INTERNATIONAL WATERFOWL AND WETLAND RESEARCH BUREAU

WOODOCK AND SNIPE

RESEARCH GROUP

NEWSLETTER

NUMBER NINETEEN DECEMBER 1993

INTERNATIONAL WATERFOWL AND WETLAND RESEARCH BUREAU

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Newsletter No 19 December 1993

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EDITORIAL

This Newsletter number nineteen shall inform members and correspondents of the Woodcock and Snipe Research Group (WSRG) as well as IWRB-headquarters and Research Group Coordinators about research going on and scheduled, preliminary results, short notes and some recent relevant literature.

Research

The long-term project on the ecology of the woodcock (*Scolopax rusticola*) in two study areas in Britain could be finalized (p. 3). It was started by Graham Hirons in 1977 under The Game Conservancy and was then part of the International Woodcock Project (1985-1988), financed primarily by CIC. Since 1989 Andrew Hoodless (Assistant coordinator WSRG) continued the field studies in Whitwell Wood (breeding season) and Cornwall (wintering sites), again under The Game Conservancy. The results are now ready for publication by A. Hoodless.

In France the colleagues of the Office National de la Chasse (ONC), especially Charles Fadat, Yves Ferrand (Assistant coordinator WSRG) and Francois Gossmann, have continued monitoring woodcock breeding and wintering through a country-wide network (page 12 ff). Sampling several thousands of woodcock bagged in the season 1992/93 revealed insight into age-structure, sex-ratio and migration patterns. More than thousand woodcocks had been ringed by the ONC-team, most of them in France, but also in Russia (as in previous years), Denmark and Italy.

Woodcock wing sampling was carried on in several European countries, mainly Britain, Denmark, France and Italy. These studies are coordinated and evaluated by John Harradine (B.A.S.C., Marford Mill, U.K.), coordinator of Duck Wing Research within the IWRB Hunting Research Group.

Wing sampling in the 1992/93 season revealed the lowest ratio of juveniles per adult woodcock since its beginning in the late 1970ies. This low value was in line with that of some other species breeding in northeastern Europe, such as the widgeon (*Anas penelope*). Obviously extreme drought conditions in the summer of 1992 especially in Russia have caused this low reproductive success. Additionally most adult woodcocks caught in Denmark in fall 1992 had not completed their wing moult as usual, which again indicated poor ecological conditions in the previous summer.

This situation caused members of the Danish Department of Wildlife Ecology, Kalø (Ib Clausager) and the ONC (Ch. Fadat, F. Gossmann) to issue a memorandum on that matter including recommendations to reduce hunting pressure during the season 1992/93 in countries which normally house large numbers of wintering woodcocks. As a result woodcock hunting was suspended for about

two weeks in several provinces of France. The effects of these measures on the populations will however require further research.

Wing sampling of the three European Snipe (*Gallinago, Lymnocryptes*) species is conducted extensively by Michel Devort, not only in France, but in many countries of the migration routes, including Westafrica. His analyses too revealed a low breeding success in 1992 for the Common snipe (*Gallinago gallinago*).

After having completed the woodcock project A. Hoodless is now in charge of a long-term project on the Common snipe, conducted by The Game Conservancy (U.K.). It comprises field studies on habitat requirement as well as extensive ringing analyses. A part of the latter was completed already by the British Trust for Ornithology (BTO, see page 32).

Meetings and publications

Three years after the Eighth American Woodcock Symposium took place in Indiana (USA) in 1990 the proceedings are available now (page xx).

Unfortunately the proceedings of the Fourth (European) Woodcock and Snipe Workshop held in Saarbrücken, April 1992, are still in print. The delay was caused by an unexpected amount of time required to edite them, as well as several bottlenecks at the printing office working for IWRB. However, they certainly will be available in the second half of 1994.

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A REVIEW OF THE GAME CONSERVANCY TRUST'S WOODCOCK PROJECT IN BRITAIN

Andrew Hoodless

Introduction

Before The Game Conservancy Trust's Woodcock Project started in 1977, practically the only knowledge concerning woodcock *Scolopax rusticola* in Britain was that from an inquiry conducted by W.B. Alexander during 1934-35 (Alexander 1945-47) and the information on the species' distribution from the British Trust for Ornithology's (BTO) Atlases of Breeding and Wintering Birds (Sharrock 1976, Lack 1986). For instance, when the project started there was just some vague evidence of the polygamous breeding behaviour in woodcocks. It was the initial Game Conservancy research conducted by Dr. Graham Hirons at Whitwell Wood, Derbyshire (Hirons 1979, 1980, 1981), using radiotagged woodcock that revealed that the species exhibited successive polygyny (males mate with a sequence of different females). This finding was important because it meant that fears over the effect of the spring shooting of roding males in Sweden and the former Soviet Union were largely unfounded. Hirons found that sub-dominant males within a wood would quickly replace any dominant males that were shot or removed (Hirons 1983).

