MONITORING OF BREEDING BIRDS IN LITHUANIA

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MONITORING OF BREEDING BIRDS IN LITHUANIA

P. Kurlavicius[1]

ABSTRACT. This paper gives an overview of the Lithuanian State Point Count Project and reviews its latest results. During 1986 to 1995 the following population changes were observed: populations of most short-distance migrants increased in 1987 following a severe cold spell in spring 1986; changes in populations of some agricultural birds corresponded with the decreased intensity of use of farmland by the human population; breeding populations of long-distance migrants generally decreased.

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INTRODUCTION

In 1984 a Common Bird Census Programme, based on point counts, was started in Lithuania. The main aim of the Programme was to provide data on population changes of terrestrial breeding birds in the area of Ignalina Nuclear Power Plant and to determine the patterns of abundance of individual species (Kurlavicius 1992). Subsequently, in 1986, a Breeding Bird Monitoring Project was started in Lithuania. The scale of this project was limited and information on population trends was obtained only for selected bird species. During 1990-1992, this scheme collected insufficient data to allow the calculation of population trends.

Since 1993, point counts have been used as a component of the National Ecological Monitoring Programme and are a part of the joint projects of the Lithuanian Ministry of Environmental Protection, Lithuanian Institute of Ecology and Lithuanian Ornithological Society. Between 45 and 70 counts are now conducted annually.

METHODS

The point count sampling procedure is similar to that used in other European countries. Forest and agricultural landscapes are covered by sampling routes, with each route consisting of 20 stops (counting stations). The distance between the stops is at least 200 m in woodland and 300 m in open landscapes. The route is covered three times during the breeding season, with observations starting at about sunrise. The first count in the season is undertaken during the period April 20-May 7, the second May 10-June 5 and the third June 6-June 20. At each stop, observers count for five minutes. All birds seen or heard are recorded. Windy and/or rainy days are avoided. The date and time of day at which point counts were undertaken varied slightly between years, with start date varying by seven days, and start time by 30 minutes between consecutive years.

Population indices were calculated using the chain index method in which the calculation of the current year's index takes into account the previous year's value. The index was calculated as follows: $Index_{(N)} = Index_{(N-1)} \times d/100 + Index_{(N-1)}$, where $d = A_{(N)} / A_{(N-1)} /100 - 100$ and N is the year for which the index is being calculated, N-1 is the preceding year and A is the number of individuals of a given species recorded in year N or N-1 on the same transect.

Because of the lack of data for 1990-'92 two separate series of indices have been calculated, one starting in 1986, the other in 1993; indices for both these years have been set to 100. The data for 1995 are only preliminary. Annual changes in indices were calculated using a Wilcoxon test and were considered significant when $P<0.05$.

The results from Lithuania presented here have been compared with those from neighbouring states. Unpublished data from Latvia, obtained using the line transect method, were kindly supplied by J. Priednieks and E. Peterhofs. Point count data from the Estonian Republic were taken from Kuresoo (1990).

English names of birds are based on the List of English Names of Western Palearctic Birds (British Birds Ltd, 1993).

RESULTS AND DISCUSSION

Data from a seven-year period are insufficient to draw firm conclusions on long-term changes in population. The overall population change of all species together revealed by adding all the individual species' records was insignificant. Nevertheless, it was clear that some major population changes took place during 1986-1995.

Populations of most common short-distance migrants, particularly Song Thrush *Turdus philomelos* and Sky Lark *Alauda arvensis* increased considerably; meanwhile populations of Robin *Erithacus rubecula* and Chaffinch *Fringilla coelebs* increased slightly or were even stable between 1986 and 1987 in Lithuania (Fig. 1). Similar trends have been documented elsewhere, e.g. for Song Thrush, Robin, and Sky Lark in Latvia, and for Song Thrush and Sky Lark in Estonia.

Figure 1a. Population indices of selected bird species in Lithuania in 1986-1995.
Statistical significance of change: Hooded Crow COR ONE: ** (1989);
Robin ERI RUB: ** (1989); Yellowhammer EMB CIT: ** (1994);
Chaffinch FRI COE: ** (1995). Sky Lark ALA ARV: ** (1994);
Other species codes are: Song Thrush TUR PHI, Jackdaw COR MON,
Goldfinch CAR CAR.

