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COMPARISON OF EURASIAN WOODCOCK (*SCOLOPAX RUSTICOLA, L.*) MONITORING METHODS

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ABSTRACT – Comparison of Eurasian Woodcock (*Scolopax rusticola*) monitoring methods
Eurasian woodcock is a popular migrating game species in Hungary and in several European countries. For its wise management it is essential to collect reliable information of the breeding, wintering and also migrating populations. The aim of this study was to describe and analyze the differences among the monitoring methods used in different countries, and to give advices to improve the methods of data collection and evaluation of the monitoring system running in Hungary. Our study is based on the comparison of monitoring programs run in France, Russia, Belarus and in the Archipelago Azores. The key factor of all such surveys is the display behaviour of male birds, which is called roding. However there are some differences between them. We evaluated the different monitoring methods on the basis of scientific literature considering the place, time and duration of survey sessions, the collected data and the methods of their analysis. The main cause of differences is the different aim of the different studies. Hungary cannot obviously be taken as a breeding or wintering area, it rather plays an important role in migration. The aim of the monitoring in Hungary is to follow and characterize the flow of migration, and to estimate the minimal number of birds crossing our countries borders. The evaluation of data in Hungary is also different. However the methods of observations and the quantity of collected data allow us to evaluate our data in a similar way. It would be essential if we would like to compare our results to the results of other monitoring programs in Europe.

Keywords: Eurasian woodcock, *Scolopax rusticola*, monitoring, survey method, observation

INTRODUCTION

To broaden our knowledge and to estimate the size of the migrating population of the Eurasian woodcock in Hungary, a country-wide monitoring program started in spring 2009. However woodcock *(Scolopax rusticola)* is a difficult species to count accurately, because it spends the day in woodland and feeds on fields during the night. There are three basic counting methods described by BIBBY ET AL. (1997): (1) Counts of displaying males where the counting unit is the displaying "roding" male. The counting period is throughout the breeding season. During spring and summer evenings, male woodcocks perform song flights over their breeding sites (roding). The breeding survey is based on a census of those males (FERRAND, 1993). As several birds may be counted at the same listening point where it is not easy to distinguish them, the collected data is simply the number of contacts (birds seen and/or heard). However, a positive correlation between the number of contacts and the number of different birds was proved by an acoustic analysis (FERRAND, 1993). (2) Drives with beaters where the counting unit is the individual bird being flushed by teams of beaters and dogs. Drives should be undertaken during the winter in the day-time. (3) Nocturnal feeding counts. The counting unit is the individual bird. These are counted as they fly to or from nocturnal feeding areas at dusk or dawn. Counts can be undertaken throughout the year.

The Hungarian monitoring program is based on roding surveys, so in our study we focused on countries using methods similar to ours. The aim of this study was to describe and analyze the differences among the monitoring methods used in different countries, and to give advices to improve the methods of data collection and evaluation of the monitoring system running in Hungary

MATERIAL AND METHOD

We evaluated the different monitoring methods on the basis of scientific literature considering the place, time and duration of survey sessions, the collected data and the methods of their analysis.

Our most important source of information was the network of the Woodcock and Snipe Specialist Group. It is a research unit of Wetlands International (WI) and of IUCN, the International Union for Conservation of Nature. Their annual newsletter is a contact organ to inform their members about the latest results of Woodcock and Snipe *(Gallinago spp.)* research.

Furthermore, every five years on average, the WSSG organizes a workshop to provide information on Woodcock and Snipe research whereby their members are offered the opportunity to meet and improve the efficiency of the network. The last (sixth) workshop was held in Nantes, France. Previous ones were held in Denmark, Great Britain, Germany, and Poland. In the last five years the following countries published results of their monitoring programs regularly: France, Russia, Portugal (Archipelago Azores), and Belarus.

France is an important wintering area for the Eurasian woodcock, and it is also a breeding area. To manage this game species wisely an integrated monitoring system for the breeding and wintering woodcock populations has been developed (FERRAND ET AL., 2008), based on a census of roding males, the census of woodcocks flushed and/or shot during hunting trips, a census of woodcocks from targeted ringing sessions and other ringing data.
The majority of Woodcock wintering in Europe are nesting in the Russian forests. For a long time, it has been a necessity to monitor the number of this species during the display period. However, this has been put into practice only a few years ago with the financial and methodological support of the French Office National de la Chasse et de la Faune Sauvage. Questionnaires are filled out by observers for one evening of roding observed at one census point. The national roding census is conducted on one common day for the whole country – the last Saturday of May. In 2010 the National Woodcock Roding Census was organized by the Moscow scientific "Woodcock" group, the Association Rosokhotrybolovsoyuz, several hunting offices and the "Russian hunter" newspaper (FOKIN ET AL., 2010).

In contrast to its mainly migrant continental populations the Eurasian woodcock is a resident species in the Macaronesian archipelagos (Azores, Madeira and Canaries). Working at Pico Island, their main objectives were to characterize the roding activity of these insular populations, to select the best peiod of the breeding season to perform a roding survey and to evaluate how sensitive this method can be to variations in abundance because of hunting (MACHADO ET AL., 2008). They followed the survey protocol described by FERRAND (1993).