During the course of the Woodcock Project The Game Conservancy Trust has amassed information on the habitat use and behaviour of woodcock during the breeding season and in winter. We have also investigated breeding success and in 1993, the final year of our work on woodcock, we developed a simulation model for a population of resident breeding woodcock in Derbyshire. This article reviews the main findings of the project and offers an explanation for the decline in the British breeding woodcock population.

Habitat preferences during the breeding season.

Hirons examined the habitat preferences of during the breeding season in lowland, mixed deciduous woodland. This study revealed that nesting females used relatively open areas with a good cover of brambles *Rubus spp.* and that nests were found primarily in areas that were rich in earthworms, typically under stands of sycamore *Acer pseudoplatanus* and ash *Fraxinus excelsior* as opposed to beech *Fagus sylvaticus* or conifer. Both solitary birds and hens with broods selected areas with denser ground cover and these were often dominated by dog's mercury *Mercurialis perennis*. The reasons for these choices were that brambles afforded overhead cover and good lateral visibility for hens on nests, whilst dog's mecury and denser ground cover provided feeding birds with better protection from avian predators, in particular sparrowhawks *Accipiter nisus* and tawny owls *Strix aluco* (Hirons & Johnson 1987). Analysis of more recent radiotracking data from Whitwell Wood suggested that woodcock

also prefer woodland edge habitat for feeding because it supports a higher density of light seeking shrubs (Hoodless, unpubl.). Pheasants, *Phasianus colchicus* also prefer woodland edges for the same reason and it seems likely that woodland management for pheasants, including the maintenance of shrubby woodland edges and open rides, which are essential for roding male woodcock in large woods, will also be of benefit to breeding woodcock.

During the last two years work has also been conducted on breeding woodcock at an upland birchwood site in Angus, Scotland. Birch *Betula pubescens* forms the most abundant class of semi-natural woodland in the Scottish highlands and information concerning habitat use in this situation was considered essential because the habitat is very different from the lowland woodland studies previously. It was found that woodcock in this situation used more open areas for nesting, particularly favouring areas of bracken *Pteridium aquifolium*, even heather *Calluna* moorland. The habitats used most intensively by feeding woodcock were dense young birch thickets up to 6 m high and mature birch with bracken ground cover. The fact that bracken was used by woodcock in the uplands is important because encroachment of bracken in Britain has increased during the last decade (Hudson & Newborn 1989). Bracken encroachment is now perceived as a problem by many grouse moor owners because bracken harbours the tick *Ixodes ricinus* that carries the louping ill virus which can be very damaging to red grouse *Lagopus lagopus scoticus*. It is too early to judge the effect of bracken removal on local woodcock populations but it is another consideration that should be borne in mind by landowners and others contemplating large scale bracken removal to control ticks among heather.

The density and behaviour of woodcock in winter.

The arrival of migrant woodcock in Britain in autumn has been observed for centuries, but until recently we had little idea of the size of the wintering woodcock population or of the relative distribution of continental and resident birds. By surveying woodcock in winter at night with a spot-lamp (Hirons & Linsley 1989) in four different parts of the country (Cornwall, Wiltshire, Derbyshire and Co. Durham) density estimates were obtained which were then used to calculate the size of the overwintering population. It was estimated that approximately 800 000 woodcock winter in Britain and given that the British breeding population consits of about 30 000 males and females (a rough estimate from the BTO's *New Atlas of Breeding Birds*, Gibbons et al. 1993)), this suggests that males and female continental woodcock probably outnumber resident British woodcock by about 14:1 in winter. The spot-lamp counts revealed that the density of woodcock was appreciably higher in southern and south-west England and analysis of woodcock ring recoveries enabled us to establish that these were the areas where the majority of the continental migrants wintered (Hoodless & Coulson, in press).

Spot-lamp counts and radiotracking of woodcock in winter have shown that the birds have clear preferences for different types of fields when feeding at night. In particular, they choose permanent pastures because these fields support high densities of earthworms and other soil invertebrates, such as leatherjackets (*Tipulidae larvae*), which comprise the woodcock's diet. This complements the findings of Ferrand & Gossmann (1988) and Granval (1988) in France. In predominantly grassland areas such as Cornwall, the woodcock even select between different permanent pasture fields on the basis of food availability, which is related to soil moisture. In areas of largely arable farming such as in north-east Derbyshire, the woodcock still exhibited a preference for feeding on grass fields and travelled twice as far from their daytime resting places to feeding locations at night (mean distance: 887 m as opposed to 444 m in Cornwall).