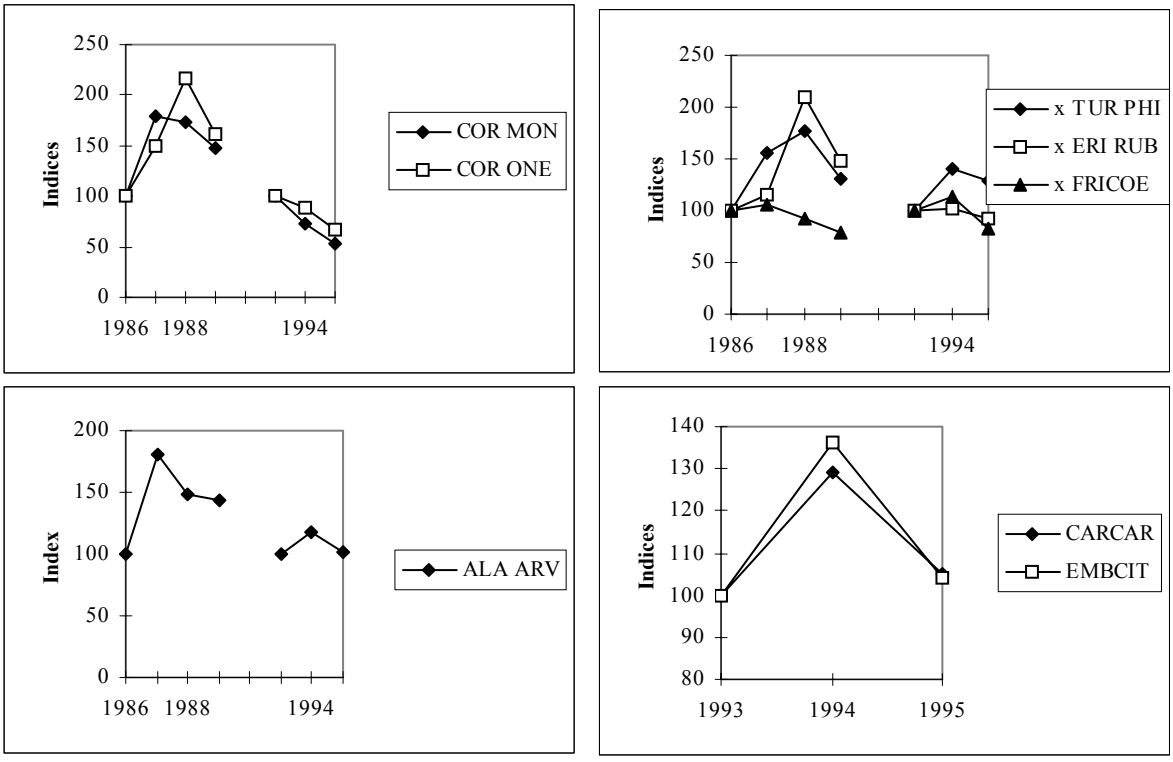
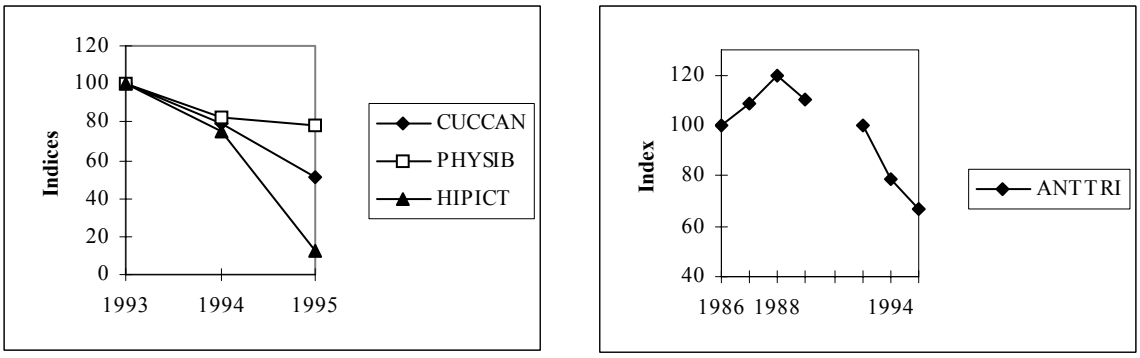


