaper and towelling on floors
- housed in pairs (to stimulate competition)
- minimum human contact
- twice daily feeds of whole dead day-old chicks or mice (in small pieces for younger birds)
- daily supplement of AVIMIX® (Vetark Animal Health, Winchester, UK.)

At approximately 30 days old birds were transferred to 2.35 x 4.0 x 6.0m outdoor aviaries equipped with fixed and swinging perches and vegetation cover to promote exercise, acclimatisation and the development of 'concealment skills'. Food type remained the same but frequency was reduced to one evening feed (a more natural adult feeding pattern), with vitamin supplements twice weekly.

Standard British Trust for Ornithology (BTO) leg bands were fitted at this point, so that the BTO could notify research workers involved in this study of details of any birds or rings recovered after release.

Release of birds from East Winch for radio-tracking:

In 2002 and 2003 birds were released from an aviary at East Winch Wildlife Centre in a 300 hectare site consisting of 76% arable farm land and 24% woodland (mostly deciduous). In 2004 a different release site was used, composed of mixed (50%), deciduous (25%) and coniferous (25%) woodland.

Once ready for release 16 hand-reared tawny owls were anaesthetised (5% isoflurane by mask) intubated with a 3 mm tube, and anaesthesia maintained on 2-3% isoflurane for the duration of a veterinary health check and the attachment of tail-mounted radio telemetry tags (Biotrack Ltd, Wareham, UK). Tags were comprised of a TW-4 transmitter, powered by an Ag 393 battery (battery-life approximately 3 months). Tags weighed 2.4 g and had a signal range of 0.5 to 1.2 km above ground and 200 – 600 m ground to ground. Tail-mounted tags were chosen over back-mounted tags to allow natural shedding during the next year's moult, and because previous studies (cited in this paper) have shown that back-mounted tags may have negative effects on the welfare, survival and reproductive success of owls, while tail-mounted tags had little or no effect on the flight of racing pigeons.

After a check to ensure that tags were working, birds were transferred to a temporary outdoor aviary measuring 6.0 x 2.0 x 2.0 m at the release site. After two weeks (acclimatisation and to get used to the radio-tags) aviaries were opened to allow the birds to 'self-release'. Food was constantly accessible inside the release aviary for a further two weeks, and food and birds were monitored to see if any was consumed by the released birds. All birds were released in late September or October – late summer and autumn being the natural dispersal time for young wild tawny owls.

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Once released the birds were tracked on foot, using Biotrack Sika and Mariner 57 receivers (Mariner Radar Ltd, Lowestoft, UK) with Biotrack three element flexible Yagi antennae. Tracking was initially carried out once each day to find the roosting birds, with visual identification where possible avoiding unnecessary disturbance to the owls. Once birds settled in a territory they were located every 48hours until death, loss of signal or loss of transmitter was confirmed.

Leg-band return study:

For the second leg-band return study, hand-rearing and leg banding of birds at the other three wildlife centres was carried out as described for East Winch. Most birds were released in August and September.

RESULTS

Release

None of the birds took any advantage of the 'soft' release technique – they all flew away from the release aviary, did not return and did not consume any support food.

Radio-tracking

Weights and sexes (where possible) of the 16 birds were recorded on admission and release and are detailed in the full paper.

Birds were tracked from 4 to 84 days and the birds were seen by the trackers on 74% of radio-tracking events.

Of the 16 birds released, 10 were tracked for between 16 and 84 days before the signal was lost. Of the remainder:

- 2 birds shed their tags after 4 and 25 days
- 1 was readmitted after 9 days with a wing injury (suspected vehicle collision)
- 1 was readmitted after 27 days emaciated and euthanased
- 2 were found dead (one emaciated at 26 days and one predated at 45 days)

Leg-band-returns

Of the 112 hand-reared tawny owls banded and released from the four centres between 1995 and 2003, 18 bands have been returned (6 live and 12 dead birds) – a recovery rate of 15%.

The paper provides full details of the 18 birds recovered, but in summary, 66% survived more than six weeks, with 39% surviving more than one year. Only one bird survived more than five years (thought to be the average lifespan of wild tawny owls).

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DISCUSSION

These results show that at least 46% of radio-tracked birds survived for six weeks or more (this has been established by previous studies as long enough to assume that birds are capable of hunting and surviving independently). The leg-band return data showed that 66% of birds recovered had survived for six weeks or more, and that one-third of the birds recovered had survived long enough to have joined the breeding population. Hand-rearing (using RSPCA methods) does not, therefore, appear to be detrimental to survival, but approximately one third of birds released did not survive that critical six-week period – suggesting that there is still room for improvement in the process of rehabilitating juvenile tawny owls.

The results of this study are similar to those from previous studies in terms of recovery rates, distances travelled by radio-tracked birds and survival rates. The data from this study suggests that the distances travelled by these rehabilitated birds were similar to those of young wild tawny owls from a previous study (cited in this paper).

These results support previous conclusions (including Bennett and Routh, 2000) that hand-reared tawny owls retained their 'hunting instincts' and that post-release survival of these birds is sufficient to justify the hand-rearing process. These birds did not take advantage of the support food provided, which might suggest that the provision of support food is a waste of resources for this species, although this behaviour may be related to avoidance of captivity rather than hunger/ nutritional state. Birds of other species have been shown to take support food during this type of release method. As release sites were chosen according to habitat type but without surveying to establish prey abundance or the concentration of the existing tawny owl population, the authors suggest that losses of rehabilitated birds might have been due to inadequate food supply to support the number of birds released.

The authors suggest that all rehabilitators should engage in post-release studies in order to ensure that they are not compromising animal welfare by releasing animals that do not survive. Further developments in rehabilitation of tawny owls might include the use of falconry techniques to train birds to hunt, and predator recognition training (to avoid predation), and that prey abundance surveys of potential release sites may also be useful in promoting survival. Examination of records of birds that do not survive release might reveal factors that could be used to predict survival or guide improvement of management techniques. As different studies show different results for different species, these conclusions should not be used to guide management decisions relating to other species.

References

Bennett, J.A., and Routh, A.D., 2000. *Post-release survival of hand-reared tawny owls (Strix aluco)*. *Animal Welfare*, 9: 317–321.