

On the influence of the Eurasian Eagle Owl *Bubo bubo* on a Barn Owl *Tyto alba* population at the border of the German low altitude mountains.¹
Eulen-Rundblick 67: 78–79

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Introduction

In their study area Einbeck (county Northeim, Lower Saxony, Germany) KNIPRATH & STIER-KNIPRATH (2014) and KNIPRATH (2014) had stated a steady decrease of the Barn-Owl population during the last 15 years. According with that, KNIPRATH (2016) described that during that time interval the mean mortality rates of the Owls in this area increased steadily and the survival intervals decreased in accordance. These alterations were not found in the recovery data of the Vogelwarte Helgoland for the Barn Owl in the North German Lowland. There indeed we found an increase in the mortality rate until mid of the 1990ies, afterwards in contrast a decrease. So the changes in the Einbeck population is a regional development, for which we had to find causes.

Result

When depicting the numbers of Barn Owl broods in the study area Einbeck we had found a clear gravity centre in the region of the Ilme-valley (fig. 1).

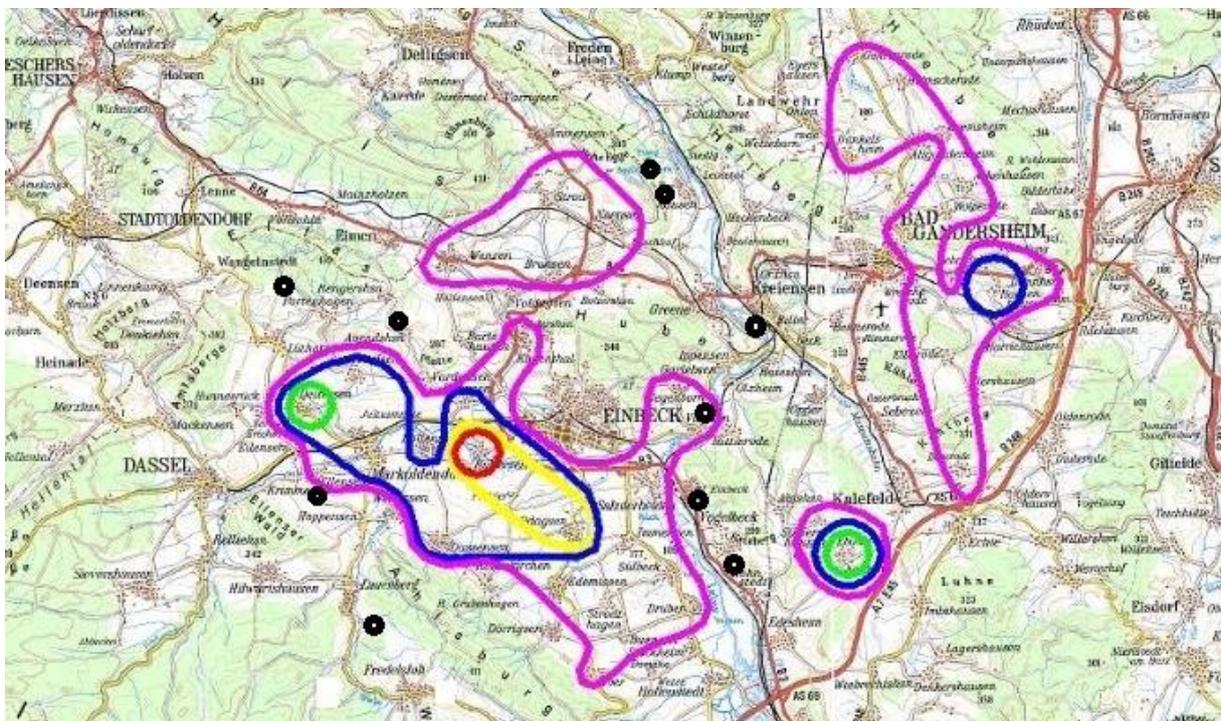


Figure 1: The dispersion of the Barn Owl broods in the study area Einbeck (county Northeim, Germany), drawn as iso-lines, which include the villages with at least 5

¹ Translated from: Kniprath E & Stier-Kniprath S 2017: Zum Einfluss des Uhus *Bubo bubo* auf eine Schleiereulenspopulation *Tyto alba* am Mittelgebirgsrand. Eulen-Rundblick 67: 78-79

(violet), 10 (blue), 15 (green), 20 (yellow), and 25 broods (red) (from KNIPRATH & STIER-KNIPRATH (2014). Additionally introduced as black dots are the Eagle Owl breeding sites of the last 25 years.

