

AN ANALYSIS OF ORIENTATION CAGE FIELD DATA –
A CASE STUDY OF HEADINGS OF THE BLACKCAP,
SYLVIA ATRICAPILLA, AT THE BUKOWO/KOPAŃ
RINGING SITE IN POLAND

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ABSTRACT

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One of the most effective methods of studying the migratory patterns of nocturnal passerine migrants is the use of orientation cages as a supplementary procedure at ringing sites. The most comprehensive studies using orientation cages (Busse's Flat Orientation Cage) were conducted within the SEEN network (SE European Bird Migration Network), with more than 43,000 tests performed at more than 40 ringing sites in autumn. A number of papers were published based on these data, presenting an overall pattern of passerine migration over SE Europe-Middle East-NE Africa. For more detailed analyses, it was first necessary to solve some methodical problems within case studies. The current work presents details for discussion based on data from 1338 tests of Blackcaps performed during the years 1995–2010 at a single ringing station, Bukowo/Kopań, located on the Polish Baltic coast. The birds were tested according to the standard methodology of the SEEN network (Busse 2000). The problems investigated were (1) the repeatability of heading patterns obtained in different years, (2) the linearity of the estimated arrival and departure headings, and (3) quantitative aspects of the results in the description of the heading pattern when migratory groups are found.

It was determined that (1) yearly heading patterns were generally coherent and could be analysed as uniform case data; (2-1) the hypothesis that the arrival/departure heading axes are generally linear is accurate to within about one 10° sector, at least in the case of the Blackcap. This is coherent with impressions from other known data sets, but does not mean that the rule always applies to all species at every location on the migration route. In the future, this problem should be studied on a more detailed scale. It was further established that (2-2) estimating arrival and departure headings makes it possible to define migratory groups (populations) passing the study site. The direct heading estimation procedure seems to be more sensitive in identifying migratory groups than the calculation procedure. Moreover, (3-1) the calculation procedure makes it possible to estimate some quantitative properties of headings of migratory groups and define some interesting, though preliminary, number patterns of local migratory patterns; (3-2) the number relations between birds demonstrating the arrival and departure headings of the migratory group seem to be an interesting parameter for study on the distance of migration of groups within a species and, possibly, between species. This is another interesting problem that

cage tests could be used to solve in the future. Finally, (3-3) knowledge about trends of individual populations passing the defined site becomes accessible only using analysis of data from orientation cages. The estimated quantitative indices discussed above could be helpful in presenting the general migratory pattern of the species on a geographical scale.

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