To estimate the size of the migrating population in Hungary, a monitoring program was initiated by the former Ministry of Agriculture and Rural Development and the Hungarian National Chamber of Hunters in 2009. Data collection and processing have been designed and carried out by Szent István University, Institute for Wildlife Conservation which also assumed to evaluate the results. The objective was to collect data from as many observation points as possible at the same period of time. These give then snapshots about different states of the migration. With the comparison of consecutive snapshots it is possible to estimate the dynamics, speed and extent of migration. The basis of the monitoring program is a roding survey weekly performed by observers on every Saturday (from 28th February to 2nd May in spring 2009, from 13th February to 1st May in Spring 2010). The observers record data on standardized forms. Data are: number of contacts (birds seen and/or heard), size of the visible area, duration of the survey, weather conditions and habitat types surrounding the observation point. The total number of observation points was 908 in spring 2010. *Figure 1* shows their distribution.

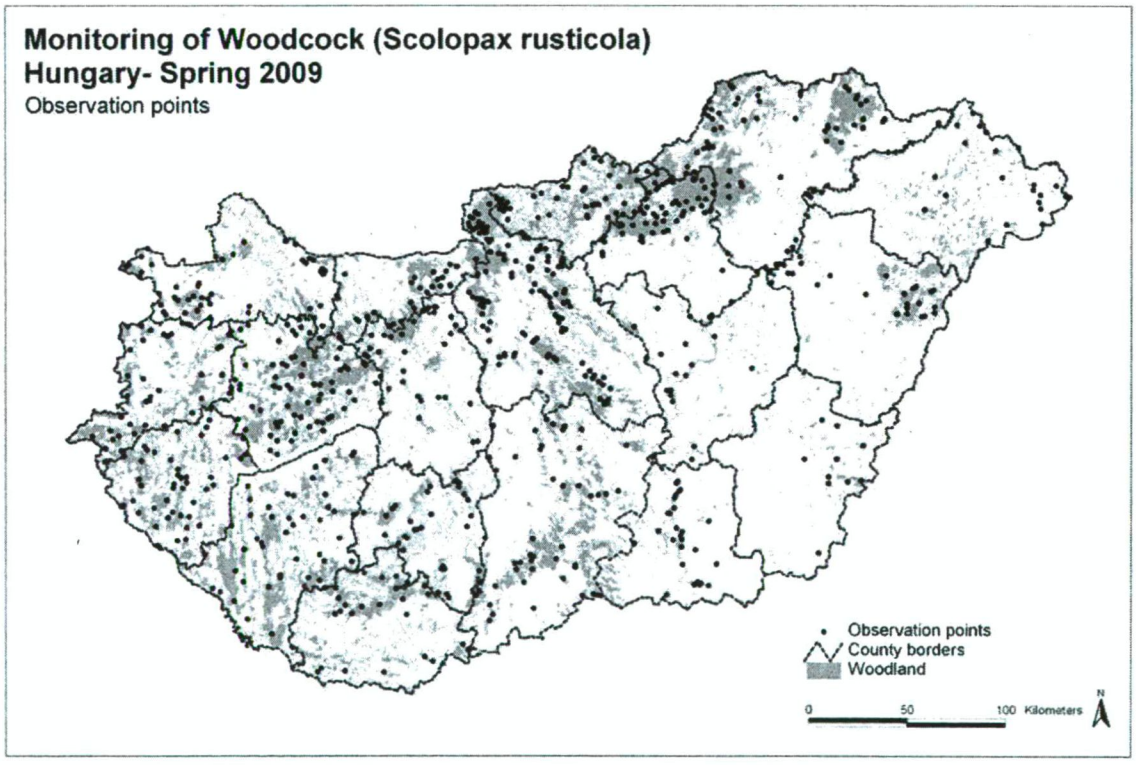

Figure 1. Woodcock observation points in Hungary – spring 2009

We compared the methods and results of their programs with the Hungarian monitoring program. The comparisons have been made considering the following questions:
(1)Why are they collecting data? (2) How do they collect data? (3)When do they collect data? (4)Where do they collect data? (5) How much data do they collect? (6) What results do they get?

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RESULTS

Our most important results are summarized in *Table 1.*

Table 1. The main characteristics of the woodcock monitoring programs in five different European countries

