

Behaviour of yearling male Eagle Owls *Bubo bubo* from the Lusatia Mountains Population (»Lausitzer Gebirge«, CZ) A telemetry study

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Verhalten von männlichen Uhu *Bubo bubo*-Jährlingen in der Population des Lausitzer Gebirges, CZ. Eine Telemetriestudie.

2002 wurden im Lausitzer Gebirge (nördliche CZ) vier Uhus *Bubo bubo* (3 Nestlinge, 1 brütendes Weibchen) telemetriert. Wanderungen und Verhalten von zwei jungen Männchen werden kurz beschrieben. Nach dem Ausfliegen besiedelten die Vögel relativ kleine Gebiete von rund 1 km² und 2,1 km². Während des Tages wurden nur rund ¼ bis ⅓ dieses Aufenthaltsgebietes genutzt. Ein Vogel wurde im Alter von 20 Wochen tot gefunden, während der zweite nach 24 Wochen nicht mehr geortet werden konnte. Für November und Dezember wird vermutet, dass er sich weiter als 100 km entfernte. Ende Dezember kehrte er wieder zurück und zeigte ab März auf Brut gerichtetes Verhaltensweisen wie Balzrufe und Nistmuldenscharren. Bei Brutbestandsaufnahmen können solche Verhaltensweisen von Jährlingen erfolgreiche Paare vortäuschen und dazu führen, dass diese in den Untersuchungen überrepräsentiert sind.

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Introduction

Movements of birds are studied over a century by ringing recoveries. In some species like owls the results did not bring satisfying results. In Europe very little is still known about long term movements of many species of whom some are threatened or they have other not negligible social significance. One of them is Eagle Owl *Bubo bubo*. Knowledge of general patterns of year round movements and especially the natal dispersal, establishing of new territories or recruitment in population still remains fragmentary. As top predator and object of increased interest of hunting lobby, this species is often illegally persecuted because true behaviour and population

status remain hidden and thrown into the shade by ancient conceptions of hunters protecting other beneficial quarry especially in an area of higher human impact. Behaviour of breeding birds, their nest site fidelity, spatial hunting activity and size of catchment areas as well as much looser behaviour of subadult birds can be studied only by radio tracking with long life transmitters. It is a long term project where due to low population density, low reproduction rate, juvenile mortality and potential emigration from study area large numbers of studied birds hardly will be reached. At the moment we can present here preliminary results based on a very limited number of birds.

Material and Method

From 2002 we tagged and followed four birds. One adult female was caught in her breeding territory (named "Kiri") and three chicks were tagged between 2002 and 2005 (two males "Kim" and "Nick", one female "Nell"). The sex of the tagged birds was determined from blood or feather samples on the base of DNA structure.

Initially, more territorial adult birds or chicks in nests were chosen but due to mortality or problems with catching of adults the total number of studied birds increases only slowly. Birds were fitted with standard VHF transmitters (Biotrack TW-3, expected range 3-10 km, from hills and air-plane up to 30 km) mostly backpack style. Signal was received with standard scanners (Yupiteru MVT-7300EU, AR8000, Icom R10) and 3 element yagi antenna or various types of whip antennas. Location of birds was determined either by triangulation from more points or around known nesting cliffs it was found directly. We did not use a standard time schedule but at least the presence or absence of signal was checked every third day in year periods without expected movements of birds. In autumn i.e. in time of dispersal birds were monitored almost every day.

Regularly, whole night or day trials were inserted. For recovery of lost birds we used car-roof-mounted directional antenna system that allowed monitoring space to sides with expected gain of 6dB during drive. If necessary the area of northern Bohemia (north from Prague) and adjacent parts of Gemany and Poland were searched by driving in net-like pattern and signal-free area was gradually extended from breeding site. Signal was also monitored from convenient elevation points up to highest peaks with open views to lowlands. Thus, negative evidences were cumulated and marked in maps for planning of further searches.

This car-mounted system with fixed anten-

nas proved to be an effective method especially for extensive surveys, long distance reception or standard monitoring in bad weather conditions in winter. As birds are site-loyal in short time periods the signal was used to define these sites and inspect them in daylight. Hunting activity, preferred places for prey capturing and whole home-range pattern was monitored during whole-night tracking trials (roughly every week) when also vocal activity of tagged birds but also of other birds was recorded. This was combined with standard survey of all nest sites. Thus, movements of single tagged birds could be evaluated in context with a population frame.

Study area

The core study area is situated in Lusatia Mountains (»Lausitzer Gebirge«) on the northern borders of the Czech Republic. This is Landscape protection area with hills up to 800 m a.s.l., scattered sandstone cliffs and generally large wood coverage. Agricultural activity with animal farms and grain production is spread in foothills and adjacent territories. The whole zone is used for recreation, tourism and hiking.