The impact of cold winters and increased pheasant shooting on the woodcock wintering in Britain.

The total number of woodcock wintering in Britain appears to have remained fairly constant since 1961. The woodcock bags from The Game Conservancy Trust's National Game Census have remained relatively unchanged (Tapper & France 1993).

There is however evidence that woodcock suffer increased mortality in severe winters because they are unable to feed when the ground becomes frozen. The best example of this was during the winter of 1962/63 when large numbers of woodcock became concentrated in southern and south-west England and many birds were found dead (Robinson & Richards 1964). Examination of woodcock bags by county in cold and mild winters has shown that relatively more woodcock are shot in southern and western England during cold winters (Tapper & Hirons 1983), but there is no evidence from ring recoveries that native British woodcock move further from their breeding sites in cold winters than in mild ones (Hoodless & Coulson in press). The implication of this is that cold weather movements within Britain are made largely by the continental woodcock. Woodcock bags since 1980 have been affected by the dramatic increase in the numbers of pheasants being shot each year. This has had the greatest impact in northern England and Scotland, because although the total number of pheasants shot in these regions is still relatively low compared to central and southern England (mean annual bags 36 pheasants/km^2 against 204 pheasants/km^2), these are the regions where the greatest percentage increase in the pheasant bag has occurred (about 36% during 1975-1990).

The decline in the British breeding woodcock population.

During the last year our research on woodcock has been concerned with using our present knowledge of the basic breeding biology and winter behaviour of the species to quantify the various life history processes that determine population levels. This is particularly important because there is currently concern

that the British breeding woodcock population may be in decline, particularly in southern England (Marchant et al. 1990). By drawing upon 15 years of breeding data from Whitwell Wood, it has been possible to examine the relative importance of four different mortality factors. These were clutch mortality, chick mortality, shooting mortality and overwinter and early spring loss combined. Chick mortality was the factor that showed the greatest variability and was clearly the one that had the largest influence on the total annual mortality. This is not surprising because chick mortality is the factor most likely to be affected by environmental influences such as the weather.

Woodcock chicks will starve if it is wet and cold when they hatch because they require constant brooding by the hen in such conditions. In very dry years chick mortality is high because after the first ten days the chicks become increasingly dependent on earthworms for food and these are less available when it is dry.

Overwinter and early spring loss was found to be density-dependent; that is, with increases in the density of woodcock remaining after shooting the proportion of birds that were lost over the winter and in early spring increased. The loss could have been due to increased overwinter mortality or to dispersal from the breeding area at the higher post-shooting densities. This density-dependence is important because it provides the mechanism whereby the population is regulated following fluctuations in breeding success. It also provides the opportunity for compensation for additional sources of mortality such as shooting. A computer model based on the breeding woodcock population at Whitwell Wood was used to compare the current rate of harvesting (estimated at 4%) for the woodcock at Whitwell Wood with the theoretical sustainable maximum. This was calculated to be 22% of the autumn population, thereby confirming that present levels of shooting could be sustained with no adverse effects on the breeding population. If the maximum sustainable woodcock bag at the national harvest rate, estimated at 10-15%. can also be sustained. Of course, a large proportion of the woodcock shot in Britain and continental woodcock are equally susceptible to being shot.

The reason for the decline in the British breeding woodcock population seems to be due to a low rate of production of young woodcock (1.2 young per female) which is insufficient to balance the annual rate of adult mortality (estimated as 58%, Hoodless & Coulson in press). As well as the effects of annual differences in weather upon woodcock chick mortality, a more serious increase in mortality is likely to have been caused by changes in woodland structure and increased predation due to a reduction in the number of gamekeepers.

The impact of hunting on woodcock throughout Europe.

Although the present rate of shooting in Britain does not appear to be having an adverse effect on our resident breeding woodcock, a large proportion of the

winter population is comprised of continental birds, which may be harvested on migration in other countries. In the absence of any studies in other European countries, we considered it important to use what information was available to determine the effects of hunting in other parts of Europe, and contracted the British Trust for Ornithology to analyse the European ringing recoveries with respect to changes in hunting rates. This analysis confirmed that most woodcock from the British breeding population were hunted in Britain and Ireland and revealed that there has been a decline in the hunting rate for the British population since the early 1960s (Henderson et al. 1993). The analysis also showed that the woodcock from the Scandinavian and Finnish breeding populations were subject to a higher hunting pressure in France than in Britain, but that again there was evidence for a decline in the hunting rate since the early 1960s. The findings of this work are important because they demonstrate that the hunting of woodcock throughout Europe cannot have caused any decline in the British or Fennoscandian breeding populations.