Until about 1990 in the county Northeim there were about 4-5 used nesting sites of the Eagle Owl (oral sources). This number until recently has increased up to 15-20 (personal data). Compared to the Barn Owl population a counter rotating development cannot be overlooked. If now looking in figure 1 at the Eagle Owl breeding sites in the region Einbeck it becomes clear that the gravity centre of the Barn Owl population is surrounded nearly completely by a closed ring of Eagle Owl breeding sites. These breeding sites of the Eagle Owl nearly completely are situated in quarries situated at the slopes of the ridges around the Ilme-depression (north of the mouth of the river Ilme into the river Leine). Not to be recognized in the figure is that in all villages between the depicted gravity centre of the Barn Owl broods and the Eagle Owl breeding sites there are 1-3 Barn Owl brood boxes. During the first years of the study (beginning with 1996) these still had been used by the Barn Owls, today only very rarely, by Kestrels indeed in increasing numbers. So we guess, that prey scarcity hardly can be the cause.

So it looks as if the Barn Owls in the vicinity of the Eagle Owl breeding sites especially would suffer from these owls. At 2-3 of these sites in the study area pluckings or single feathers of Barn Owls were found. Six rings of Barn Owls ringed in the study area were recovered in Eagle Owl pellets, two of them in the area. Onto that in the data base of the Vogelwarte Helgoland (thanks to O. Geiter) we found only two more recoveries, which had attributed to the Eagle Owl by the finders. Indeed the database additionally contains 109 recoveries, with the comments "Taken by owl or raptor - exact identification of predator available" or "Taken by unspecified animal". Beyond these we may guess a greater number of prey made by Eagle Owls.

Discussion

The endangering of the Barn Owls by the Eagle Owl is imaginable in two ways: first by direct predation, for which we have sufficient proofs. Then indeed the concentration of broods of the Barn Owl in the central part of the Ilme-depression indicates that the mere presence of the Eagle Owls represents a recognizable thread, to which the Barn Owls avoid. We easily can imagine that the young Barn Owls arriving here at their juvenile dispersal directly recognize. Eagle Owl males defending a territory mostly already beginning with August every evening are calling. One or other Barn Owl possibly avoids settling here.

It is not without interest to look at the interrelation Barn Owl – Eagle Owl from the visual angle of an Eagle Owl. Certainly the Eagle Owl has a very broad spectrum of prey, but his most successful years coincide with the peak years of the Common Vole (*Microus arvalis*) (HÄNEL 2014). So the Barn Owl also is prey competitor for him. Every preyed Barn Owl for the Eagle Owl not only is a profitable prey but deliberates it at the time from a competitor. A similar influence of the Eagle Owl on the Buzzard (*Buteo buteo*), as well competitor concerning the Common Vole, is communicated by CHAKAROC & KRÜGER (2010) and GRÜNKORN (2015).

The local population of Kestrels (*Falco tinnunculus*) in the controlled Barn Owl boxes steadily has increased (KNIPRATH & STIER-KNIPRATH 2012). As also these Kestrels use the population of the Common Vole, we could assume that a general scarcity of prey could not be the cause of the decrease of the Barn Owls. This indeed could be a fallacy, if the free breeding Kestrel population at the same time had decreased. For the Kestrels a direct threat by the Eagle Owl more likely is not given, for they are active during day-light. The lesser threat of the Kestrel broods in this special case is to be attributed to that they indeed are safer in the Barn Owl boxes than when breeding for Example in old Corvid nests.

Nevertheless the doubt free influence of the Eagle Owl on the local population of the Barn Owl not shall remain uncommented. This population of the Barn Owl not has developed before the years 1984-2000 as a consequence of intense nest box activities (fig. 2). During that period the development of the Eagle Owl population in the same region got going. What happens now is the re-establishment of the Eagle Owl – Barn Owl relation onto a level, which eventually already had existed earlier (HÄNEL pers. comm.).

