

Earlier egg laying in the Barn Owl *Tyto alba*

1. Introduction

After KANIA (1994) first observed that in Poland from 1931 to 1994 the egg laying dates of Great and Blue Tits had advanced for ten days the phenomenon has been confirmed during the last decade for additional bird species. In Germany in the years 1970-2000 the advancement in Great and Blue Tits and in the Nuthatch counts 5-6 days and in the Spotted Flycatcher at least 3 days (WINKEL & HUDDE 1997, WINKEL 2002). For the Goldeneye in northern Germany even 14 days were stated for 1971-1995 (LUDWICHOWSKY 1997). For the same

period it was confirmed for England that 64 of 65 bird species show the same, in 20 of these a significant tendency (CRICK et al. 1997, MCCLEERY & PERRINS 1998).

2. Material and methods

One of the recent publications (KOOIKER 2005) on egg laying advancement in which significant trends are communicated for Great and Blue Tits and the Lapwing, encouraged to screen the data basis of several Barn Owl ringers under this aspect.

Tab. 1: Temporal and spacial origin of data

site/region	coordinates	time period	n	elaborated by
county Celle	52,63N, 10,30E	1972-1992	95	R Altmüller, H Köneke
area Barnbruch	52,45N, 10,70E	1993-2005	1577	H Seeler, H Schemmel
county Northeim	51,82N, 9,87E	1996-2005	366	E Kniprath, S Stier
county Potsdam-Mittelmark	52.30N, 12,85E	1999-2005	42	B Wuntke

The data on breeding biology were recorded by the ringers at 1- 3 controls at each brood and the egg laying data deduced. Only those broods of the first half of the year were taken in which the data are sufficiently exact to calculate the egg laying date.

The figures 1- 4 demonstrate that for the Barn Owl the same holds true as for other bird species: As a trend the egg laying date constantly was advanced at least since 1972. The speed of the alteration during the respective study periods was between 0.43 and 0.87 days pa. The lowest value was found for the most eastern study area (Potsdam Mittelmark) the other ones are very close to each other (as do the study areas).

For all three study areas the graphs show a trend towards earlier egg laying. But on behalf of the high yearly scattering it cannot be certified statistically.

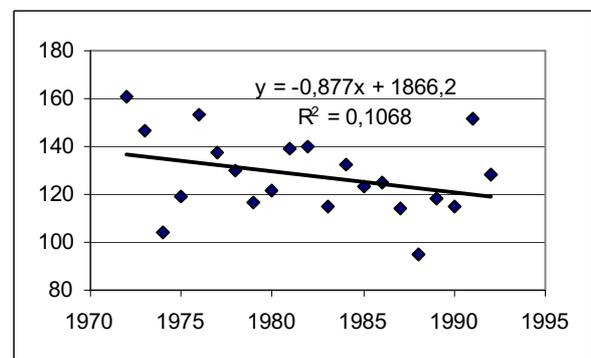


Fig. 1: Alteration of the mean egg laying date of the spring broods (days after New Year) in the county Celle, Lower Saxony; N= 95

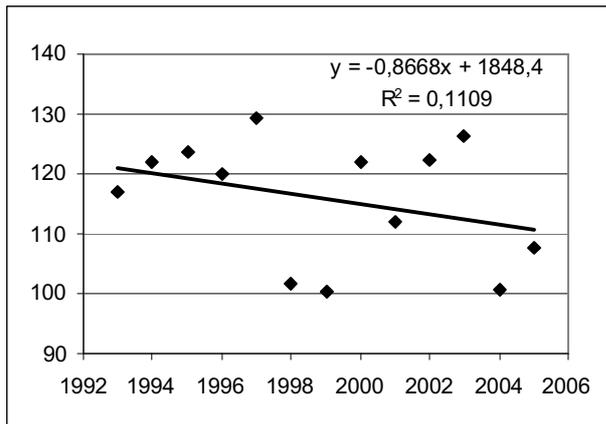


Fig. 2: Alteration of the mean egg laying date of the spring broods (days after New Year) in the area Barnbruch, Lower Saxony; N= 1577