Acknowledgements

We are grateful to the CIC delegations of France, Germany, and the Netherlands for cosponsoring the project from 1981 to 1985 and the Working Group Western Palearctic of the CIC Migratory Bird Commission for funding during 1985 to 1988. David Caldow kindly ensured the completion of the project by funding it from 1989 to 1993. Among the many people who have helped with this work, we are particularly grateful to John Ellis and family.

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SOME OBSERVATIONS ON WOODCOCK (*SCOLOPAX RUSTICOLA*) MIGRATION IN AUSTRIA AND WESTERN HUNGARY IN 1992

Philipp Meran

Spring migration: After some unusually warm days at end of February/ beginning of March temperatures fell considerably below average all through March and it was extremely dry everywhere. This was probably the reason for the delayed migration of several species. Lapwings (*Vanellus vanellus*) arrived not before 10th March in Eastern Austria and Hungary, thus one week later than usual, while woodcocks were not observed before mid-March. Migration peaked around 23rd March, and last woodcocks were seen in Burgenland (Austria) around 10th April. Probably because of the drought spring migration was rather brief in 1992 in this region.

The following woodcocks bagged during evening flights in spring 1992 were analyzed (but unfortunately not sexed):

Date	Location	Age	Weight (g.)	Bill length (mm)
Hungary				
17.3.	Balatonkeresztur	juv.	305	71
18.3.	Buzsák/Somogy	ad.	350	78
18.3.	Buzsák/Somogy	juv.	270	67
21.3.	Buzsák/Somogy	ad.	310	75
24.3.	Balatonkeresztur	ad.	420	70
24.3.	Keszthely	juv.	354	67
25.3.	Keszthely	juv.	318	76
31.3.	Balatonkeresztur	juv.	335	74
31.3.	Balatonkeresztur	ad.	355	75
1.4.	Keszthely	juv.	360	79
1.4.	Balatonkeresztur	ad.	400	72
Austria				
9.4.	Kogl, Auwald	ad.	220	69
11.4.	Hendorf	juv.	335	74

Fall migration: First migrating birds were observed at Reinischkogel (Steiermark, Austria) by end of September, but the first large influx was probably not before 23-25 October, the last one at 9/10 November. During a frost period afterwards only few individuals were seen lateron.

Generally, fall evening flights were much less directed towards agricultural fields than in the past. Instead woodcocks were more heading to riverbeds and other natural openings of forested regions. Is this change caused by lack of earthworms after pesticide application in the fields?

The following birds were bagged in Steiermark (Austria) during evening flights in fall 1992.

Date	Location	Age	Weight (g.)	Bill length (mm)
13.10.	Reinischkogel	ad.	305	69
23.10.	Rosenkogel	ad.	361	72
27.10.	Gasselsdorf	juv.	328	64
2.11.	Rosenkogel	ad.	358	65
3.11.	Grambach	ad.	402	79
8.11.	Gleichenberg	juv.	340	73

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SOME NOTES ON THE WOODCOCK SEASON 1992/93 IN MOROCCO.

J. A. Wadsack

As the previous winter this season was extremely dry. There was hardly any noticeable precipitation before the end of February. This situation, as well as a relatively mild winter in Europe resulted in an extraordinarily low woodcock abundance. The first woodcock in the Mamora forest was observed on 26 October, another one on 5 November 1992, and the first influx not before the end of November. In contrast to earlier years only very few woodcock were flushed during boar hunts in January 1993.

Accordingly, woodcock hunting was poor this season. Table 1 provides an overview on the number of birds flushed, as an index of woodcock abundance. Only three woodcocks were bagged, all juvenile females, with an average weight of 265 g.

Date	Duration (hours)	Woodcock flushed individuals	contacts altogether
05/12	4,0	4	6
12/12	4,0	1	2
19/12	3,0	2	4
20/12	4,5	2	3
26/12	3,5	4	7
02/01	3,0	7	9
09/01	3,5	3	4
16/01	3,0	1	1
01/03	3,5	3	2
Average	3,6	3,1	4,4

Table 1: Number of woodcock observed during nine outings with two to three guns in the Mamora forest, Morocco, hunting season 1992/93.

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SUIVI DES POPULATION DE BECASSES EN 1992/1993

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1. Suivi des males chanteurs (croule)

Le comptage des mâles à la croule (mai et juin) a été effectué cette année dans 59 départements sur les 62 sollicités. Pratiquement, 961 sites ont été retenus par tirage au sort, et parmi eux, 25,5%, soit un quart, étaient occupés par au moins une bécasse au moment de la croule du soir. Ce taux n'est pas significativement différent de ceux des années antérieures (figures 1 et 2).

