International Waterfowl Research Bureau

WOODCOCK AND SNIPE RESEARCH GROUP

Newsletter No. 13 December 1987

CONTENTS PAGE

EDITORIAL

This Newsletter number thirteen of the Woodcock and Snipe Research Group (WSRG) shall inform about research going on and sheduled, preliminary results, short notes of interest and recent publications.

Meetings

During the 33rd Board Meeting of the International Waterfowl Research Bureau (IWRB), May 26, 1987 at Regina (Canada) coordinator and joint coordinator of the WSRG were reelected for another three years. As time was very limited during this meeting because of the Ramsar Convention Conference, a written report of the group's activities was submitted to the board.
At the 34 th General Assembly of the International Council for Game and Wildlife Conservation (C.I.C.), June 1 to 6, 1987 at Budapest (Hungary) the coordinator reported on preliminary results of the International Woodcock Research Project (see below), which was mainly financed by CIC. He expressed sincere thanks to the representatives of 8 CIC-delegations and organisations sharing in the costs.
During the Sympsoium for Counting Waterfowl, organized by the Italian Hunting Federation, July 2 to 3, 1987 at Ferrara, Italy, the joint coordinator reported on recent and future aims of woodcock and snipe research, on methods applied and some results gained already. As this paper includes many aspects of general interest and importance it is given in full length in this issue (p. 2 to 14).

Research

During 1987 the International Woodcock Project has been carried on mainly by the joint coordinator, assisted by John Ellis in the British study area (Whitwell Wood). 22 adult woodcock had been caught in 1987, including 5 retraps. Only two nests were found and 8 young birds ringed. Along with earlier recoveries these data allow preliminary annual survival estimates that are calculated now. Wintering woodcock are studied at Cornwall in SW-England, where 40 birds were ringed this winter. Calculation of harvest rates is one of the targets of this study.
Unfortunately we could not yet get hold of the ringing data of the French study area (Forest Compiegne). Due to the coordinator's several month stay in Alaska the German part of the project so far only comprises stomach analyses of birds shot.
Some results of the Whitwell Wood study area are presented by two publications of the joint coordinator (see Bibliography, p. 34).

Woodcock wing sampling is carried on in several European countries, mainly Denmark, France, and Great Britain, and coordinated and evaluated by Dr. Harradine (Marford Mill,

England).
Extensive woodcock studies under several aspects are conducted in France by the Office National de la Chasse (ONC). A review of the most recent activities is provided by Fadat & Ferrand in this issue (p. 16).

Publications

Proceedings of the Second Woodcock and Snipe Workshop (1982) are still available and can be ordered from the coordinator.

Proceedings of the Third Workshop (1986) are however still in print, but hopefully available in 1988.

Dr. Herby Kalchreuter (HK)
Coordinator
D-7823 Bonndorf-Glashütte
F.R.G.

Dr. Graham Hirons (GH)
Joint Coordinator
Dept.of Zoology, Edward Grey Institute
South Parks Road
Oxford OX1 3PS
U.K.

THE IWRB WOODCOCK & SNIPE RESEARCH GROUP. ITS AIMS AND METHODS

(Paper presented at Ferrara, July 3, 1987)

Graham Hirons

ABSTRACT:

Woodcock and snipe are among Europe's most important and widespread migratory quarry species, yet only a decade ago neither species had been intensively studied here. In 1974, a Woodcock and Snipe Group was established within the IWRB to encourage and co-ordinate research interest in the two species. The intensive field studies which resulted have provided a good description of the woodcock's general breeding biology, ecology and behaviour, and our knowledge of this species probably now matches that of snipe. In contrast, our understanding of population dynamics (eg. national population trends, mortality due to hunting and other factors, productivity and the factors influencing it etc.) remains fragmentary for both species. Much further research needs to be undertaken before rational management of woodcock and snipe populations on a European scale can be contemplated. This will continue to require close cooperation between hunters and game biologists.

INTRODUCTION

Background to the Research Group's formation

In Europe, only two waders are important quarry species throughout their range, the woodcock (*Scolopax rusticola*) and the snipe (*Gallinago gallinago*). Both are migratory and widespread , both differ markedly in appearance from other shorebirds and both have long associations with folklore which has helped make them equally fascinating to hunters and naturalists alike. In spite of all this, until comparatively recently neither species had been intensively studied in Europe, and for the woodcock especially, many basic aspects of its biology were entirely unknown (Shorten 1974).

In 1974, in order to rectify this lack of knowledge and to harness the widespread interest in these two groups, a woodcock and snipe research group was established under the auspices of the International Waterfowl Research Bureau. Soon afterwards major research projects on woodcock were initiated in Ireland (wintering behaviour), Great Britain (breeding biology,) and France (ecology, impact of hunting, collection and analysis of bag statistics). In addition, in several countries annual collections of wings from hunters were begun to provide an index to the woodcock's breeding success the previous summer. The snipe has aroused rather less interest, and to date there has only been one major study of its breeding biology in Europe (in Britain, by Dr. R.E. Green of the R.S.P.B.).

One of the original aims of the Research Group was to overcome the isolation of national research efforts. Since the Group's inception, members have maintained contact by means of an annual newsletter which gives up to date reports of research in progress and reviews of recent publications. In addition, three Workshops have been organised to allow direct exchanges of information between researchers in different European countries.

In this report, I summarise the results of the recent research on woodcock and describe some of the more interesting methods used to unravel its life-history, ecology and behaviour. I then identify what further research is needed to provide a scientific basis for the effective management of woodcock and snipe on a European scale.

RESEARCH ON WOODCOCK: THE PROBLEM

The combination of perfect camouflage, lack of sexual dimorphism, a solitary woodland existence and crepuscular habits make the woodcock a challenging species to study. Except for the male's conspicuous dusk and dawn display flights, direct observation of woodcock is very difficult precluding conventional marking techniques for individual recognition. For these reasons some of the most elementary facts were either missing or misinterpreted in earlier accounts of the woodcock's life history, ecology and

behaviour. For example, for a long time there was uncertainty over the function of roding (the male's characteristic aerial display flight), whether pair bonds were formed, the number of broods produced per female per season, the age of first breeding etc. Even the habitats where feeding took place were open to doubt, hindering interpretation of the woodcock's habitat requirements.

INTENSIVE FIELD STUDIES - METHODS

Radio-tracking

Many of these basic questions concerning the woodcocks' biology have been answered by intensive field studies of birds equipped with miniature radio transmitters. In Britain alone over 100 birds have been marked in this way during the breeding season and about 20 during winter. The latest design of transmitter package weighs about 4.5 g in total (ca. 1.5% of body weight), and has a life of about 50-60 days. Transmitters are glued to the back feathers between the wings by means of 'superglue'. The range over which transmitted signals can be detected can vary between 200m for a bird in thick cover to several kilometres for a flying bird.

Stationary woodcock can be located visually at close range without flushing them. This enables their position to be determined exactly whenever necessary, for example to locate nests, broods and feeding sites and to collect the faeces of individual birds to determine their diet.

The activity of individual radio-marked woodcock has been monitored remotely throughout the 24 hours by the use of 'Rustrak' recorders. This has enabled incubation and brooding rhythms of radio-tagged females and bouts of feeding activity to be determined accurately (Hirons & Owen 1982).

Capture of woodcock

In winter, probably the most efficient method of capturing woodcock is by dazzling them on fields at night with a strong light (Gossmann et al. 1987). Birds can also be caught as they return to woodland at dawn in mist-nets set at regularly spaced intervals (ca. 20m) across rides. This method can also be used to catch roding males. These can also be caught with a decoy: when the roding bird comes within site of the observer hidden in a hide the decoy (either a bantam (Hirons 1983), or a small duck (Bouckaert 1987)) is tossed out. Providing it is reasonably dark, males seeing the decoy immediately fly fast towards it and are caught in mist-nets set around the hide. Female woodcock are difficult to catch in summer; trapping them on the nest invariably causes desertion and most have been caught fortuitously in mist-nets set to catch roding males.

Nest-finding

Population studies of woodcock are hampered by the difficulty of

finding nests. 'Cold-searching' is very time-consuming and becomes impossible once the ground vegetation has grown-up. Searching with trained dogs is more efficient but can cause disturbance and success rates will vary according to the individual dogs used, weather, cover-type, time of day etc. In Britain, several nests have been found by locating female woodcock radio-tagged previously. Unfortunately, females are much more difficult to catch for radio-attachment than males, and once marked prove to be far more mobile during the breeding season.

One potential way of 'unmasking' well-camouflaged incubating woodcock is to scan the woodland floor with a thermal imager. This provides a thermal picture in which, at low ambient temperatures, 'hot' objects, such as an incubating woodcock, will stand out against their cooler surroundings. However, the results of initial trials with such a device were disappointing (Hirons & Linsley 1986).

PRINCIPAL RESULTS FROM INTENSIVE FIELD STUDIES OF WOODCOCK

Breeding behaviour

Male woodcock do not maintain exclusive territories (contra Tester & Watson 1973). Instead they display solitarily over extensive areas (sometimes over 100 ha) until attracted down by a receptive female. The male then remains constantly with the female for a short period (usually 3-4 days) until the clutch is laid, probably to ensure that he alone copulates with her, before resuming display (roding) flights. In one study area in Britain (Whitwell Wood, Derbyshire), males were found to differ significantly in their ability to locate and mate with receptive females (from 0 to at least 4 among the males studied, Hirons 1983). The most successful males were those that displayed for longest over the most suitable nesting habitat. At Whitwell, most first-year males did not display or take part in breeding. However, in a Swedish study (Marcstrom 1987) first-years made up a large proportion of the roding population. In Britain at least, females breed in their first year (Hirons 1983).

Roding males, once established, are very faithful to a particular area during the breeding season; sixty-three percent of adult males marked in Whitwell were retrapped in a subsequent season. Females are less site-faithful and usually change woods following an unsuccessful breeding attempt (maximum movement recorded 9.6 km).

Breeding biology

Examination of the gonads of woodcock shot in Ireland indicated that few birds are reproductively active before the beginning of March (Stronach 1983). In Britain, egg-laying begins in March, peaks at the end of March/early April and continues until late June or even July (Shorten 1974; Hirons 1983). In Whitwell, at least some of the clutches laid after April were replacements

following egg-loss. Females can also relay after losing broods, sometimes beginning incubation of the repeat clutch only 12 days later. This suggests that in Britain some females may be able to rear successfully two broods in a season. In Whitwell, the estimated overall nesting success (ie. proportion of nests surviving to hatching) is 41% (n=45); 47% of nests were lost to predators. The female alone cares for the chicks. These can fly at 19-20 days and become independent at about 35 days old.

In Whitwell roding stops earlier in the season in dry summers (Hirons 1983) and the young to old ratio is lower among woodcock shot in the area in the subsequent winter (Hirons 1987a); presumably breeding ends earlier when summers are dry, as in snipe (R.E.Green pers. comm.).

Feeding ecology

Studies in Ireland, France and two separate areas of England have shown that in winter, woodcock fly out to pasture fields at dusk (Wilson 1983; Ferrand & Gossmann 1987; Gossmann et al. 1987; Hirons 1982) where their principal food is earthworms (Hirons 1982; Granval 1987a). In all these studies individual woodcock were extremely faithful to the particular areas of cover where they rested by day and to the particular fields where they fed at night. These two areas may be 100m - 2km apart. In Whitwell, it was shown that as the breeding season progresses, woodcock gradually switch to feeding during the day and roosting at night in either open or cleared woodland, or on arable fields. From April onwards, the distribution of woodcock within Whitwell corresponds closely with the abundance of earthworms (Hirons 1983).