Results

Here we present preliminary results about spatial activity of "Kim" and "Nick" in their first year of life. "Kim" was tagged on 20.6.2002 and after fledging it spent all time in relative close vicinity of nest. After three months he was found predated in this area. "Nick" was tagged at nest on 24.6.2003 in age of nine weeks when this bird was still in nesting lodge or around. It is difficult to determine clear beginnings of early post-fledging periods because nesting cliffs are surrounded by

Tab. 1. Data of the tagged Eagle Owls. – *Daten zu den untersuchten Uhus.*

	Tagged		Last record in post-fledging range		Note
	Date	Age (w)	Date	Age in weeks	
Kiri	3.10.03	adult			Female, battery for 4.5 years
Kim	20.6.02	7	20.9.02	20 (died)	Male, battery for 2.3 years
Nick	24.6.03	8	11.10.03	24	Male, battery for 2.5 years
Nell	23.6.05	8	11.10.05	N/A	Female, battery for 4.5 years, Nick's younger sister

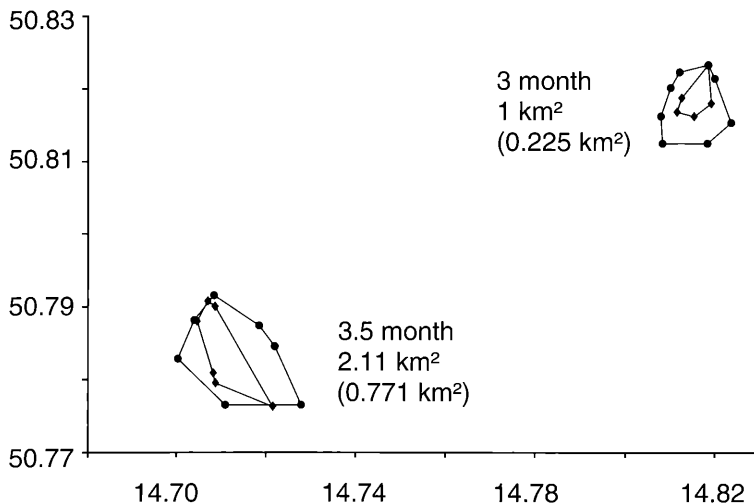


Fig. 1. Post-fledging ranges: "Nick" (left) in period 24.6.-11.10. 2003 and "Kim" (right) in period 20.6.-20.9.2002. Night (●) and daylight (◆). Data in brackets) spatial activity. – Aufenthaltsgebiete der Junguhus nach dem Ausfliegen: »Nick« (links) vom 24.6. bis 11.10.2003 und »Kim« (rechts) vom 20.6. bis 20.9.2002. Räumliche Aktivitätsmuster nachts (●) und tagsüber (◆, Daten in Klammern).

tree canopy and growing chicks have good chance to disperse in adjacent crown storey very early with low flight skills.

The whole post-fledging period when birds were in nest vicinity in contact with parents lasted at least 3 and 3.5 months respectively. Their post-fledging ranges were in that time (100 % minimum convex polygon – MCP) about 1 km² and 2.1 km². Both birds revealed daylight activity and their movements covered about 1/3-1/4 of their ranges. Dispersal occurred in autumn when Nick at the age of 24 weeks disappeared (November, December) and its signal was not recorded in a distance up to 100 km around. On the end of December he appeared again in this area moving widely till March when he settled in a new small range that was impressed among existing breeding territories. Spring behaviour of this bird simulated a true breeding behaviour with typical vocalization and extremely prolonged time in a particular spot with evident and permanently renewed nest depression.

Discussion.

Fledglings spent at minimum three month in close vicinity of nest or in a restricted area nearby. The fully documented case indicated 24 weeks which is longer than data from Spain (Penteriani et al.

2005) and close to upper limit published elsewhere (Glutz & Bauer 1980, Cramp & Simmons 1985). Afterwards fledging birds became gradually noisy (Penteriani et al. 2005). With increasing time parental investment in offspring probably gradually decreased when parents reduced provisioning of food and on the end they probably even avoided own fledglings. At this time, the offspring spent more time begging and moving even in daylight. Fledglings were occasionally able to catch prey before the half of this period and, at least partly, fed themselves a long time before they dispersed. It is not excluded that direct aggression by adults towards offspring was associated with death of "Kim" "Nick" did not show typical behaviour of immature "floaters" in first spring (compare with *Bubo virginiana*, Danilson, year unknown).

Conclusions

Young birds were using relatively small post-fledging ranges (100 % MCP were about 1 km² and 2.1 km²) in post-fledging period.

Post-fledging period lasted at least 3 and about 3.5 months when "Nick" reached 24 weeks.

Young birds revealed daylight activity covering about 1/3-1/4 of their home ranges.

Yearlings (and probably even older immature birds) can simulate a true breeding behaviour in

their spring ranges. Breeding censuses may thus over-represent real breeding population and number of failed nests may be over-represented if such yearling's attempts are evaluated as failed broods.

Abstract

From 2002, four Eagle Owls (3 chicks, 1 breeding adult female) were fitted with long-life VHF transmitters and birds were intensively monitored in the northern part of the Czech Republic. The Birds were from nests situated in a hilly area that lies on the Czech-German border region that suitable woodland habitat and nesting cliffs. Movements and behaviour of two yearling males are shortly described. In post-fledging period young birds occupied relatively small ranges (100 % MCP) of about 1 km² and 2.1 km². Daylight activity covered about 1/3-1/4 of their post-fledging ranges. One bird was found dead in final part of this period at the age of 20 weeks while the second naturally disappeared at the age of about 24 weeks. In November and December we suppose that this bird was most probably more then 100 km far away but from the end of December it was back again back

moving widely till March when it settled in a new range that was impressed among existing breeding territories. Spring behaviour of this bird simulated a true breeding behaviour and thus breeding censuses based on such evidences may over-represent real breeding density. Number of failed nests can be over-represented if such yearling's attempts are evaluated as failed broods.

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