Dans le détail des variations régionales, on observe toujours un fort taux d'occupation en Alsace. Ceux de la Lorraine et du Massif Alpin ont baissé, tandis que celui du Bassin de Paris a augmenté.

Toutefois, au plan national, ces variations ne sont pas significatives et l'on peut penser, que les effectifs moyens français sont resté stables en 1993, du même ordre d'importance que ce qu'ils sont depuis 1988.

2. Suivi de la migration et de l'Hivernage

2.1. Baguage des Bécasses en transit en Russie et au Danemark

Comme en 1991, une mission de baguage a été effectuée du 21/09 au 19/10 en Russie, et du 26/10 au 5/11 au Danemark où respectivement 104 et 147 bécasses ont été baguées.

Du point de vue qualitatif, les pourcentages de jeunes observés ont été de 66% pour la Russie et seulement 38% pour le Danemark. Jamais un âge ratio aussi faible n'avait été observé depuis 24 ans pour ce dernier pays où la moyenne durant cette période est proche de 70% dans les tableaux de chasse.

Parmi les causes possibles, une très forte sécheresse de mi-mai à mi-août, dans le Centre-Nord de la Russie d'Europe et le Sud de la Scandinavie doit être retenue en priorité (cf. infra, paragraphe: proportion des jeunes).

2.2. Baguage des bécasses en hivernage en Italie

Une mission initiatrice de baguage a eu lieu en Italie, près de Rome, en janvier 1993, en collaboration avec le Club della Beccaccia (président S. Spano). Elle fut couronnée de succès car 57 bécasses ont été baguées en quelques jours et

une équipe de bagueurs formée à cette technique. Nul doute qu'elle sera développée à l'avenir dans ce pays.

2.3. Baguage des bécasses en hivernage en France

Le baguage des bécasses a été étendu à 47 départements, soit une dizaine de plus que l'année précédente, situés pour la plupart dans le Centre-Nord de la France.

Malgré cet accroissement, seulement 864 bécasses ont été baguées, en raison d'une diminution importante et significative des densités. Le nombre moyen de bécasses vues par équipe de bagueurs et par sorties a été en effet de 5,45 contre respectivement 7,02 et 6,55 en 1990/91 et 1991/92. L'analyse de l'âge ratio des captures indique que, comparativement aux années antérieures un déficit de jeunes (66% contre 73% en moyenne) est la cause de la baisse des densités (cf. infra, paragraphe: proportion des jeunes).

2.3.1. Reprises

Parmi les 180 reprises enregistrées, il s'agit, pour environ la moitié (87), de reprises directes (= baguées en 1992/93) et de 93 reprises indirectes (= baguées avant l'hivernage 1992/93). Parmi les plus remarquables, signalons une bécasse capturée dans le Morbihan en 1984/85, soit 8 ans auparavant. Son lieu de reprise était distant d'environ 15 km de son lieu de capture.

2.3.2. Espérance de vie des bécasses en hivernage

Le temps de port de bague moyen (Tpb) calculé à partir du total des reprises a été de 26,4 jours, soit le même que les années antérieures. Si l'on ne considère que les reprises directes effectuées à moins de 20 km du lieu de baguage, le Tpb est de 23,7 jours (figure 3). Cette valeur reflète mieux que la précédente l'espérance de vie des bécasses arrivées à leur terminus migratoire. On a constaté, en effet que le Tpb des bécasses reprises hors des lieux de captures, donc en migration, était beaucoup plus long (plus de 40 jours) que celui des bécasses arrivées sur leur aire d'hivernage. Ceci provient du fait qu'une bécasse en migration est moins exposée, du fait des changements de remises qu'elle effectue, qu'une bécasse cantonnée gravitant toujours autour de la même remise.

2.4. Analyse des tableaux de bécasses

2.4.1. Rappel des conditons météorologiques

Tranchant avec une série d'années plutôt sèches, l'automne 1992 a été pluvieux en toutes régions. La capacité d'accueil a été très importante, au dessus de la moyenne. L'hiver peut être considéré comme d'intensité moyenne, avec deux périodes de gel assez courtes, fin décembre et fin février.

2.4.2. Densités des bécasses en hivernage

La figure 4 traduit les variations régionales des densités. Elle sont, comme par le passé, plus élevées dans le Nord et l'Ouest que dans les autres régions, mais inférieures dans leur ensemble à celles des années antérieures.