Most studies of woodcock diet have relied upon the examination of stomach contents of birds shot in winter, when earthworms are clearly the major food taken. However, the diet is probably more diverse in summer. There is also some evidence of a sexual difference in diet, with females taking more insects (Granval 1987b), perhaps because they tend to occupy slightly different habitats to males outside the breeding season (Imbert 1987).

Habitat preferences

Habitat preferences of woodcock in the breeding season have only been quantified at Whitwell (Hirons & Johnson 1987), a 171 ha mixed woodland in Derbyshire, England. Both feeding sites and nests occur disproportionately in stands of sycamore (Acer pseudoplatanus). Areas where beech (Fagus sylvaticus) and pine (Pinus sylvestris and P. nigra) dominate the overstorey tend to be avoided by feeding birds and no nests have been found under beech after April. Feeding sites tend to be in younger stands with a higher percentage ground cover of dog's mercury (Mercurialis perennis) and consistently high values for pH and earthworm biomass (on average 82% greater than in random plots). Roding intensity also differs significantly between different areas of the wood, partly because some individual males display

more over some parts of the wood than others (Hirons 1987). The area over which most birds display consists largely of sycamore and has contained 71% of the nests located in Whitwell so far (n=45). The results of this study indicate that habitat type and structure, and food availability all influence where woodcock feed, nest and display during the breeding season.

Diurnal habitat preferences of woodcock in winter have not been quantified although there is some indication that females are more likely to be found in wetter areas by day eg. valley bottoms (Granval 1987b; Imbert 1987). At night most birds visit pasture fields having a high availability of earthworms (Hirons 1983; Ferrand & Gossmann 1987; Granval 1987a).

EXTENSIVE STUDIES

The recent field studies described above have provided a good understanding of the woodcock's general breeding biology, ecology and behaviour. In contrast, our knowledge of its population dynamics is fragmentary. Given some of the difficulties of studying woodcock, it is certain that many of these wider questions will only be answered by close cooperation between hunters and game biologists. As woodcock are migratory throughout Europe, the IWRB Woodcock and Snipe Research Group has encouraged the international cooperation necessary to increase our understanding of woodcock population dynamics. Here, I review extensive research on woodcock.

Population trends

The magnitude of the European woodcock population in autumn

From estimates of the number of woodcock harvested and the proportion shot (derived from ringing results) in each country, Hepburn (1983) tentatively estimated the total European autumn population at between 14.8 and 37 million birds.

Trends in the European wintering population

No field census method has yet been developed for woodcock in winter, and the only indication of trends in the size of the wintering population comes from bag statistics.

In Denmark, all holders of a hunting licence must by law submit information on their personal game bag each season (see Strandgaard & Asferg 1980). Unfortunately, there is very little objective information on the size of the annual bag of woodcock in other European countries. In Britain, the hunting bag is estimated by the National Game Census organised by the Game Conservancy . Interested owners of shoots report their annual bag and extrapolation of this data suggests an increasing bag in Britain estimated at around 200,000 birds per season (Tapper & Hirons 1983). Although the number of woodcock shot in Britain is almost certainly increasing, the figures derived from the National Game Census probably do not accurately reflect the

number of woodcock overwintering in Britain. Most woodcock in Britain are shot on pheasant shoots and since the latter have been increased by hand-reared birds, the higher woodcock bag may just be the consequence of more days spent shooting pheasants. What impact this increase in shooting pressure might be having on woodcock populations is not known. This example illustrates the difficulty of ascertaining population trends from bag records alone.

In France a relative index to the abundance of woodcock each season has been calculated since 1976 from information supplied to the Office National de la Chasse (Section Becasse) by hunters shooting over dogs (Fadat 1979) . This index (Indice Cynegetique d'Abondance - I.C.A.), based on information summed for a large number of hunters, is the product of the average number of woodcock killed per hunting trip and the proportion of outings on which at least one woodcock was killed. The I.C.A. reflects variation in hunting success rates and therefore should be more sensitive to annual variation in woodcock densities than schemes which estimate the total number of woodcock shot per season alone. There are no comparable schemes in other European countries.

In the 10 years since the French scheme started, the number of woodcock hunters has increased by an estimated 13% and the I.C.A. has shown a corresponding tendency to decrease at a rate of 3.3% per annum. Unfortunately there is no information on changes in survival or harvest rates of woodcock over the same period.

Estimating the size of breeding populations

For the snipe, Green (1985) was able to quantify the relationship between counts of displaying (drumming) males and nest density. No such relationship has yet been demonstrated for the woodcock, although sample counts of roding males have been used frequently to project both local and national estimates of the size of woodcock breeding populations, usually expressed in pairs (eg. Piersma 1986)! These estimates are probably of little, if any, value; males do not defend exclusive territories, some rode much more than others and individuals cannot be distinguished apart. Furthermore, nests are very difficult to find and as yet no constant numerical relationship has been demonstrated between the number of males displaying over an area and nest density.

Wing Collections

Immature woodcock can be distinguished from adults by the worn tips of their outer primary feathers (Clausager 1973). Since its inception the I.W.R.B. Woodcock and Snipe Research Group has encouraged countries to record the proportion of young in samples of woodcock wings collected from hunters in order to provide an index to breeding success the previous summer. Regular collections of woodcock wings are made in Britain, Denmark, France, Ireland and Italy.

Several factors other than breeding success in the previous season have since been shown to influence the age composition of the woodcock bag: migration patterns, hard weather movements, differences in spatial and temporal distribution related to age , rates of harvest etc.(see Harradine 1983; Fadat 1987; Hirons 1987a). For this reason, the usefulness of national wing collections in providing an index to breeding success the previous summer has been questioned by Fadat (1987). However, annual variation in the overall British age ratio correlates well with fluctuations in the Danish ratio (Harradine 1987) which in turn are believed to reflect variations in the breeding success of Scandinavian and western Russian birds (Clausager 1983), many of which subsequently winter in Britain. Similarly, the proportion of young in the bag in northern England is correlated with rainfall in the previous summer, which is known to affect woodcock breeding success (Hirons 1987a).

Ideally, age ratios should be related to the size and composition of the wintering woodcock population in order to investigate the relative importance of production and adult survival in influencing the size of that population from year to year, but this has seldom been attempted. However, the numbers of woodcock shot each winter at one site in Cornwall, southwest England were positively correlated with the age ratio in the bag for the whole of S.W. England, even though the percentage of young in the bag here is higher than elsewhere in Britain (Hirons 1987a). Thus, it seems that although hunting pressure may affect the level around which age ratios fluctuate, providing it remains fairly constant from year to year, it will not obscure major variation in the proportion of young in the population. In France, where rates of harvest are supposedly higher than in Britain, the overall percentage of young in the bag does seem to be correlated with annual variation in woodcock abundance as revealed by the I.C.A.($r = 0.780$, $P=<0.05$; calculated from Fadat 1987, omitting the hard winter of 1978-79). Many of the woodcock shot in France originate of Scandinavia and migrate through Denmark (Clausager 1983), and interestingly, the I.C.A. each winter is also positively correlated ($r = 0.728$) with the age ratio in Denmark the previous autumn.

THE WAY FORWARD

Our understanding of the natural history of the woodcock probably now matches that for the snipe. However, as shown above our knowledge of its population dynamics eg. national population trends, mortality rates due to hunting and other factors, productivity and the factors affecting it, migration routes etc. are far too fragmentary for rational management of this important quarry species on a European basis. The same can be said of the snipe. Therefore, it is timely to outline what further research needs be undertaken to provide a scientific basis for any management proposals. Although discussion will centre on woodcock, most of the remarks apply equally well to snipe.

Estimating breeding density

The major stumbling block remains establishing relationships between the number of roding observations (roding intensity), the number of roding males, and nest density.

Although nest density cannot yet be estimated from counts of roding male woodcock, it may be possible to devise an index to population trends. In Whitwell the number of roding observations per evening in any one area remains fairly constant from year to year and is highest in the area where most nests have been found (Hirons 1987b). Most studies of roding woodcock have been undertaken in optimal habitats and there may be more annual variation in counts of roding males in less favourable habitats which could be related to annual variation in woodcock abundance. This kind of relationship underpins the annual singing ground survey of American woodcock (S. minor), the results of which are used in management of this species in North America. In France, counts of roding woodcock over an extensive area are currently being made to investigate whether a similar scheme could provide an index to population trends in the European woodcock (Ferrand pers. comm.). Extensive studies relating roding intensity to food availability across a range of different woodlands would also be instructive.

Ringing recoveries

Maximum use has not been made of the European ringing recoveries of woodcock. A re-analysis of data held in the EURING data bank should be undertaken to define quantitatively the wintering areas of the breeding populations of the different European countries. In addition any trends over time in the probability of recovery due to hunting, hard weather, changes in migration routes etc. should be determined. From information on the annual ringing totals, harvest rates (see below) and estimates of the annual bag for each country, it should be possible to derive a closer approximation of the European wintering population than before.

Origin of shot birds

A pilot study should be undertaken to determine whether the natal area of shot birds can be determined from X-ray analysis of trace elements in their wing feathers. If so the proportions of the bag contributed by different breeding populations could be quantified and the results integrated with those from the analysis of ringing recoveries.

Wing collections

The results of the above research would facilitate interpretation of annual variation in age ratios revealed by wing collections. Data from the various national schemes need to be collated and then analysed in far greater depth than hitherto. If the natal areas of the shot samples could be quantified (see above), then trends in age ratios could be related to those meteorological and

other factors operating on the breeding grounds which are thought to influence breeding success.

Harvest rates of woodcock

Satisfactory estimates of harvest rates are not available for any of the woodcock's range. However in France considerable effort is now being made to catch and ring birds on the wintering grounds (Gossmann et al. 1987) in order to determine rates of shooting. Similar studies should be undertaken in other countries.

Annual survival and productivity estimates

Population studies are being continued in Britain (Whitwell) and France (Forest of Compiegne). Since many of the woodcock ringed are recaptured in subsequent years, the data being collected will provide reliable annual survival estimates for two mainly non-migratory populations. In addition , rates of nesting success will be compared in the two areas. However, further intensive research, presumably involving radio-telemetry, needs to be undertaken to determine predation rates on adults during the breeding season, survival of broods, number of breeding attempts per female per season etc. If possible these studies should be repeated in different parts of the species' range.

Habitat preferences in the breeding season

At present these have only been quantified, as opposed to being described in general terms, for one area of breeding habitat in Britain. Similar studies should be carried out elsewhere, particularly in Scandinavia, to identify the habitat needs of breeding woodcock throughout its range.

Population modelling

Many of the fundamental management questions concerning woodcock may best be answered by a computer modelling approach. The studies outlined above would yield more precise estimates of several of the key parameters eg. mortality factors, survival rates, population densities at different stages of the life cycle. Also more research is needed to confirm the apparent density-dependence in the survival of woodcock outside the shooting season (Hirons & Potts 1983). A model with this assumption suggested that the rates of harvest thought to apply in Britain are considerably below the maximum sustainable (Potts & Hirons 1983); those elsewhere in Europe might not be.

CONCLUSION

The above research priorities need to be achieved before rational management of woodcock populations on a European, or even national, scale can be contemplated. However, it is doubtful whether this would prevent consideration of any proposal to introduce new regulations governing the hunting of woodcock. The

I.W.R.B. Woodcock & Snipe Research Group will continue to encourage and co-ordinate research along the lines outlined above, and is actively seeking funds to support such studies (I.W.R.B. International Woodcock Project).

