

Breeding Woodcock *Scolopax rusticola* monitoring in France

Y. Ferrand, Office National de la Chasse et de la Faune Sauvage, Direction des études et de la recherche, Saint-Benoist, F - 78610 Auffargis, France. E-mail: y.ferrand@oncfs.gouv.fr F. Gossmann, C. Bastat, 53 rue Russeil, F - 44000 Nantes, France - rezobecasse@oncfs.gouv.fr

Abstract

The French breeding Woodcock population has been monitored since 1988, and since 1991, the monitored geographical area has been representative of that population. Monitoring is based on observing roding males, the methodology being random sampling with replacement. The annual results are expressed as a frequency of occurrence. The data collected since 1988 allow us to define very precisely the breeding distribution area of the French Woodcock population. The collected data have shown that the French breeding Woodcock population has been stable from 1991 to 2000.

1. Introduction

The Woodcock *Scolopax rusticola* is present all year round in France. The wintering population in France, mostly in the south and west, is augmented significantly by a large proportion of breeders from Scandinavia, north-eastern and central Europe. The established French breeding population is at the southwestern limit of the main European breeding area. This population has been monitored since 1988, the monitored geographical area having been representative of the entire population since 1991.

2. Census method

Monitoring is based on evening observations of roding males. Previous research has shown that the roding sites in May and June identify potentially favourable breeding areas (Ferrand unpub; Hirons 1987), the amount of calling increasing with the number of males present (Ferrand 1987). Ferrand (1993) described the basic methodology. France being divided into *départements*, we used a stratified sampling design in each. For each *département* we obtain a number of 1:50 000 maps, in which we define forested sampling units (2×2 centigrades). Each year, samples are obtained randomly for about 10% of the sampling unit population. A defined listening point is estab-

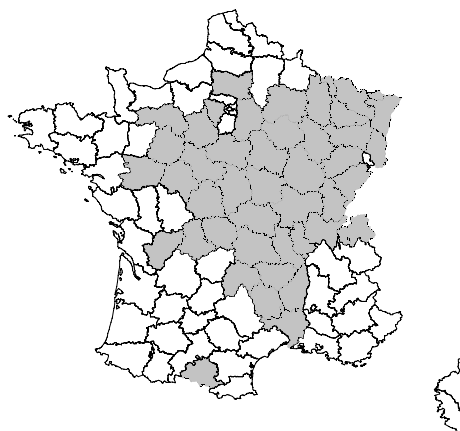


Fig. 1. Monitoring areas of roding woodcocks from 1991 to 2000 (yearly).

lished as close to the centre of the sampling unit as possible. A single visit is made in May or June, when all Woodcock seen and heard are recorded for about 90 minutes (the duration of the evening roding period).

We use a method of random sampling with replacement; *ie* the sample is renewed each year and all members of the sampling population are given an equal chance of being drawn.

3. Results

The annual results are first expressed as a frequency of occurrence. Two abundance

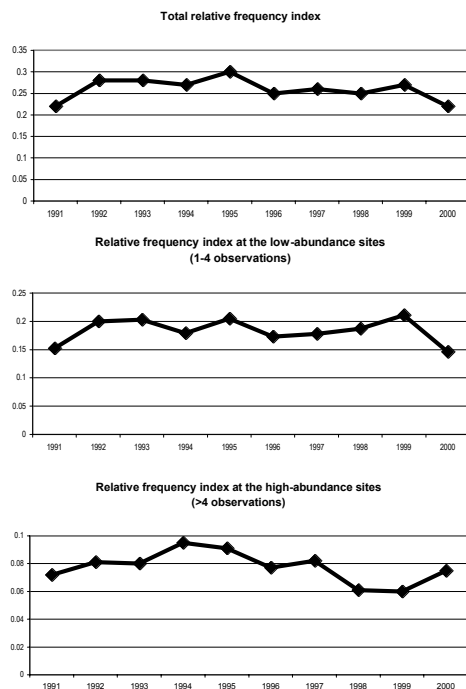


Fig. 2. Trend of the total relative frequency index (proportion of sampling units with at least one seen or heard roding woodcock) and of the low (1-4 observations) and high (>4 observations) abundance sampling units from 1991 to 2000.

classes are also defined: 1-4 observations (low abundance) and more than 4 observations (high abundance).

Population trend

We can establish population trends from data collected continuously in 42 *départements* since 1991 (Fig. 1). The frequency of occurrence (proportion of sampling units containing at least one Woodcock, seen or heard) is stable ($\chi_1^2=1.495$; $P=0.221$; Fig. 2). We can also define stability for high and low abundance sampling units ($\chi_1^2=2.17$; $P=0.14$ and $\chi_1^2=0.137$; $P=0.711$ respectively; Fig. 2). Our collected data show that the trend in the French breeding Woodcock population has been stable from 1991 to 2000.



