On the mortality of North German Barn Owls[1]

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1 Introduction

For the entire population of a bird species in its total distribution area there are only two regulation factors: natality (birth rate) and mortality. Of course both are as well responsible for population changes in partial populations – as those of the responsibility of national schemes and, much smaller, the study areas of single investigators – but not alone. Here in addition immigration and emigration play a role: The smaller the areas the greater the influence af these latter factors. To estimate each of these four factors ringing and control of a number of birds as great as possible is necessary. On the basis of different data bases – recovery data of ringing schemes and controlling results of long term investigations – authors have tried to estimate the mortality of Barn Owls in central Europe (data of schemes: SCHIFFERLI 1957, SCHÖNFELD 1974, BAIRLEIN 1985, DE JONG 1995, MÁTICS 2000; local studies: DE BRUJN 1994, ALTWEGG et al. 2003, KNIPRATH 2007). Here the mortality of northern German Barn Owls will be analysed on one hand using the recovery data of the local population of the author, which already had been used to analyze other subjects of the biology of the species (KNIPRATH & STIER-KNIPRATH 2014), and the recovery data of the Vogelwarte Helgoland, which likewise have been analyzed under different subjects (KNIPRATH 2012, 2013, 2016).

2 Material and methods

Summary

For this study of the mortality of Barn Owls data from two different sources have been used: a: the values of a local population (eggs, nestlings, and breeders) and b: the recovery data of owls ringed as nestlings until 2008 as furnished by the Vogelwarte Helgoland. On these bases the mortality rates were calculated for years and cohorts by conventional life-tables. For the eggs up to hatching a mean mortality rate of 0.16 was calculated with a declining tendency over the years of the study, for the nestlings up to fledging of 0.23 with increasing tendency. This latter one was correlated inversely with the yearly number of broods as well as with the number of broods in the respective following year.

For not to be obliged to separate the breeding seasons of the owls into two life-years, here these years of life of the owls defined newly: They begin with the start of the breeding interval, in Central Europe the beginning of March (here: March 1st). So the include a complete breeding season, in some years also the interval of a second brood, and the following wintering. Necessarily this counts as well for the young owls. Thus their first year ends on February 29th and comprises always less than 12 months. To discriminate this latter one from the life-years of the adult owls we here introduce the term youth-year. Biologically it comprises the weeks of growth, hatching, and fledging, becoming independent, the dispersal, and the first wintering.

The mean mortality of the young owls up to the end of the youth-year (February 29th) with 0.42 is in the same magnitude as that of the adult owls with 0.45 from August to the end of February. Only with the start of the breeding period it increases clearly, for the adult owls as well as for the young ones, more strongly for the latter ones. During the years of the study it evidently decreased in the young as well as in the adult owls. The mortality rate oscillated over the years, in the local population steadily increased until about 2004, did no more alter until 2007 and again increased more intensely since. In the date of the Vogelwarte in contrast a reduction of the mortality rate is visible until 2001.

The mortality rates of the cohorts (age-groups) in the local population clearly increased over the years with a corresponding decrease of the life expectance of the first ones. In the data of the Vogelwarte a decrease until mid of the 90ies is visible with a newly increase afterwards. The life-expectancy of the cohorts is corresponding: first increase, then decrease.

The mortality rate by years of life in the local population up to the fourth year clearly decreased and afterwards tended to remain constant. The development was totally different after the data of the Vogelwarte: Despite of a strong scattering a steady reduction is visible.

The mortality rate of a year influenced the population magnitude of the following year as well in the local population as in the data of the Vogelwarte.

During the course of the year the mortality rate in the data of the Vogelwarte decreased until April, then increased strongly until June, decreased to July until beyond the value of April, continued decreasing until October, and the increased again until February. This template repeated until the fourth year of life of the owls but with continuously decreasing amplitude.

In some of these developments the influence of nest-box-activities for the Barn Owls is recognizable.

(The entire paper in English is available at www.kniprat-barn-owl.de)

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