Acknowledgements

Research on woodcock and snipe in Europe in the last decade has been financed by a wide variety of national and international organisations too numerous to thank individually here. Most current research in France is supported by Office National de la Chasse. The continuation of research on woodcock outside France has only been possible by generous donations to the I.W.R.B International Woodcock Project from the Club de Becassiers, I.W.R.B., several national delegations of the International Council for Game and Wildlife Conservation (C.I.C), and the Working Group on the West Palearctic Flyway within the Migratory Bird Commission of C.I.C. Much of this financial aid has been due to the efforts of R. Pouget, C. van Hasselt and H. Kalchreuter. I am most grateful to all these organisations and individuals.

Finally, I should like to thank Monica Shorten whose original search of the literature highlighted the need for the establishment of a research group devoted to woodcock and snipe and who continues to provide much personal advice and encouragement.

REFERENCES

BOUCKAERT, V. 1987. Methode de Baguage chez (Scolopax rusticola) en croule. Proc. Third Woodcock & Snipe Workshop. (In Press).

CLAUSAGER, I. 1973. Age and sex determination of the Woodcock (Scolopax rusticola). Dan. Rev. Game Biol. 8(1):1-18.

CLAUSAGER, I. 1983. Wing collection of Woodcock in Denmark. In Kalchreuter, H. (ed.) Second Woodcock & Snipe Workshop pp.18-126.

FADAT C. 1979. Estimation des variations relatives de densites de becasses (Scolopax rusticola) par la methode des Indices Cynegetique d'Abondance (I.C.A.). Bull. Mens. Off. Nat. Chasse Sp. Scien. Tech. 79:79-110.

FADAT, C. 1987. Utilisation des tableaux de Becasse des Bois Scolopax rusticola pour la gestion cynegetique de leurs populations. Proc. Third Woodcock & Snipe Workshop (In Press).

GRANVAL, Ph. 1987b. Variations du regime alimentaire de la becasse (Scolopax rusticola L.) en hivernage. Proc. Third Woodcock & Snipe Workshop (In Press).

HARRADINE, J. 1983. The Woodcock Production Survey in Great Britain. In Kalchreuter, H. (ed.). Proc. Second Woodcock & Snipe Workshop pp. 100-117.

HARRADINE, J. 1987. The woodcock production survey in the United Kingdom and Ireland. Proc. Third Woodcock & Snipe Workshop (In Press).

HEPBURN, I.R. 1983. Hunting bags and population of woodcock in Europe. In Kalchreuter, H. (ed.) Proc. Second Woodcock & Snipe Workshop pp. 138-145.

HIRONS, G.J.M. 1982. The diet and behaviour of Eurasian Woodcock wintering in Cornwall. Proc. Int. Congr. Game Biol. 14:233-288.

HIRONS, G. 1983. A five-year study of the breeding behaviour and biology of the Woodcock. In Kalchreuter, H. (ed.) Proc. Second European Woodcock & Snipe Workshop pp. 51-67.

HIRONS, G. 1987a. Some factors affecting age ratios among woodcock wings collected from hunters in Britain. Proc. Third European Woodcock & Snipe Workshop (In Press).

HIRONS, G. 1987b. Habitat use by Woodcock Scolopax rusticola during the breeding season. Proc. Third European Woodcock & Snipe Workshop (In Press).

HIRONS, G. & BICKFORD-SMITH, P. 1983. The diet and behaviour of Eurasian Woodcock wintering in Cornwall. In Kalchreuter, H. (ed.) Proc. Second Woodcock & Snipe Workshop pp. 11-17.

HIRONS, G. & JOHNSON, T.H. 1987. A quantitative analysis of habitat preferences of Woodcock (Scolopax rusticola) in the breeding season. Ibis (In Press).

HIRONS, G. & LINSLEY, M. 1986. Beating nature's camouflage: locating woodcock on the ground in woodland by the use of a thermal imager. I.W.R.B. Woodcock & Snipe Research Group Newsletter 12:5-8.

HIRONS, G.J.M. & OWEN, R.B. Jr. 1982. Radio Tagging as an Aid to the Study of Woodcock. Symp. Zool. Soc. Lond. 49:139-152.

IMBERT, G. 1987. Distribution spatio-temporelle des becasses dans leur habitat diurne, en foret domaniale de Boulogne sur Mer (Pas de Calais). Proc. Second Woodcock & Snipe Workshop (In Press).

MARCSTROM, V. 1987. Woodcock display activity and woodcock hunting in Sweden. Proc. Third Woodcock & Snipe Workshop (In Press).

POTTS, G.R. & HIRONS, G. 1983. Towards a realistic simulation for woodcock populations. In Kalchreuter, H. (ed.) Proc. Second Woodcock & Snipe Workshop pp.83-91.

PIERSMA, T. 1986. Breeding waders in Europe. Wader Study Group Bulletin 48 (supplement).

SHORTEN, M. 1974. The European Woodcock. A search of the literature since 1940. Game Conservancy, Hampshire.

STRAANDGARD, H. & ASFERG, T. 1980. The Danish bag record II. Danish Review of Game Biology 11(5) 112pp.

STRONACH, B. 1983. A report concerning the reproductive organs of woodcock in the month of February. In Kalchreuter, H. (ed.) Proc.Second Woodcock & Snipe Workshop pp. 43-50.

TAPPER, S.C. & HIRONS, G. 1983. Recent trends in Woodcock bags in Britain. In Kalchreuter, H. (ed.) Proc. Second Woodcock & Snipe Workshop pp. 132-137.

TESTER, J.R.& WATSON, A.1973. Spacing and territoriality of Woodcock Scolopax rusticola based on roding behaviour. Ibis 115:135-138.

WILSON, J. 1983. Wintering site fidelity of woodcock in Ireland. In Kalchreuter, H. (ed.) Proc. Second Woodcock & Snipe Workshop pp. 18-27.

Author's adress:

Dept. of Zoology

Edward Grey Institute

South Parks Road

Oxford OX1 3PS

U.K.

NATIONAL NOTES

AUSTRIA

On the phenology of Woodcock migration in Eastern Austria and Western Hungary 1986.

Philipp Meran

Spring migration: Like in the previous year woodcock migration was delayed due to rough weather conditions. Winter extended all through March, and no woodcocks were observed in the mountaineous areas before April 1. Instead they obviously had prefered the lower altitudes, were more of them were seen than in other years.
The following table lists woodcock shot when roding in spring 1986:

Date	Location	Weight (gr.)	Sex	Age	Bill length (cm)
18.3.	Klingenbach	287	♂	ad.	7.1
21.3.	Siegendorf	307	♂	ad.	7.4
24.3.	Ebreichsdorf	320	♂	juv.	7.0
27.3.	Siegendorf	310	♀	ad.	7.5
30.3.	B.Fenyves	295	♂	juv.	6.9
2.4.	B.Fenyves,Berek	375	♀	ad.	7.5
2.4.	Marcali	342	♂	ad.	7.8
4.4.	Marcali	335	♀	juv.	7.2

The first four birds originate from lowlands of Eastern Austria, the latter of the Balaton region in Western Hungary. The females of March 7 and April 4 have both been shot from a pair (the latter one flying in front), while the female of April 2 was not involved in roding, but flew very low and quiet and possibly was on migration.

Fall migration: Migrating woodcock were observed at many places from October 3 onward. However, because of a preceding dry period of almost 9 weeks the birds did not stay long nor "rode" intensively in the evening. Most birds were seen after October 22, but none was recorded after November 13, thus indicating an unusual early end of the fall migration.
The following table lists woodcocks bagged during evening flights, fall 1986:

Date	Location	Weight (gr.)	Sex	Age	Bill length (cm)
10.10.	Reinischkogel	330	♀	juv.	6.8
12.10.	Reinischk. Kremser	293	♀	ad.	7.3
22.10.	Kalthuber, Rosenkgl.	350	♂	juv.	6.6
22.10.	Kalthuber, Rosenkgl.	310	♂	juv.	6.8
22.10.	Kalthuber, Rosenkgl.	368	♀	ad.	7.1
24.10.	Kalthuber, Rosenkgl.	315	♂	juv.	7.2
5.11.	Gasselsdorf	324	♀	ad.	7.3

Author's adress:

Steirisches Jagdmuseum, Graz, Austria

FRANCE

Bilan des Recherches sur la Becasse des Bois 1986-87

(Woodcock Research in France 1986-87)

C. Fadat & Y. Ferrand

Summary:
Breeding Biology: In 1987, roding observations were made in 36 departments of France with the continuing objective of devising a national index to woodcock populations in the breeding season. There were 26 observation sites below 500 m a-s-l, and 20 above 500 m. The average number of roding contacts (roding woodcock seen or heard) per observation period tended to be higher than in 1986. Roding was recorded at 77% of the sites in March (79% in 1986) declining gradually to about 18% of the sites occupied in July (25% in 1986). As in 1986, only in the mountain zones and the extensive wooded areas of the Paris basin were woodcock still roding after May. In other areas, all below 500 m, roding had ceased by this time. The **intensity** of roding in relation to altitude was studied in Haute-Savoie. As in 1986 there was evidence of an altitudinal migration, at least as regards the occurence of roding by males. In addition to the above observations, the presence/absence of roding woodcock in May-June was assessed at 52 sites chosen at random in the departments of l'Oise, Seine et Marne, Loiret and Yvelines. Roding birds were recorded at 44% of the sites. This method will be used in future to assess between-year fluctuations in the numbers of birds roding.

Migration and wintering: In the period October 1986 to March 1987 almost 500 woodcock were caught (by lamping) and ringed on the Atlantic coast, mostly in Brittany. One important finding was that woodcock remain faithful to a particular area both within and between winters, confirming the results of previous studies elsewhere in Europe. After a wetter than average autumn, the weather turned cold from 13/14 January. However, conditions remained severe for a shorter period and over a less extensive area than in January 1985, with the result that fewer woodcock were found starving. The national index to average woodcock density in winter (Indice Cynegetique d'Abondance National) was 0.17 compared with 0.14 in 1985/86. This increase had been expected, and according to the authors indicates that ecological conditions (i.e. autumn drought in the wintering zones) were responsible for the low numbers of woodcock in the 1985/86 winter, rather than the harsh weather of the previous winter. 43% of 4360 woodcock sexed in 1986-87 were males, slightly above the mean for the last 10 years. 76% of the 6964 woodcock aged were first-years, the highest proportion since 1977/78. This trend was general across the country. 680 woodcock were examined for radioactive contamination following the accident at Chernobyl. The mean level of radioactivity found (50 beckerels/kg) was well below the level considered to be dangerous for humans (600 beckerels/kg). Examination of woodcock wings in France provided no evidence that increased levels of radioactivity in Scandinavia had lowered the production of young.

GH

1. -BIOLOGIE DE LA REPRODUCTION

1.1. - Introduction

Avec le même objectif depuis 1985, soit la mise en place d'un suivi des populations de bécasses en période de reproduction à l'échelle nationale, les observations de mâles à la croule se sont poursuivies en 1987 en différentes régions de France.

Elles ont eu lieu sur 36 départements selon un protocole rigoureusement identique à celui de 1986 (FERRAND 1987). Les différents sites suivis étaient situés tant en plaine (26 à moins de 500 m) qu'en zone montagneuse (20 à plus de 500 m). De ce fait, la couverture géographique obtenue nous semble satisfaisante compte tenu des diverses modalités de la croule en France (FERRAND 1984).

L'an dernier, nous avions posé les bases d'un nouveau protocole moins contraignant et plus précis que le précédent. Un test de ce nouveau protocole a été réalisé au printemps dans le Bassin Parisien.