Fig. 3. Distribution area of roding males for the period 1988-2000.

Legend

Maps with at least one visited sampling unit (listening station)

■ Presence

■ Absence

○ Maps not covered

● Non-participant *départements*

Distribution

The data collected since 1988 allow us to define a very precise distribution area for

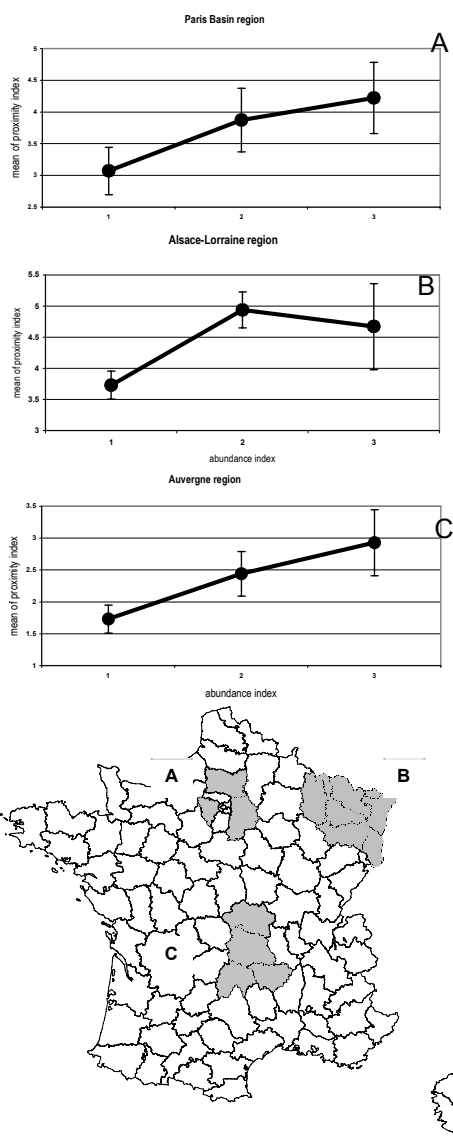


Fig. 4. Relation between the mean of proximity index [value from 0 (isolated sampling unit) to 8 (unit entirely surrounded)] and the abundance index (1 = 0 observation; 2 = 1-4 observations; 3 = >4 observations) for three French regions.

the French breeding Woodcock population. This can be done at two levels, national and regional. The 1:50 000 maps represent the basic unit at national level (Fig. 3) and the forested sampling unit the basic unit at regional level. The northeastern part of the species' distribution, the mountainous regions and the large forests of the Paris Basin comprise the majority of the Woodcock breeding distribution in France.

We can obtain ecological information from this census. For example, an isolation/proximity frequency index can be attributed to a sampling unit according to the number of joined sampling units. The index value varies from 0 (isolated unit) to 8 (unit entirely surrounded). A first analysis of the habitat fragmentation effect (isolation v abundance) for three French regions shows that breeding Woodcock is significantly more numerous in large forests (Fig. 4). However, further research is needed to establish this effect more precisely to accord with the forest topography and structure.

4. Conclusion

The data collected by this census method - a population trend established through distribution and ecological information - are necessary to ensure management of this game species.

Woodcock censuses have also been carried on in Switzerland since the late 1980s, the census method being identical to that in France, (Estoppey 2001) and in Russia since 1999, their census method being sampling units randomly chosen within 12x12 km quadrats). Now our objective is by coordinated work in other

countries to apply our or similar methodology to as much of the Woodcock's European breeding area as possible.

Acknowledgments. The authors thank all the observers of the ONCFS Woodcock network for their active participation in collecting data and particularly E. Corda for her help with the statistical analysis.

References

- Estoppey, F. 2001. Suivi démographique des populations nicheuses de Bécasse des bois (*Scolopax rusticola*) en Suisse occidentale de 1989 a 2000. Nos oiseaux 48: 105-112.
- Ferrand, Y. 1987. Reconnaissance acoustique individuelle de la bécasse des bois, *Scolopax rusticola*, a la croule Gibier Faune Sauvage 4: 241-254.
- Ferrand, Y. 1989. Contribution à l'étude du comportement du mâle de Bécasse des bois (*Scolopax rusticola* L.) en période reproduction. Méthode de dénombrement. - Univ. Montpellier 3, Thèse Doct. Nouveau Régime. 203 p.
- Ferrand, Y. 1993. A census method for roding Eurasian woodcock in France. Proc. 8th Am. Woodcock Symp. Biol. Report 16: 19-25.
- Hirons, G. 1987. Habitat use by Woodcock, *Scolopax rusticola*, during the breeding season. Gibier Faune Sauvage 4: 349-362.