L'Indice Cynégétique d'Abondance national est égal à 0,09, soit le plus faible enregistré depuis le début du suivi en 1976. En 1987/88 et 1989/90, au cours desquelles de faibles densités avaient aussi été observées, l'ICA2P avait été égal à 0,11 (figure 5).

En 1992/93 l'indice 0,09 correspond à un tableau moyen annuel de 11 à 12 bécasses, réalisé au cors de 35 sorties de chasse, dont 9 à 10 furent positives (au moins une bécasse prélevée). Le tableau moyen annuel des deux années antérieures était de 15 à 16 bécasses, soit supérieur d'environ un tiers à celui de 1992/93.

Les variations saisonnières des densités sont traduites par la figure 6, établie à partir des échantillons hebdomadaires d'ailes collectées. On admet pour cela que les prélèvements des chasseurs sont proportionnels aux densités.

Cinq périodes peuvent être distinguées:

- en octobre et jusqu'au 23 novembre, les densités sont régulièrement croissantes partout, avec un décalage de deux semaines entre la zone interne où les bécasses sont plus précoces et la zone externe (voir figure 4 pour la distinction des deux zones). Cette phase correspond à la migration postnuptiale, observée chaque année à la même période;
- du 23 novembre au 21 décembre, les densités amorcent un déclin dans les deux zones, mais alors que ce déclin s'accentue en zone interne début décembre, il est estompé en zone externe par une courte période de croissance. Ces variations inverses des densités dans les deux zones peuvent être interprétées comme la conséquence d'un erratisme orienté, interne à la France, des montagnes vers les plaines littorales;
- du 21 décembre au 11 janvier 1993, les densités augmentent partout, une semaine plus tôt en zone interne qu'en zone externe. Cette phase correspond probablement à un mouvement erratique de bécasses stationnées cette fois hors de France, déplacées par l'arrivée du froid, suite à une avancée anticyclonique en provenance du Nord-Est de l'Europe;
- du 11 janvier au 8 février, les densités décroissent partout, plus précocement en zone interne qu'en zone externe,
- à partir du 11 février, les densités restent faibles et stationnaires en zone externe, tandis qu'ne zone interne, elles amorcent une période de croissance. Cet afflux de bécasses en zone interne a été accompagné d'une augmentation sensible de la proportion de mâles (cf. infra, paragraphe: 2.3.3.).

Globalement, le tableau 1 montre que 10% des prélèvements ont été réalisés en octobre, 33% en novembre, 34% en décembre, soit un total de 77% à la date

du 31 décembre. Le reste, se répartit pour 15% en janvier et pour 8% en février.

Cette répartition est tout à fait conforme à ce qui a été observé par la passé.

2.4.3. Composition des tableaux de chasse

2.4.3.1. Proportion des sexes (= sexe ratio)

Parmi les 2281 bécasses sexées pour l'ensemble de la France, 990, soit 43,4% étaient des mâles, et 1291 des femelles (56,6%).

Ces proportions s'inscrivent tout à fait dans la continuité des années antérieures (figures 7 et 8).

L'analyse des variations intra-saisonnières (figure 9) montre que jusqu'au 4 janvier, le sexe ratio a augmenté régulièrement de 36 à 45%. Par la suite, en rapport avec l'afflux de bécasses de début janvier, il a fortement augmenté, les mâles devenant majoritaires fin janvier (18-25 janvier) et mi-février, cette dernière coïncidant avec l'accroissement des densités en zone interne (figure 9).

2.4.3.2. Proportion des classes d'âge (= âge-ratio)

La proportion des jeunes dans les tableaux s'élève cette année à 59,4% (4410 ailes examinées). C'est l'âge-ratio le plus faible observé depuis le début du suivi en 1976. Parmi ces jeunes, 22,5% étaient issus de nichées tardives (mue alaire non terminée) soit, une diminution de 5,5 points (19,6%) par rapport à l'année précédente. Cette diminution est du même ordre de grandeur que celle des jeunes issus de nichées précoces (7,2 points, soit 17,2%).

Le pourcentage de jeunes tardifs aux ailes non usées, qualifiés d'autochtones (nés près du lieu de chasse) est toujours faible (2,6%), mais plus élevé que par le passé).

L'analyse des variations intra-saisonnières (tableau 1 et figure 12) indique que les âges-ratios étaient faibles en début de période, et qu'une tendance à l'augmentation est observée jusqu'à fin novembre, alors que l'inverse se produit régulièrement chaque année depuis 1976.

Il s'agit donc là d'un phénomène rare, qui constitue l'évènement majeur de la migration post-nuptiale de l'automne 1992.