1.2 - Résultats

1.2.1. - Nombre moyen de contacts

Cette année, la tendance générale du nombre moyen de contacts (un contact est un oiseau vu ou entendu pendant la croule.) est à la hausse, par rapport à la saison dernière.

Cependant, nous ferons les mêmes réserves que l'an passé quant à l'interprétation des évolutions inter-annuelles du nombre moyen de contacts.

En particulier, il convient de rappeler que ces fluctuations ne nous permettent absolument pas de préjuger de la réussite ou de l'échec de la reproduction (FERRAND 1985).

1.2.2. - Répartition spatiale mensuelle

Cette évolution est tout à fait analogue à celle du printemps 1986 avec 77% d'occupation des sites en Mars (79% en 1986) suivie d'une chute graduelle jusqu'à environ 18% (25% en 1986) de sites occupés en Juillet.

Cette année encore, seules les zones de montagne et les grands massifs forestiers du Bassin Parisien retiennent des bécasses à la croule aprés le mois de Mai.

Nous avons renouvelé en Haute-Savoie l'expérience réalisée au printemps dernier (FERRAND 1987), soit le suivi de bécasses à la croule à différentes altitudes. Les mêmes sites que l'an passé ont été à nouveau suivis ainsi qu'une série de 3 autres placés à 3 altitudes différentes.

Le résultat est identique à celui de l'an passé. La migration altitudinale des bécasses nous paraît désormais bien établie au moins pour ce qui concerne les mâles chanteurs. Notons toutefois qu'il ne nous est pas permis à l'heure actuelle de savoir s'il s'agit bien des mêmes individus.

1.2.3. - Evolution temporelle

Nous avons complété nos connaissances dans ce domaine.

Deux types de régions se dessinent :

- l'une réunit des régions où la croule est de courte durée (jusqu'en avril), quasiment toutes situées à moins de 500 m d'altitude,

- l'autre regroupe les régions à longue durée de croule (jusqu'en juillet), soit le Bassin Parisien et les zones montagneuses.

1.2.4. - Nids et nichées

De nombreux nids ou nichées nous ont été signalés cette année.

Dans la mesure où le réseau d'observateurs ne s'est pas accru de façon démesurée, on peut penser que la reproduction du printemps 1987 a été plutôt bonne.

A noter que la découverte d'une femelle avec 4 jeunes dans le Tarn et Garonne est une première, car aucun indice de nidification n'avait encore été signalé dans ce département. Au niveau national, seul le département des Bouches-du-Rhône reste sans cas connu de nidification de bécasse, encore que le Massif de la SAINTE-BEAUME, limitrophe du VAR, révèle régulièrement des bécasses nicheuses.

1.3. - Test d'un nouveau protocole

Comme nous l'avions indiqué l'an dernier (FERRAND 1986), la mise en place d'un protocole nouveau, moins contraignant et tout aussi fiable, était nécessaire.

Ce nouveau protocole vise à recueillir en Mai-Juin des données de type présence-absence sur plusieurs sites forestiers choisis au hasard, à partir d'une grille-échantillon, de maille égale à 2 x 2 centigrades.

Avant de lancer le réseau avec cette nouvelle méthode, nous avons souhaité auparavant la tester à petite échelle dans les départements de l'Oise, de Seine et Marne, du Loiret et des Yvelines.

Nous avons ainsi obtenu un taux d'occupation, soit le pourcentage de sites sur lesquels nous avons détecté la présence de croule.

Cette variable constitue la base de la méthode de suivi (FERRAND 1986).

Sur les 52 sites tirés au hasard, 23 soit 44,2% (Pr[30,7%<p%<57,7%] = 0,95) étaient occupés (Figure 1). Ce % est excellent dans l'objectif d'un suivi de fluctuations inter-annuelles. En effet, une valeur extrême aurait rendu difficile l'interprétation des tendances inter-annuelles.

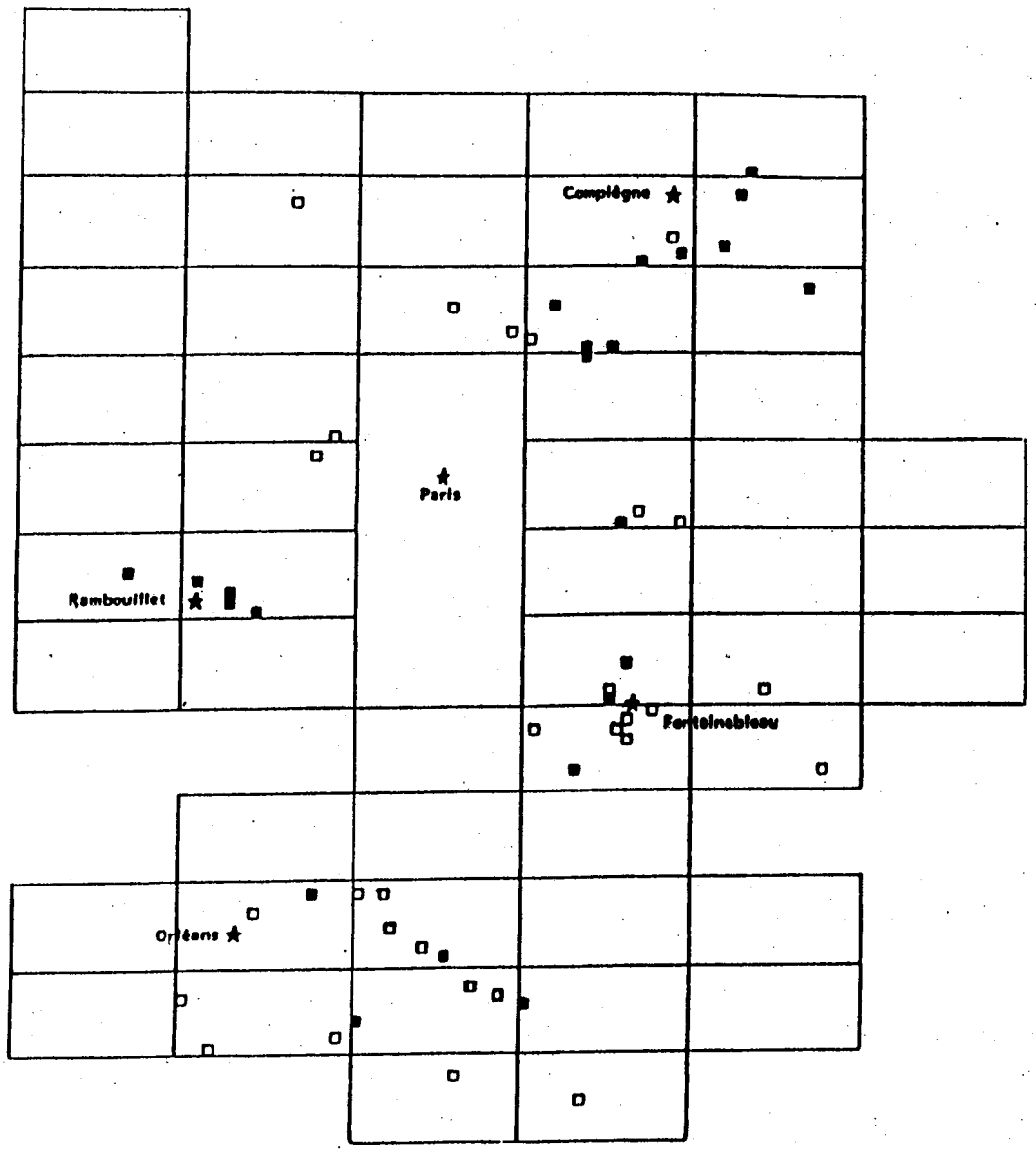
1.4. - Conclusion

Au terme de 3 années d'observations intensives, nous avons désormais une vue trés précise du déroulement de la saison de croule dans diverses régions françaises, grâce à l'effort soutenu de prés de 50 correspondants.

Les résultats du test réalisé en Ile de France nous ont tout à fait satisfaits et l'objectif que nous nous étions fixé est maintenant atteint. A partir du printemps prochain, les différentes équipes verront leur travail allégé.

Dans la mesure où le suivi s'applique essentiellement aux bécasses reproductrices en France les régions où la croule est absente en mai-juin n'auront pas à suivre ce protocole, excepté dans les régions limitrophes de celles où la croule existe dans cette période. Ces régions situées essentiellement sur la frange côtière du pays accueillent en revanche beaucoup d'oiseaux en hivernage et leur travail à cette époque de l'année est indipensable pour une bonne gestion de l'espèce, et en particulier une meilleure connaissance quantitative et qualitative des prélèvements.

A partir de 1988, nous possèderons un outil fiable de suivi des populations de bécasses nicheuses sur notre territoire. Dans quelques années, nous aurons un élément de réponse à l'importante question des fluctuations d'effectifs au niveau national de cet oiseau-gibier de plus en plus recherché.



F I G U R E 1 : Localisation géographique des carrés-échantillons tirés au hasard

avec présence de croule
sans présence de croule

2. ETUDE DE LA MIGRATION ET DE L'HIVERNAGE

2.1. Baguage des bécasses

Le baguage des bécasses en migration ou hivernage en France a encore pu être étendu en 1986/87, grâce à la participation de nouvelles équipes dans le Nord et le Sud-Ouest.

Ainsi, prés de 500 bécasses ont été baguées d'Octobre 86 à Mars 87 le long de la façade Manche-Atlantique. La Bretagne demeure néammoins la région privilégiée de baguage en raison de densités supérieures à celles des autres régions.

Une synthèse des résultats obtenus de 1983 à 1985 a été présentée en Octobre 1986 lors d'une réunion internationale du groupe européen, travaillant sur la bécasse. Elle sera publiée dans le prochain numéro de la revue GIBIER FAUNE SAUVAGE éditée pour l'O.N.C..

La conclusion la plus importante est qu'une bécasse est fidèle à sa remise à la fois au cours d'un même hivernage, mais aussi d'une année à l'autre.

Ce comportement pouvait être supposé (cantonnement) mais n'avait encore jamais été démontré, en France, à partir d'un grand nombre d'oiseaux, de telle sorte qu'on peut affirmer à présent qu'il s'agit là d'une règle générale en zone d'hivernage au sens strict. Du point de vue de la gestion des populations, il en découle que les réserves qui pourraient être créées à des fins de protection auront une efficacité certaine comparable à celle constatée pour le gibier sédentaire.

Ceci a pu être testé dans les Côtes du Nord (Pleumeur-Bodoue) où même pendant le grand froid de Janvier 1985, les bécasses sont restées dans la réserve où d'autres venues d'ailleurs, les ont rejointes.

2.2. Analyse des tableaux de Chasse

2.2.1. Conditions météorologiques

La campagne 1986/87 aura été placée sous le signe du contraste météorologique comme en 1984/85 :

- automne normalement pluvieux pour la plupart des régions (Provence exceptée) moyennement froid (premières gelées début Novembre, puis début et fin Décembre.)

- hiver brutal à partir des 13/14 Janvier comparable à celui de Janvier 1985 légèrement moins intense toutefois par sa durée et son étendue géographique (l'Ouest et le Sud-Ouest furent moins atteints qu'en 1985.)

2.2.2. Densités des bécasses

Les bécasses ont été régulièrement réparties sur l'ensemble du territoire en raison d'une pluviomètrie suffisante excepté en Provence comme indiqué.