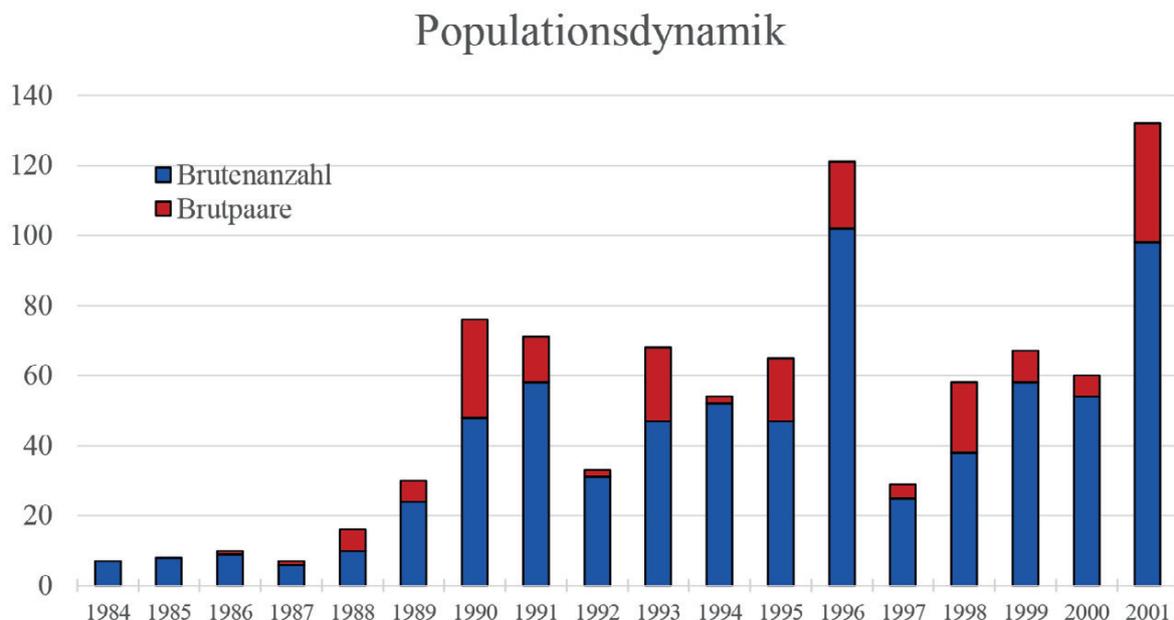


Figure 2: Development of the breeding population of the Barn Owl in the county Northeim (Lower Saxony, Germany) 1984-2001 (from: H. WEITER: Report on the population dynamic of the Barn Owl. Poster in the county Northeim building at Northeim) (Brutenanzahl = number of broods; Brutpaare = breeding pairs)

It now would be extremely hasty to assume, the Eagle Owl would be the main cause of the local decrease of the Barn Owl. It is the cause, for which I have at least some numbers. No numbers I do have concerning the influence of modern agriculture. This one could be the cause for the numbers of Common Vole in normal years are to low for the Barn Owl to keep its numbers at a level, which would allow a quicker regeneration in better prey-years (HÄNEL pers. comm.).

Thank

I thank Dr. KERSTEN HÄNEL for helpful comments to the discussion.

Summary

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A local Barn Owl *Tyto alba* breeding concentration has been observed in the central part of the river Ilme depression (Northeim county, Lower Saxony, Germany). Over the last years a general decline of the numbers of breeding Barn Owls was noticed in parallel with a decrease of survival rates and an increase in mortality. In the same region the number of breeding Eagle Owls has increased considerably during the last 25 years. Causal connections related to predation of Barn Owls by Eagle Owls and other interactions between these species are discussed.

Literature

CHAKAROV N, KRÜGER O 2010: Mesopredator Release by an Emergent Superpredator: A Natural Experiment of Predation in a Three Level Guild. PLoSONE 5(12): e15229. doi:10.1371/ journal.pone.0015229

GRÜNKORN T 2015: Projekt Ursachenforschung zum Rückgang des Mäusebussards im Landesteil Schleswig. Jagd und Artenschutz 2015: 94–97

HÄNEL K 2014: Populationsentwicklung des Uhus *Bubo bubo* im Weserbergland – Zwischenstand einer laufenden Untersuchung. Eulen- Rundblick 64: 4–11

KNIPRATH E 2014: Was lässt sich aus den Bestandszahlen einzelner Untersuchungsgebiete zur Entwicklung des Schleiereulenbestandes ableiten? Eulen-Rundblick 64: 12–16

KNIPRATH E 2016: Zur Mortalität norddeutscher Schleiereulen *Tyto alba*. Eulen-Rundblick 66: 73–85

KNIPRATH E & STIER-KNIPRATH S 2012: Bestandsentwicklung einer Turmfalkenpopulation *Falco tinnunculus* in Südniedersachsen. Vogelkdl. Ber. Niedersachs. 43: 115–117

KNIPRATH E & STIER-KNIPRATH S 2014: Schleiereule *Tyto alba*: Eigenschaften und Bruterfolg einer zweiten niedersächsischen Population. Eulen- Rundblick 64: 43–65