	France	Russia	Archipelago Azores (Portugal)	Belarus	Hungary
Aim of the roding surveys	Breeding population survey	Breeding population survey	Breeding population survey	Breeding population survey	Migrating population survey
Coverage	National	National	Local (Azores archipelago)	Local (Berezinsky Reserve)	National
Since when	1992	1999	2001	2005	2009
N of observation points	860 (in 2010)	2455 (in 2010)	22 (in 2009)	12 (in 2009) (between 2005-2008 it was 60)	908 (in Spring 2010)
Annual frequency of observations	1	1	1-2	1	12 in Spring
Observation period	Between Mid-May and Mid-June	The last Saturday of May	March-April	June	Between Mid-February and the beginning of May
Counting unit	Number of contacts (birds seen and/or heard)	Number of contacts (birds seen and/or heard)	Number of contacts (birds seen and/or heard)	Number of contacts (birds seen and/or heard)	Number of contacts (birds seen and/or heard)
Results/evaluation of data	National occupation rate, proportion of high abundance sites	Roding intensity	Breeding abundance	Mean N of contacts	Mean N of contacts; Dynamics of migration
Additional monitoring programs	Ringing trips, hunting trips, hunting bag statistics	Ringing trips, hunting bag statistics	Hunting trips, hunting bag statistics	Ringing trips, hunting bag statistics	Autumn migration monitoring (Nocturnal feeding count); Hunting bag statistics

(1) The aim of roding survey studies is the monitoring of breeding population in each country except for Hungary. Our aim is to estimate the size of the migrating population.
(2) There are only minor differences between the methods of data collection by roding surveys.They are mostly differences in additional data collection. There are two additional indices which allow the monitoring of woodcock migratory and wintering numbers in France: (a) the mean number of contacts/hour registered during ringing trips and (b) a hunting index (number of seen woodcocks/standardized hunting trip, duration= 3.5 hours) collected by the Club National des Bécassiers (GOSSMANN ET AL., 2009).

The main task of an additional project in Belarus is to ring Woodcock during the autumn migration (MONGIN ET AL., 2009). Woodcock ringing and study of migration were carried out in the Berezinsky Reserve vicinities on several stationery plots. The main study period was 16 September – 9 November. They recorded 391 birds during 51 night trips, 76 woodcocks were caught during the season.

(3) The timing of data collection is very similar in France, Russia, and Belarus (May-June). In Azores and Hungary observations are carried out earlier (March-April).
Censuses lasted 120 minutes in Russia and in Belarus too. The observations in Hungary last only one hour after dusk. In Azores observations always began at least 1 hour before sunset and stopped half an hour after the last contact was registered.

(4) The observation points cover the whole area of the country in France, Russia, and Hungary. The Archipelago Azores is a smaller part of Portugal, however the woodcock

population there is resident, so the monitoring can be taken as full-cover. In Belarus the covered area decreased with the decline of the number observation points in 2009. In France observations are carried out every year at listening points randomly chosen in forest habitats. A listening point is defined as an open area (clearing, plantation, etc) as close as possible to the centre of a 2x2 centigrade square. In Russia the observers should choose an open place in a forest, the criteria is that it should be suitable for roding and for observations. In Belarus the listening points were located in two squares (12x12 km).

(5) The number of the observation points was the highest in Russia, and the lowest in Belarus. Census of the breeding population in Belarus was carried out at 12 listening points during June in an area called Berezinsky Reserve. However until 2008 the number of the observation points in Belarus was much higher. The highest annual frequency of observations is in Hungary. In the Archipelago Azores the frequency of data collection was similar to ours, because the researchers tried to describe the characteristics of the intensity of roding throughout the breeding season. According to their results, they selected then a shorter period of time for monitoring the population trend.

(6) The most important results in France are (a) the national occupation rate (the % of listening points at which at least one roding male was observed). In 2010, the value was 23.6% (GOSSMANN ET AL., 2010). (b) The proportion of high abundance sites (number of contacts $\geq$ 5), was 7.9%. The population trend of the French breeding woodcock population has been analysed for the last 10-year period. The stability of proportion of positive site and of the proportion of high abundance sites characterizes this period. After a period of increase observed since the end of the 1990s, the breeding woodcock numbers in France seem to have reached a plateau.

The results of monitoring in Russia showed that roding intensity in 2010 was the lowest in the last 12 years. Owing to hot and dry weather conditions in summer 2010, roding stopped by 10 july, approximately 2 weeks earlier than usual (FOKIN ET AL., 2010).

CONCLUSIONS

The methods of data collection are very similar in each country; the key factor is the display behaviour of male birds. It is obvious, because it is one of the most effective methods, which was described properly by FERRAND (1993) and could be easily adopted for the studies in the case of Russia, Belarus, and Azores. In Hungary, it was not adopted directly, but it is still analogous. The sampling is representative, standardized (repeatable), and regular in each studied country. There are only minor differences which are caused by local circumstances (e.g. timing, duration).

The main cause is the different aim of the different studies. Hungary cannot obviously be taken as a breeding or wintering area, it rather plays an important role in migration. The aim of the monitoring in Hungary is to follow and characterize the flow of migration, and to estimate the minimal number of birds crossing our countries borders. Therefore the monitoring in Hungary takes a much longer period of time - with the highest annual frequency - of observations than in France or Russia.

The evaluation of data in Hungary is also different from the countries mentioned in our study, because the different aims of the programs. However the methods of observations

and the quantity of collected data allow us to evaluate our data in a similar way. It would be essential if we would like to compare our results to the results of other monitoring programs in Europe. It would also be a step forward in creating an international cooperation of monitoring programs which could allow us to see the population as a whole.

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