La figure 2 qui émane des relevés de sorties d'environ 600 chasseurs au chien d'arrêt montre que d'importants effectifs ont stationné dans le Nord et le centre de la région Ouest avant la vague de froid. Quelques bécasses étaient encore présentes en Suède mi-Novembre attestant de la relative lenteur de l'écoulement du flux migratoire. A ce propos, la figure 3 montre que le maximum des densités a été observé mi-Novembre ; aprés cette date, elles ont décru régulièrement jusqu'à fin décembre - début Janvier où un nouvel afflux a été observé, probablement, en liaison avec le froid.

Comme en 1985, d'importantes concentrations ont été observées en zone littorale où la chasse a été suspendue exceptée toutefois dans la Seine Maritime, le Calvados et le Var.

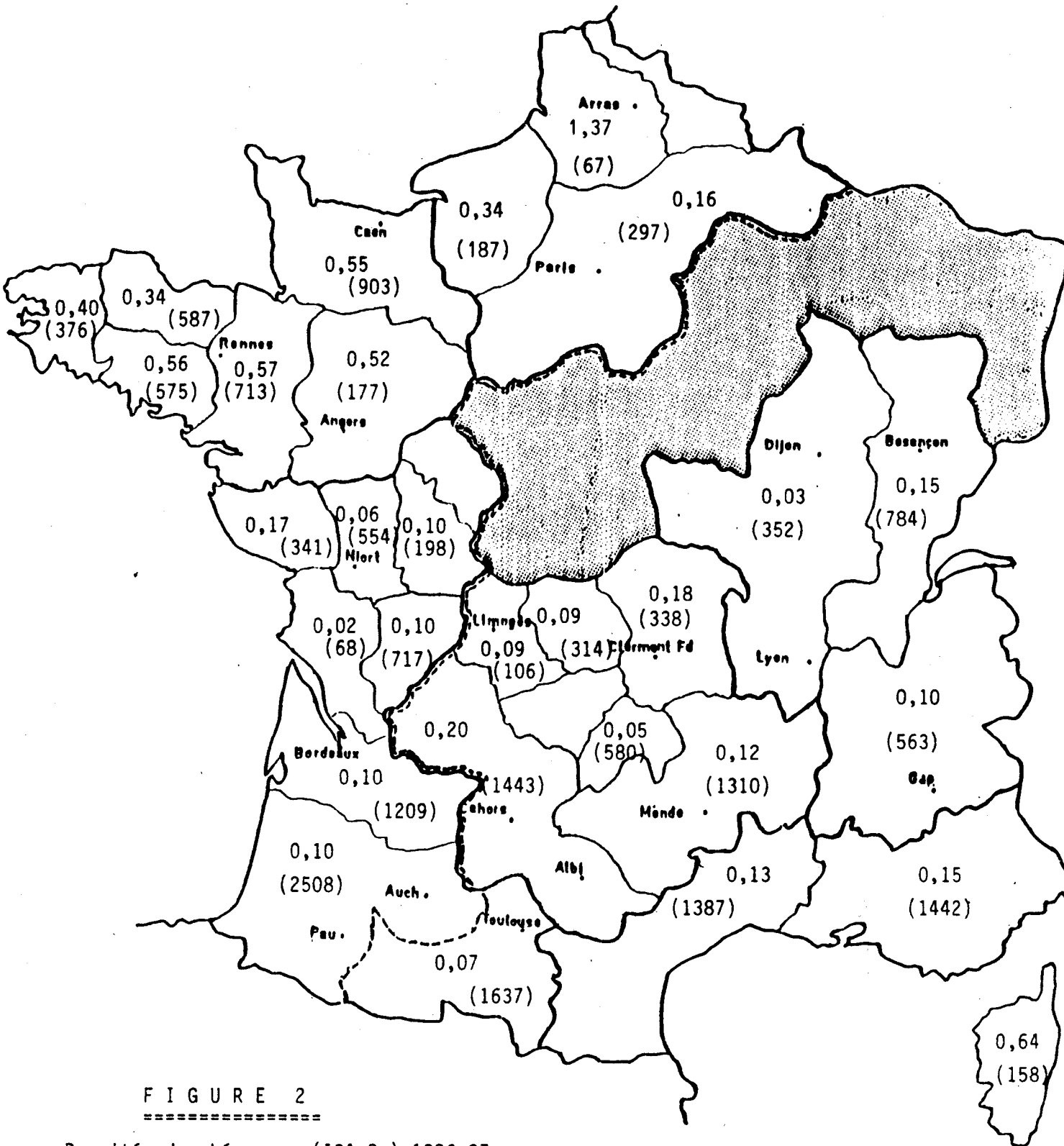
Des bécasses, mortes de faim (amaigrissement extrême) ont été signalées, mais en moins grand nombre toutefois qu'en 1985.

Sur l'ensemble de la campagne, l'Indice Cynégétique d'abondance national (I.C.A.2p) est égal à 0,17, contre 0,14 en 1985/86 (figure 4 et 7).

Cette augmentation prévisible - (voir compte-rendu précédant du 11/9/86) - indique que la chute des densités observées en 1985/86 était bien due, comme supposé, à des conditions écologiques (fortes sècheresses automnales en zone d'hivernage) et non aux conséquences du froid de 1985. Cependant, cet indice s'inscrit dans la tendance générale des 10 campagnes précédantes, a savoir, une décroissance moyenne de 3,3% (un tiers en 10 ans) des nombres de bécasses prélevées par un chasseur moyen.

2.2.3. Proportion des sexes dans les tableaux (= sexe-ratio)

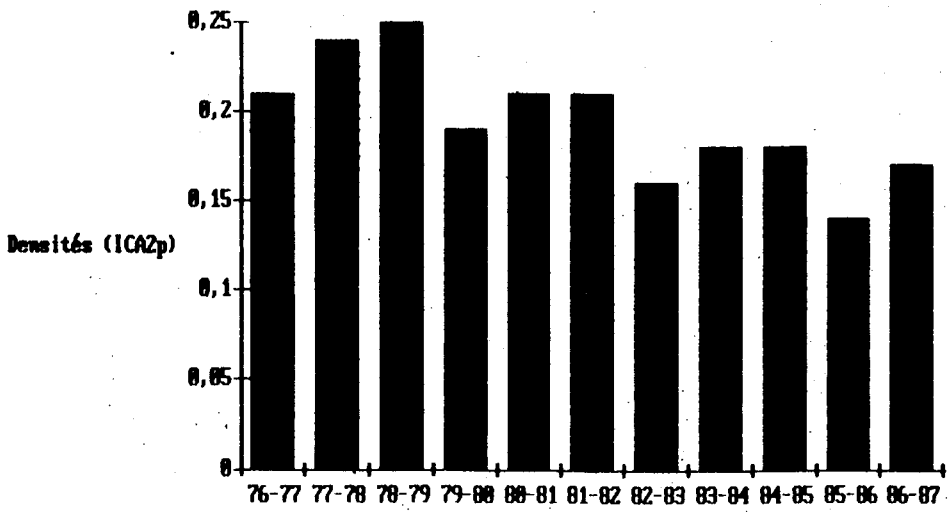
La proportion des mâles dans les tableaux a été cette année de 43% (4360 bécasses sexées) soit 1 point de plus de la moyenne des 10 campagnes précédentes. Il n'est pas possible de dire si cette légère augmentation traduit un phénomène profond ou est aléatoire. (figure 7)



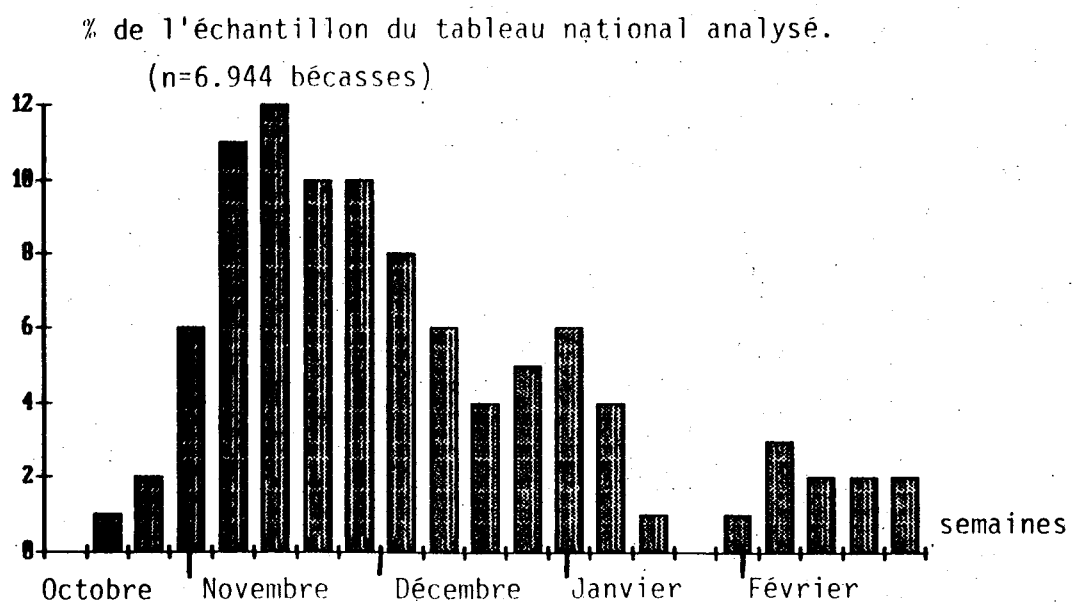
F I G U R E 2

Densités des bécasses (ICA 2p) 1986-87

Variations spatiales des densités de bécasses (chasse au chien d'arrêt)
Les densités sont exprimées en Indices Cynégétiques d'abondance annuels (Octobre à Février inclus) (ICA 2p). Entre paranthèses, les nombres de sorties de chasse journalières prises en compte pour leurs calculs. Les ICA 2p sont directement proportionnels aux nombres de bécasses tuées par chasseur et par jour de chasse, ainsi qu'au nombre total de bécasses présentes dans la région considérée.



F I G U R E 4 : Variations inter-annuelle des densités de bécasses rencontrées par les chasseurs (exprimés en Indices Cynégétiques d'abondances I.C.A.2p) au cours des onze dernières campagnes de chasse, sur l'ensemble du territoire national



F I G U R E 3 : Variations intra-annuelles des fractions (pourcentage) de l'échantillon du tableau national analysé. Ces fractions sont proportionnelles à l'importance du flux migratoire de la semaine considérée.

2.2.4. Proportion des classes d'âges dans les tableaux (=âge-ratio)

2.2.4.1. *Ensemble des jeunes*

Le pourcentage des jeunes dans l'échantillon des tableaux analysé (6964 bécasses) a été de 76%, soit en contre partie 24% d'adultes. Il est avec celui de 1977/78 le plus élevé de la décennie écoulée.

Cette augmentation de la proportion des jeunes a été observée en toutes régions (figure 5). On observe en outre un déplacement géographique des maxima : c'est la région Charente Maritime-Gironde qui cette année a reçu le plus de jeunes, en proportion, contrairement à la Bretagne coutumière de ce fait.

Ceci peut être la conséquence de plusieurs mécanismes migratoires tels que :

- le stationnement prolongé de cohortes de jeunes entre la Loire et la Garonne en raison de conditions écologiques favorables (humidité et douceur).

- le faible taux de retour des adultes à leurs remises d'hivernage. Rappelons que l'automne 1985 avait été sec dans cette région provoquant des concentrations d'adultes et par là des prélèvements importants localement. Les remises d'hivernage laissées vacantes par leur disparition ont été réoccupées en automne 86 par des jeunes nouvellement arrivés.