A partir de début décembre, l'évolution est conforme à la normale (tendance à la décroissance).

Des observations similaires ont simultanément été effectuées au Danemark, tant pour la faiblesse de l'âge-ratio moyen, le plus bas (48%) enregistré depuis 24 ans (moyenne annuelle proche de 60%) que pour les variations intra-saisonnières (tableau 1, figure 12).

Discussion - Conclusion

Au travers des variations des indicateurs biologiques décrits précédemment, on observe par rapport aux années antérieures:

- une stabilité du taux d'occupation des aires de croules, de l'espérance de vie des bécasses en hivernage (reprises directes) et du pourcentage de mâles dans les tableaux de chasse,
- une augmentation du pourcentage de jeunes autochtones. Mais il convient de noter qu'il s'agit là d'une variation relative par rapport à celui des jeunes exogènes (ou allochtones) nés sur des aires de reproduction éloignées de leurs régions d'hivernage. Du fait que l'occupation des aires de croule n'a pas beaucoup varié et qu'il en est vraisemblablement de même de la production de jeunes en France, l'augmentation du pourcentage des autochtones peut n'être que la conséquence de la diminution des jeunes tardifs exogènes.
- une diminution historique du pourcentage total des jeunes en novembre, tant dans les tableaux de chasse que dans les échantillons bagués.
- une forte diminution tout aussi importante des densités, principalement fin octobre - début novembre, tant en forêt le jour (chasse) que sur les prairies la nuit (baguage).

Il nous paraît opportun de rappeler ici que l'âge-ratio des tableaux (chiens d'arrêt) est conditionné, d'une part, par les facteurs démographiques, taux de réussite des couvées notamment, mais aussi, d'autre part, par les facteurs de répartition des jeunes par rapport aux adultes (migration différentielle). Parmi eux, le pluviométrie et surtout la mortalité ont une grande influence. Globalement, la mortalité détermine le niveau moyen de l'âge-ratio d'une région d'hivernage (70% pour la France, 65% pour le Danemark, 50% pour les Iles britaniques, etc...) provoquent les variations (plus ou moins dis points en général) autour de ce niveau moyen.

Une faible pluviométrie entraîne une chute de l'âge-ratio dans les remises d'hivernage suite à la diminution de la capacité d'accueil et la désertion par les jeunes de la zone d'hivernage considérée.

Une forte pluviométrie augmente la capacité d'accueil et permet aux jeunes de se nourrir facilement dès leur arrivée, puis de se cantonner.

L'automne 1992 a été très pluvieux; la chute de l'âge ratio ne peut pas être imputé au facteur pluviométrie.

Rien n'indique que la mortalité, celle due à la chasse notamment, a varié, par rapport à la campagne 1991/92, au point de provoquer une chute de l'âge-ratio d'environ 10 points.

En conséquence, la confrontation de l'ensemble de ces mécanismes aux observations de l'automne 92, conduit à penser que la forte chute des densités observée en automne 92/93 provient d'un déficit de jeunes vraisemblablement originaires du Nord-Est de l'Europe (Nord Russie, Pays Baltes, Scandinavie). La sécheresse observée dans ces régions en période de reproduction a probablement provoqué une forte mortalité juvénile soit, un faible taux de survie des jeunes à l'envol.

Aucune autre hypothèse interprétative (migration anticipée ou retardée des jeunes, flux migratoire dévié au Nord ou au Sud), ne peut être retenue à l'échelle nationale.

SEMAINES	DENSITES FRANCE (% du tableau total)	DENSITES ZONE EXTERIEURE (% du tableau total zonal)	DENSITES ZONE INTERIEURE (% du tableau total zonal)	AGE RATIO FRANCE (% Juv)	AGE RATIO FRANCE moyenne 1977/84 par quinzaine	AGE RATIO DANEMARK 1992/93 par quinzaine	SEX RATIO FRANCE (% mâles)
20/09-05/10	0.1	-	0.2	-			
06-12/10	0.3	0.1	0.4	11		40	
13-19/10	1.1	0.5	1.9	45			37
20-26/10	2.8	0.8	5.6	50			36
27/10-02/11	5.4	3.5	7.9	50	77.8		34
03-09/11	6.8	5.3	8.8	52.5		42	36
10-16/11	8.8	8.9	8.6	61.5	72.4		37
17-23/11	9.5	9.5	9.5	65.7		47	41
24-30/11	7.5	6.8	8.5	67.7	71.2		43
01-07/12	7.1	7.5	6.5	63.5		56	39
08-14/12	6.8	8.5	4.8	61.5	67.3		46
15-21/12	5.9	6.8	4.8	60.9		54	47
22-28/12	6.3	6.1	6.6	56.2	68.0		44
29/12-04/01	7.6	8.4	6.8	59.9		58	46
05-11/01	6.2	8.0	4.0	57.5			38
12-18/01	4.0	5.3	2.4	62.9	67.5		60
19-25/01	3.1	3.4	2.7	64.5			52
26/01-01/02	2.1	2.8	1.3	58.7	65.7		47
02-08/02	1.8	2.3	1.2	56.2			47
09-15/02	1.9	1.7	2.2	49.3	61.2		61
16-22/02	2.2	1.9	2.4	54.5			54
23-29/02	2.4	1.9	2.9	41.2	59.2		53