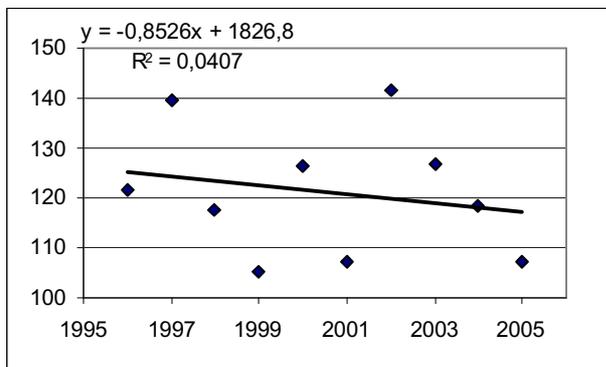


Fig. 3: Alteration of the mean egg laying date of the spring broods (days after New Year) in the county Northeim, Lower Saxony; N= 366 (data from Kniprath 2007)

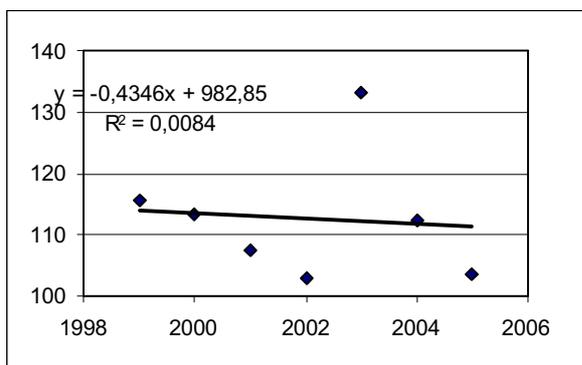


Fig. 4: Alteration of the mean egg laying date of the spring broods (days after New Year) in the county Potsdam-Mittelmark, Brandenburg; N= 42

3. Discussion

According to its origin in climatic warmer zones (de JONG 1995: 19) the Barn Owl since ever used a maximum part of the year for breeding. In favourable years (early and warm springtime, good vole stock) breeding starts evidently earlier than in unfavourable ones. In contrast, in these latter ones the owls often wait for several weeks until the vole stock has regenerated to a certain extent. We could expect that the general warming would support the Barn Owl in this tendency. Earlier egg laying gives it the chance to add a second brood. And for this the probability raises to anticipate an eventual autumnal crash of the vole stock. This earlier egg laying of the Barn Owl well accords to the bird species mentioned in the introduction.

As we cannot expect that the speed of the global warming diminishes we can guess that after some decades the Barn Owl will breed "year around", at least will always start earlier in springtime and more and more often will breed until late autumn and even into the winter. Then we more often could expect real third broods in which after two successful broods at least one parent bird will make a third breeding attempt.

Summary

For all four study areas in northern Germany the authors found that egg laying has been advanced for 0,43 to 0,87 d pa. This is interpreted as reaction to the global warming.

4. Literature

- CRICK HQP, DUDLEY C, GLUE DE & THOMSON DL 1997: UK birds are laying eggs earlier. *Nature* 388: 526.
- DE JONG J 1995: De Kerkuil en andere in Nederland voorkomende uilen. *Friese Pers Bockerij* bv Leeuwarden
- KANIA W 1994: Breeding phenology of *Parus major* in Poland, 1931-1993: Data from ringing schedules and nestling aging method. *J. Ornithol.* 135 (spezial issue): 11.
- KNIPRATH E 2007: Schleiereule *Tyto alba*: Dynamik und Bruterfolg einer niedersächsischen Population. *Eulen-Rundblick* 57: 17-39

KOOIKER G 2005: Vögel und Klimaerwärmung: 28-jährige phänologische Beobachtungen in und um Osnabrück von 1976 bis 2004. Vogelkdl. Ber. Niedersachs. 37: 99-111.

LUDWICHOWSKY I 1997: Langfristige Trends bei Flügellänge, Körpermasse und brutbiologischen Parametern erstbrütender Weibchen eines norddeutschen Bestandes der Schellente. Vogelwarte 39: 103-116.

MCCLEERY RH & PERRINS CM 1998: ...temperature and egg-laying trends. Nature 391: 30-31.

WINKEL W 2002: Sind Singvögel Anzeiger von Umwelt- und Klimaveränderungen? Langzeittrends bei Meisen und anderen Kleinhöhlenbrütern im Braunschweiger Raum. Milvus 21: 1-12.

WINKEL W & HUDDE H 1997: Long term trends in reproductive traits of tits (*Parus major*, *Parus caeruleus*) and Pied Flycatchers (*Ficedula hypoleuca*). J. Avian Biol. 28: 187-189.

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