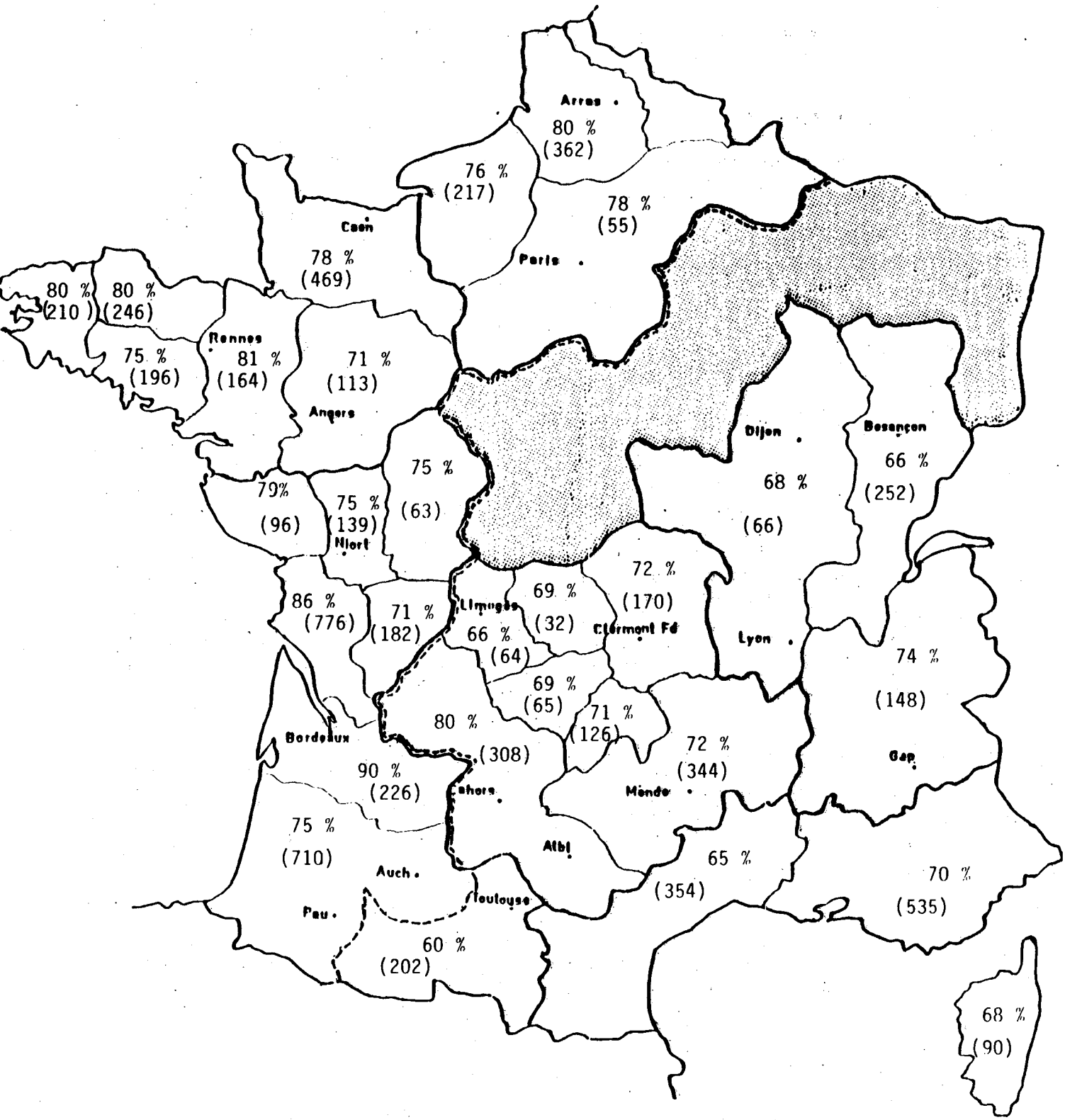
2.2.4.2. *Jeunes tardifs nordiques et autochtones*

Les jeunes tardifs ont été distingués des précoces comme les années antérieures par une mue de l'aile incomplète. Ils sont en majorité d'origine nordique, tandis que les précoces sont plutôt d'origine occidentale.

La figure 6 montre qu'ils se sont répartis plus à l'intérieur du pays que les années antérieures, où les maximas étaient enregistrées le long de la façade Manche-Atlantique. Cette année, leur taux moyen est plus élevé dans l'Est, les régions d'altitude du centre et le Sud-Ouest qu'en Bretagne qui paraît avoir été sous-fréquentée par eux.

Ceci s'accorde avec l'interprétation proposée précédemment concernant le stationnement prolongé de jeunes entre la Loire et la Garonne, aprés un transit préalable dans l'Est et le Centre.

Pour l'ensemble du pays, le pourcentage des jeunes tardifs s'élève à 35%. Il est en légère hausse (2 points) par rapport à la compagne précédante mais cette augmentation ne représente pas de différence significative avec la tendance des campagnes antérieures.

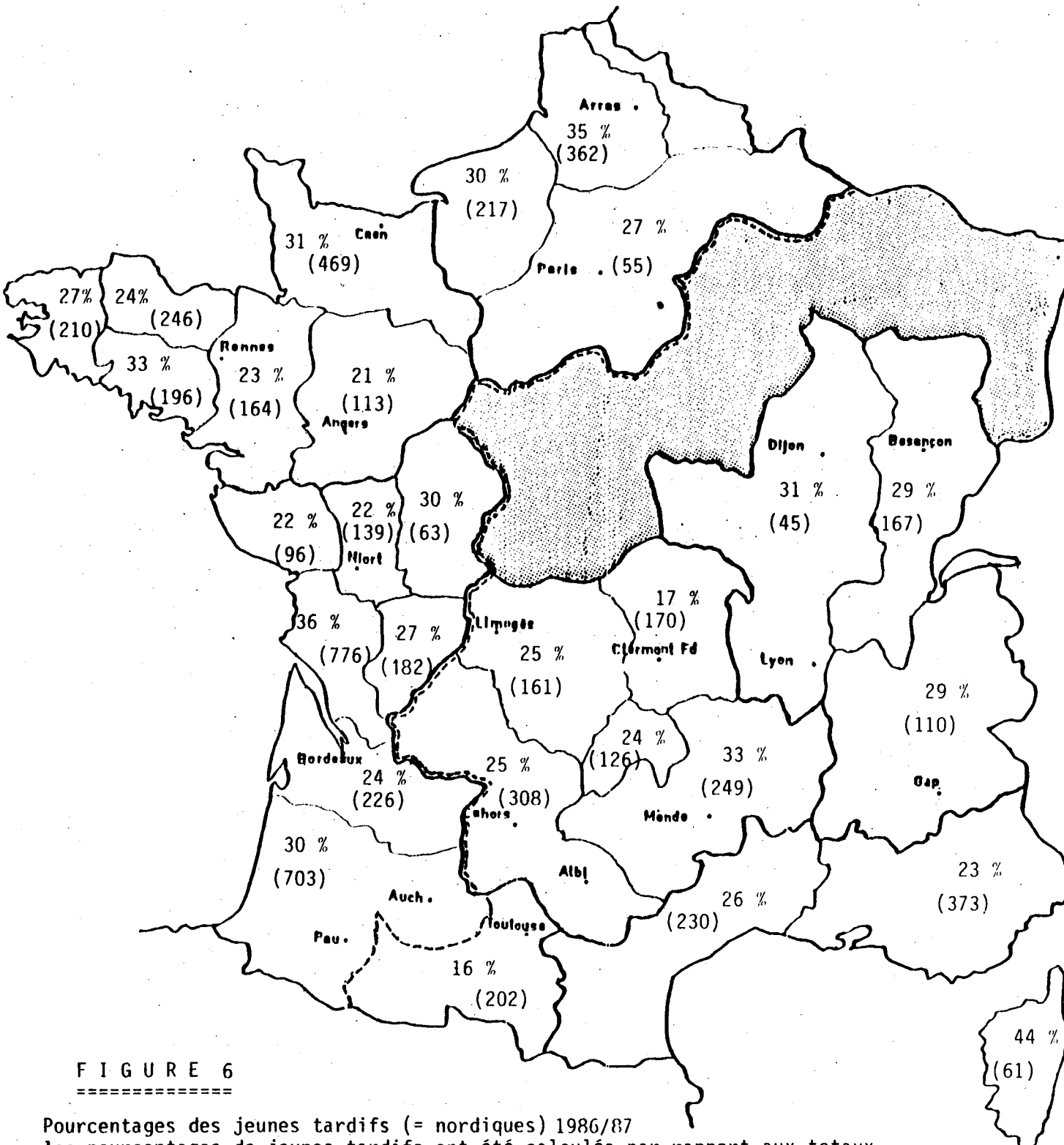


F I G U R E 5

Age-ratio (=% de jeunes des tableaux) - 1986/87

Variations spatiales de l'âge-ratio des tableaux. Entre parenthèses, les nombres de bécasses examinées dans chaque région. Leur total pour l'ensemble de la France est de 6.964.

On notera l'augmentation d'ensemble de ces âge-ratios dans la plupart des régions par rapport aux campagnes précédentes.



F I G U R E 6

Pourcentages des jeunes tardifs (= nordiques) 1986/87
les pourcentages de jeunes tardifs ont été calculés par rapport aux totaux des jeunes présents dans les tableaux de chaque région considérée, indiqués entre parenthèses.

Il en est de même pour le pourcentage des jeunes autochtones (nés sur les lieux de prélèvement) qui est de 3%.

2.2.5. Accident de Tchernobyl

2.2.5.1. *Résultats des analyses des bécasses*

Un échantillon de 680 bécasses a pu être analysé par divers laboratoires vétérinaires des régions de la façade Manche-Atlantique principalement.

Un rapport synthétique a été établi par l'O.N.C. (C. MALLET) et transmis récemment au Ministère (4 Septembre 1987). Il sera vraisemblablement communiqué sous peu à la presse.

Comme divers communiqués publiés en cours de campagne de chasse l'avaient déjà révélé, il apparaît que la bécasse est parmi les migrateurs analysés celui qui a été le plus contaminé, en raison d'un régime alimentaire essentiellement carné. Les mécanismes de l'assimilation des aliments veulent qu'il s'effectue une concentration des substances nutritives suite à l'excrétion d'eau, lorsqu'elles passent de l'état de matière vivante (proie) à celui d'aliment assimilé chez le prédateur. Aussi, une première concentration s'effectue entre le sol contaminé et les végétaux qui y poussent. Une deuxième a lieu entre les végétaux et les animaux végétariens (insectes, lombrics mais aussi canards herbivores, palombes, etc...) Une troisième a lieu chez les prédateurs de ces végétariens tels que la bécasse ou le merle. (figure 8)

Bien que la radioactivité du césium - métal dont les propriétés biochimiques sont proches du potassium - puisse durer pendant plusieurs dizaines d'années, le renouvellement constant de la matière vivante chez tous les animaux fait qu'un élément chimique, radioactif ou pas, ne demeure pas plus de quelques mois en tant que constituant d'un organe (période biologique).

Ainsi, une molécule de césium n'est présente qu'environ 120 jours au sein d'un même organe (muscle, sang). Elle peut être recyclée, mais aussi excrétée par l'urine.

De ce fait, un animal se décontamine peu à peu au fil des mois, si son alimentation est saine.

Il en fut ainsi des bécasses au cours de leur hivernage en France (baisse des taux moyens de radioactivité, baisse de la proportion des contaminées au sein des échantillons analysés d'un mois à l'autre.)