Figure 1b. Population indices of selected bird species in Lithuania in 1986-1995.
Statistical significance of change: Common Cuckoo CUCCAN: * (1994, 1995);
Wood Warbler PHYSIB: ** (1994);
Tree Pipit ANTTRI: * (1994). (*=p<.05, **=p<.01).
Other species codes are: Icterine Warbler HIPICT.



The reason for the increase in the populations of these species is reasonably clear. During the first 10 days of April 1986, populations of early-arriving migrants were seriously affected by cold weather. In Lithuania, this cold spell began on 10 April, and on 11 April a snowstorm started which lasted two days and resulted in snow cover of about 20 cm. This event resulted in increased bird mortality in Lithuania (Kurlavicius, Raudonikis 1989). The first bird deaths were recorded on the first day of the storm, with deaths of Robin, Chaffinch, Song Thrush and Sky Lark the most commonly recorded in Lithuania. These observations suggests that the cold spell in spring 1986 was the primary cause of the low populations of these early-arriving migrants in the East Baltic region in that year. The data from Latvia support this conclusion for Chaffinch, Song Thrush and Sky Lark and those from Estonia for Song Thrush and Sky Lark. It is likely that these species tried to recover their populations in 1987, hence the observed increases between 1986 and 1987.

In Lithuania in 1988, populations of some early-arriving migrants, such as Song Thrush and Robin, continued to recover after the catastrophe in spring 1986, while numbers of others, such as Chaffinch and Sky Lark, declined (Fig. 1). Population trends of early-arriving migrants, estimated from the Lithuanian point count data, were thus not uniform. At the same time, they frequently did not correspond to the trends observed in Latvia and Estonia. It seems that populations of early-arriving migrants were not seriously affected by the late spring cold spell in Lithuania in 1988. The cold weather front arrived, and snow started, in Lithuania on 22 April and lasted until 28 April. However, the impact of the weather in the last ten days of April 1988 was much less dramatic for Lithuanian birds than during the 1986 spring cold spell (Kurlavicius, Raudonikis, 1989; Kurlavicius, unpubl.). The 1988 cold spell had a more serious impact on birds in areas to the north of Lithuania, e.g. in Estonia (Kuresoo, 1990).

The recent increase of the Wren *Troglodytes troglodytes* population, and fluctuations in Garden Warbler *Sylvia borin* numbers, in Lithuania during 1993-1995 (Fig. 1) do not correspond with population trends of these species in Latvia.

Population changes of some birds that inhabit, or feed in, the agricultural landscape correspond to the decline in intensity of its use by the human population of Lithuania. The regional populations of most corvids, such as Eurasian Jackdaw *Corvus monedula*, Hooded Crow *Corvus c. cornix* (Fig. 1), as well as Rook *Corvus frugilegus* and Common Raven *Corvus corax*, have decreased in recent years. At the same time, populations of some passerines associated

with the agricultural landscape, such us Sky Lark, Goldfinch *Carduelis carduelis* and Yellow-hammer *Emberiza citrinella,* have increased or are stable.

The annual population indices of most long-distance migrants, such us Common Cuckoo *Cuculus canorus*, Icterine Warbler *Hippolais icterina*, Common Whitethroat *Sylvia communis*, Wood Warbler *Phylloscopus sibilatrix* and Golden Oriole *Oriolus oriolus* showed a marked decline in Lithuania during 1993-1995. Trends of these species in Lithuania correspond with those from Latvia in 1993-1994 (data from Latvia for 1994-1995 were not available). At the same time, the Willow Warbler *Phylloscopus trochilus* population seemed to be stable in Lithuania and Latvia in 1993-1994. This indicates that the causes of these population changes operate over a rather large part of these species' breeding ranges or that they are a consequence of changes in areas outwith the breeding range. Most likely, they are determined by changes in climatic conditions in these species' wintering areas.

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