Mais il existe un risque de recontamination aprés leur retour sur les lieux de reproduction en raison de la persistance de la radioactivité dans le sol de ces régions.

De ce fait, les bécasses qui seront prélevées en automne 1987 risquent d'être encore contaminées.

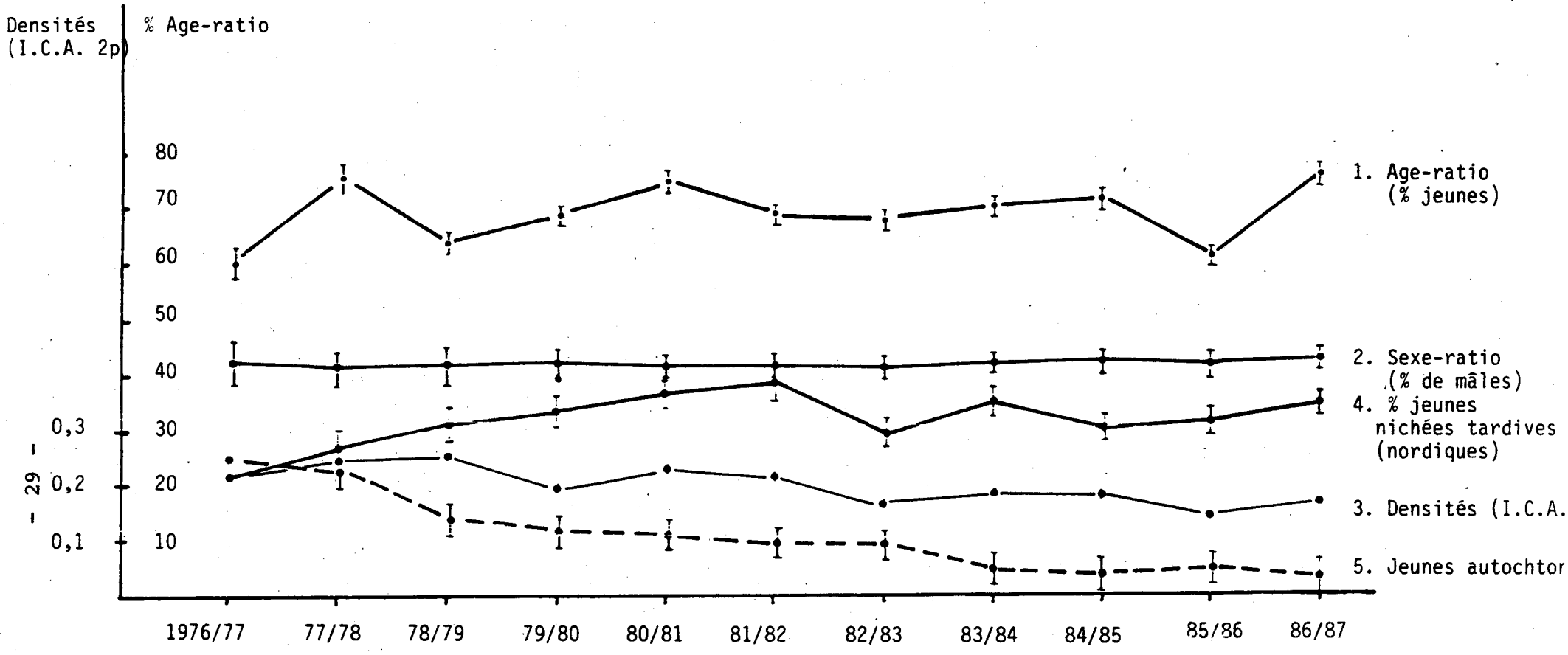


Figure N° 7 - Variations des âge -ratios (courbe 1), des sexe-ratios (courbe 2), des pourcentages de jeunes tardifs (nordiques) (courbe 4), des pourcentages de jeunes autochtones (courbe 5°, et des densités rencontrées par les chasseurs (courbe 3).

Voir commentaire et interprétation dans le texte.

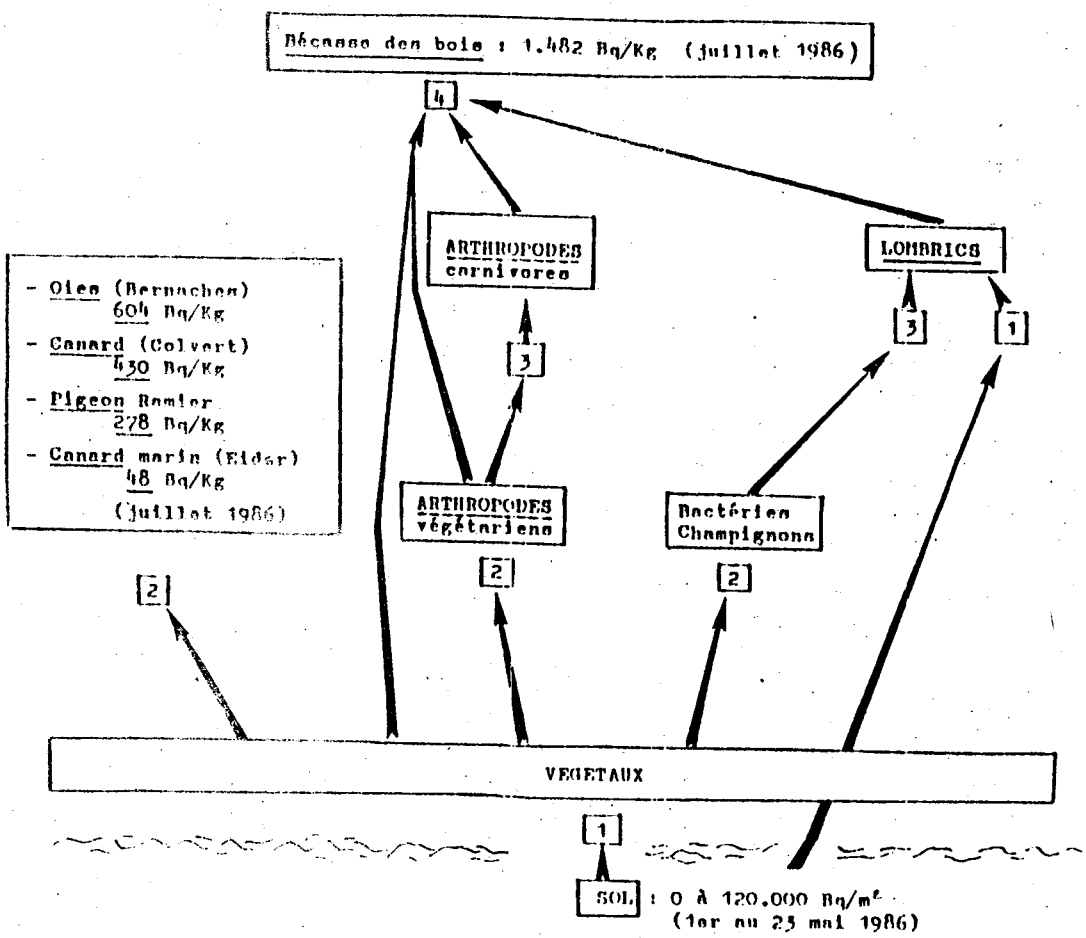


FIGURE 8 : Accident de TCHERNOBYL (26.4.1986) = Divers niveaux de concentration du Césium 137 chez quelques espèces de gibiers prélevées en Juillet 1986 en Suède.

Néammoins, le taux déjà faible en 1986 devrait l'être encore plus en 1987, en raison de la dilution par les pluies des éléments radioactifs dans le sol des sites de reproduction.

2.2.5.2. *Conséquences sur les hommes et la faune sauvage*

Les taux moyens de radioactivé, en début d'automne en France, étaient faibles, de l'ordre de quelques dizaines de becquerels par kilogramme, soit nettement inférieurs au seuil (600 becquerels par Kg) au-delà duquel la consommation des aliments contaminés est jugée dangereuse pour la santé humaine (risques de cancers, de modifications des cellules reproductrices et des embryons).

On pouvait se demander par ailleurs, si l'accident n'avait pas eu de graves conséquences sur la production de jeunes des populations de bécasses, du fait qu'il avait coincidé avec la période où la ponte était la plus intense dans les pays d'Europe Orientale et du Nord. S'il en avait été ainsi, on aurait constaté une diminution significative du nombre de jeunes tardifs (en majorité d'origine nordique) relativement à celui de jeunes précoces (occidentaux ou autochtones) moins touchés par l'accident.

L'analyse des tableaux de chasse nous indique (cf 2, 2, 4, 2 ci-dessus) qu'aucune différence significative n'est apparue en 86/87 par rapport aux années antérieures.

On doit donc admettre qu'il n'y a pas eu de baisse relative de production de jeunes nordiques et que l'accident de Tchernobyl n'a pas eu de conséquence immédiate grave au plan quantitatif sur les populations de bécasses.

Néammoins, des conséquences génétiques (malformations du type brévirostrie) peuvent apparaître à moyen ou long terme si la sélection naturelle ne rend pas la souche de bécasses tarée incapable de s'adapter aux conditions nouvelles de vie imposées par la malformation. Ces cas-là sont rarissimes au sein des populations sauvages et les chances de voir apparaître une nouvelle forme de bécasse sont trés faibles.

Il convient de rappeler dans ce contexte que les taux de pollutions causées par les explosions nucléaires dans l'atmosphère jusquà leur arrêt en 1963 étaient du même ordre d'importance que celui causé par l'accident de Tchernobyl.

CONCLUSIONS

Les résultats précédemment exposés conduisent à admettre que les bécasses se sont réparties, en automne 1986, d'une façon moins hétérogène du point de vue quantitatif que la saison antérieure, tant au plan des densités que de la composition des effectifs.

Mais au plan national, aucune différence significative n'apparaît par rapport aux années antérieures.

L'accident de Tchernobyl n'a pas eu de conséquence immédiate importante sur la production de jeunes nordiques, comme on aurait pu le penser.

Dans ce contexte, la campagne 1987/88 se déroulera, à conditions météorologiques normales, un peu à la manière de 1985/86 à savoir :

. - précocité des arrivées sur la façade littorale Manche-Atlantique, sous l'influence des jeunes, devenus adultes depuis, qui s'y étaient cantonnés pendant le froid, de retour à leurs remises d'hivernages respectives.

- diminution du pourcentage de jeunes dans les tableaux.

- densités moyennes sans changement ou en légère baisse.

Toutefois, des variantes peuvent intervenir dans le déroulement de ce scénario d'ensemble, en raison d'une part des accidents météorologiques toujours possibles et d'autre part, des conséquences de la fin de campagne de chasse de l'hiver 1987.

Comme déjà indiqué, la non-suspension de la chasse pendant la vague de froid dans certains départements côtiers (Seine-Maritime, Calvados, Var) et la rapidité de la levée de la suspension dans d'autres, alors que des concentrations de bécasses existaient encore, risquent d'avoir provoqué une forte mortalité.

Celle-ci entraînera forcément une diminution du nombre des survivantes et par là, des densités à l'automne 1987.

Author's adress:

Ch. FADAT & Y. FERRAND

C.E.R.A. Avifaune
Migratrice Terrestre
O. N. C.

GREECE

First records of breeding woodcock in Greece?

Intensively roding woodcock had been observed by W. Bauer and H.J.Böhr from 14.-20. May 1973 and again on 10. June 1975 near Elatia in the north-eastern part of Greece, close to the Bulgarian border. Similar observations were made nearby at Sagradenia from 12.-14. June 1975 and again on 23. May 1979. All birds were observed at elevations between 1500 and 1700 m in the Rhodopian mountains. (From: Vogelwelt 108(1): 5, 1987).
Though a direct record for nesting is still missing these observations strongly suggest woodcock are breeding in northern Greece, which was obviously not reported before.

HK

NORTH AFRICA

Some notes on the woodcock season 1985/86 in Morocco

Joachim A. Wadsack

Woodcock have arrived extremely late in fall 1986. Not before November 16 the first bird was observed at Rabat, another one on November 22 in the Marmora forest and one on December 4 near Ben Slimane. The first and only considerable influx of woodcock occured from beginning to mid December. An average of 6.2 woodcock were flushed per hunting day (13 days, average 3.4 hours hunted). Density was highest in the Marmora forest, but very low in the Pays de Zaer, the Ben Slimane region and in the middle Atlas mountains.
17 woodcock shot comprised 10 birds of the year and 7 older ones. Mean weight was 283 gr. (270-330 gr.) and thus the lowest recorded since 1977.

Author's adress:

3, rue de Azron
Rabat, Morocco

USSR

Woodcock and Snipe harvest in the Ukraine

Based on 88214 questionaires distributed to hunters in the Ukrainian SSR in 1974-75 an annual game bird bag of 5.06 million was calculated. More than half of the bag comprised waterfowl, but almost 170.000 woodcocks and more than 150.000 snipes were bagged (Krainev et al. 1984: Proceedings of the Oka State Reserve, Vol. XV: 94-106. Russian with English summaries).

HK

BIBLIOGRAPHY

Albrecht, J.S.M. (1986): Some notes on the field characteristics of the Great Snipe Gallinago media with reference to the Common Snipe Gallinago gallinago. Orn. Soc. Middle East 16: 30 - 33.

Debusche, M. & Isenmann, P. (1986): Consommation exceptionelle d'un vertebre (Chalcides chalcides) par une becasse (Scolopax rusticola). L'Oiseau et R.F.O 56: 212.

Dwyer, T.J., D.G. McAuley & E.L. Derletz (1983): Woodcock singing-ground counts and habitat changes in the northeastern United States. J. Wildl. Mgmt. 47(3): 772 - 779.
Since almost two decades American Woodcock (Scolopax minor) populations are monitored annually by counting displaying males along certain routes. While the populations in the central management unit were more or less stable, those of the eastern U.S. exhibited a continious decline since more than a decade. Survival rates of woodcock were lower in the eastern than in the central unit. However, because of the low recovery rates overharvest can almost certainly be excluded as a cause of this decline. A comparision of aerial photographs of the late 1960's and the late 1970's exhibited a decline of prime woodcock habitat, mainly abandoned fields and alder and an increase of urban/industrial areas. However, only the latter was significantly related to the change in the call-count index.
HK

Fujimaki, Y. & Skira, I.J. (1984): Notes on Latham's Snipe Gallinago hardwickii in Japan. Emu 84: 49 - 51.
Latham's snipe breeds only in Japan and nearby areas. This paper provides information on its arrival and departure in Japan, its breeding distribution (by 20 km sq.), habitat preferences, breeding biology and numbers (2 pairs per 400 ha in mountain meadows). At present Latham's snipe is widely distributed in Hokkaido and higher areas of Honshu and its status is secure. However, in the face of continual development, research is needed on its distribution in relation to food and habitat.
GH

Hirons, G. (1987): Habitat use by Woodcock, Scolopax rusticola, during the breeding season. Gibier Faune Sauvage 4: 349 - 362.
Radio-tagged birds provided considerable insight into the habitat requirements of woodcock. Density and availability of earthworms obviously determined the feeding sites, and ground cover in addition the nesting sites in this study area in Derbyshire, England. Thus certain types of forest and vegetation structure (i.e. sycamore stands with a ground cover of Mercurialis

perennis) were clearly preferred, others more or less avoided (mainly beech and pine stands). Roding was most intensively over prime habitat, where most of the nests had been found.

HK

Hirons, G. (1987): A quantitative analysis of habitat preferences of Woodcock, Scolopax rusticola, in the breeding season. Ibis 129: 371 - 381.
A detailed analysis of the data gathered from radio-tagged woodcock in the study area in Derbyshire, England. The birds switched from feeding on pastures by night in early spring to feeding in woodland by day during the breeding season. This behaviour is obviosly determined by the life cycles of earthworms, thus the availability of the main prey item of woodcocks. Discriminant analysis revealed habitat requirements of solitary birds, broods and nesting females respectively. The results question some of the earlier opinions of 'typical woodcock habitat'.

HK

Lack, P. (1986): The atlas of wintering birds in Britain and Ireland. Poyser: Calton.
Gives the winter distribution in Britain and Ireland (by 10 km squares) of snipe, jack snipe and woodcock based on three seasons fieldwork (1981/82 - 1983/84). Snipe were recorded in 76% of squares, woodcock 58% and jack snipes 20%. The map for snipe suggests a southward movement of birds fledged in northern parts of Britain and Ireland and confirms their association in winter with lowland areas in southern England and the bogs of southern Ireland. Woodcock are harder to locate in winter and so its distribution will have been under-recorded. Nevertheless the map demonstrates that the species is more widely distributed than in the breeding season, being present in all regions except the highest areas of Scotland. The Atlas fieldwork suggests that jack snipe are sporadically distributed in winter and in smaller numbers than the 100.000 estimated from sportsmens' bags (10.000 are estimated to be shot annually).

GH

Lang, B. (1985): (Non breeding snipes) Cormoran 5: 321 - 325. In French with an English summary.

McKelvie, C.L. (1986): The book of the Woodcock. Debrett Peerage Ltd. London, 208 pp.
Monographs on woodcock have been issued since more than hundred years in several European countries and thus in different languages. This one is the first British book solely devoted to this species. The author, a game biologist and obviously also well acquainted with field sports has described the life history of this beloved game bird based on the most recent stage of knowledge. It is not a scientific

book in the strict sense of the word (no reference list is attached), but the results of relevant research are woven into the text that reads were elegantly. Excellent photos, paintings, graphs and ancient photographs further support the better understanding of this secretively living bird by the general reader. A considerable part of the book comprises hunting; controversial aspects are discussed without emotion, but in a pleasing pragmatic way and based on scientific research - as expected from a biologist.

HK

Miller, D.L. & M.K. Causey (1985): Food preferences of American Woodcock wintering in Alabama. J.Wild.Mgmt. 49(2): 492 - 496.
The stomachs of 70 woodcock (Scolopax minor) collected from November through February in various coverts containted 63% earthworms, 16% centipedes (Chilopoda), 8% beetles (Coleptera, primarily larvae), 6% fly larvae (Diptera), 4% unknown insect parts and 3% miscellaneous, by volume. All food items were not used with equal intensity. Centipedes and earthworms were preferred to insects.

HK

Monke, R.(1985): (Snipe Gallinago gallinago attacking Passer montanus. Beitr. Vogelkd. 31: 363 - 364. In German.

Nitta, K. & Fujimaki, Y. (1985): (Seasonal variation in daily activity of Gallinago hardwickii in the breeding season.) Tori Bull. Orn. Soc. Japan 34: 49 - 55. In Japanese with English summary. (Lab. Wildl. Res. Ecol. Obihiro Univ. Agric. & Vet. Med., Inada, Obihiro 080, Japan.)
Seasonal variations on the daily activity patterns of Latham's snipe Gallinago hardwickii were studied along the lower reaches of the Tokachi River, eastern Hokkaido, from late April to late August 1984. During the study birds were counted along a 3 km transect at a speed of 3 km per hour and an intensive search was made for sitting snipe in a 1.4 km sq. area of riverbed. During the breeding season aerial displays were the most conspicuous behaviour, followed by calling from poles or trees. The number of snipes counted increased at 03.00, 06.00-07.00 and 19.00 in late April and mid-May and also at 17.00 in late May and mid-June, showing 3 or 4 peaks. Peaks occured just before and just after sinrise or sunset. The maximum number of snipes counted in the daytime, between 06.00 and 07.00 increased from late April to May, then decreased gradually until the end of June. Thereafter the number of snipes observed declined abruptly because of the decrease in detectability and in numbers. Although censuses can be carried out from late April to late June, for an effective census it is desirable to survey snipes between 06.00 and 07.00 in May.

AUTHORS' SUMMARY

Phillippot, M. (1985): (Short-billed Woodcock) Cormoran 5: 349.
Bird shot with bill of 35mm in November 1984.

Piersma, T. (1986): Breeding waders in Europe. A review of population size estimates and a bibliography of information sources. Wader Study Group Bulletin 48 (supplement).
Includes estimates of the size of the European breeding populations of woodcock and the three species of snipe, based on published sources, recent surveys and unpublished material provided by national correspondents. The estimates are: Jack Snipe 28.100 (mostly in Sweden and Finland); Snipe 841.000 (mostly in Sweden, Finland and Iceland); Great Snipe 3500 (mostly in Sweden and Norway) and Woodcock 347.000 (including 200.000 in Finland). All the estimates are given in 'pairs'! The author considers that the figure for woodcock should be regarded as a minimum. This is probably wise as the bag of woodcock in Europe has recently been estimated at around 3.7 million (Although this will include many birds originating from Russia and the Baltic states)! One could also take issue with the author's statement (p. 3) that numbers of breeding woodcock have been accurately surveyed in very few countries; they have not been accurately surveyed anywhere and the figures for most countries can be little more than guesswork. One very useful feature, however, is a comprehensive list of papers on the breeding biology of waders in Europe published since 1950.

GH

Rabe, D.L., H.H. Prince & E.D. Goodman (1983): The effect of weather on bioenergetics of breeding American Woodcock. J. Wildl. Mgmt. 47(3): 762 - 771.
Simulation modeling was used to investigate the impact of weather on the bioenergetics of hen and chick woodcock (Scolopax minor). Air temperature and precipitation were used as inputs. The model also comprised the availability of earthworms, the main food item, based on data from Michigan. They exhibited a close relationship between soil moisture and temperature and density of earthworms close to the surface, causing considerable seasonal variations of the latter. There are peaks in May and June, but lows in summer. Reproductive success of woodcock (derived from wing sampling) showed a significant linear relationship ($r = 0.53$) to earthworm availability (similated from weather data). Thus, there is a twofold impact of spring weather on woodcock reproduction: directly on the energy requirements and indirectly, but even more effectiv, on food availability.

HK

Spano, S. (1986): Age effect on wintering of the woodcock Scolopax rusticola L. Suppl. Ric. Biol. Selvag. 10: 383
(Inst. Zool. Univ. di Genova, Via Baldi 5, Genova, Italy)

Stribling, H.L. & P.D. Doerr (1985): Nocturnal use of fields by American Woodcock. J. Wildl. Mgmt. 49(2): 485 - 491.
During winter American Woodcock (Scolopax minor) preferred to feed at night in cutover soybean fields in North Carolina. Earthworms made up 99% of the food ingested. Earthworm density in other field types were similar, but protein contents and thus nutritional values of worms in the soybean fields were higher, due to the soil richer in nitrogen and organic matter. Woodcock might have some mechanism that allows them to select protein-rich food. The microtopography of soybean fields further supports woodcock feeding, as the furrows are less due to become frozen.

HK

Wasmann, R. (1986): (On the food of Jack Snipes.) Orn. Mitt. 38: 173. In German. (Noldenweg 8, D-3320 Salzgitter 1, F.R.G.)

Ziesemer, F. (1986): (The situation of Black-tailed Godwit, Redshank, Snipe and Ruff and other 'meadow birds' in Schleswig-Holstein.) Corax 11: 249 - 261. In German.