Tableau n°1: Variations intra-saisonnières en France des densités et des caractères qualitatif des tableaux de bécasses (92/93).

SUMMARY

Monitoring woodcock populations (in France) in 1992/1993.

The "Office National de la Chasse" (ONC) has established a network all over France to monitor breeding as well as migrating and wintering woodcock populations.

Breeding population in France

59 of 62 relevant departements have been included in the network to monitor roding males in May and June. Of 961 sites selected at random, 25.5% were occupied by at least one roding male in 1993. This figure was not significantly different from those of previous years (Figures 1 and 2), though local fluctuations have been observed since 1988.

Migrating populations abroad

As in 1991 missions to ring migrating woodcocks have been conducted by ONC in 1992. From 21 September to 19 October 104 birds have been ringed in Russia, and 147 in Denmark, from 26 October to 5 November.
While of those Russian birds 66% were juveniles, this age-class comprised only 38% of the birds caught in Denmark. Never during the 24 years of monitoring age-ratios in Denmark such a low rate of juveniles has been recorded.
A similar action was initiated in Italy, where in collaboration with the Club della Beccaccia 57 woodcocks were ringed in January 1993 near Rome.

Wintering populations in France

In spite of an increase of departments (47) conducting ringing, altogether only 864 woodcocks had been ringed during winter 1992/93. The ringing index (number birds caught per outing) decreased from 7.02 in 1990/91 to 6.55 in 1991/92 and again to 5.54 during this period. The reason for this decline was obviously a lower number of juveniles (66%, against an average of 73%).
180 recoveries were reported; 87 of them had been ringed during the period of 1992/93 (direct recoveries). The number of days between ringing and recovery resembles an index of survival, or hunting pressure respectively. During winter 1992/93 woodcocks carried their rings for 26.4. days on average, as in previous years (Figure 3).
Number of woodcocks bagged per hunter per day provides an index of woodcock density. Local variations and fluctuations over the years are exhibited by figures 4 and 5, respectively. Seasonsal variations of woodcock abundance (Figure 6, Table 1) obviously reflect meteorological situations during winter 1992/93.
43.4% of the woodcocks bagged during this season were males, and 56.6% were females, which is more or less in line with previous years (Figures 7,8,9).
4410 wings examined revealed an overall ratio of 59.4% juveniles in the bag, the lowest value since the beginning of wing sampling in 1976.

HK

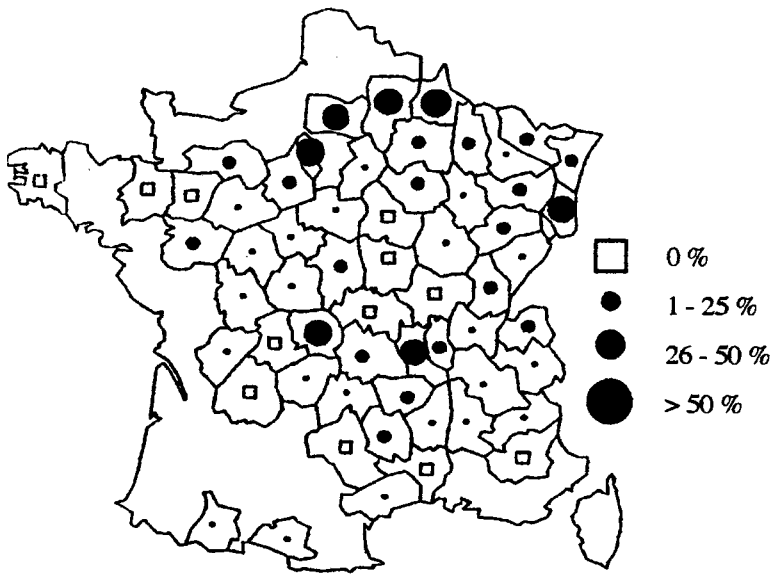

Fig. 1: Localisation des départements qui ont participé au suivi en 1993 et taux d'occupation pour chacun d'eux

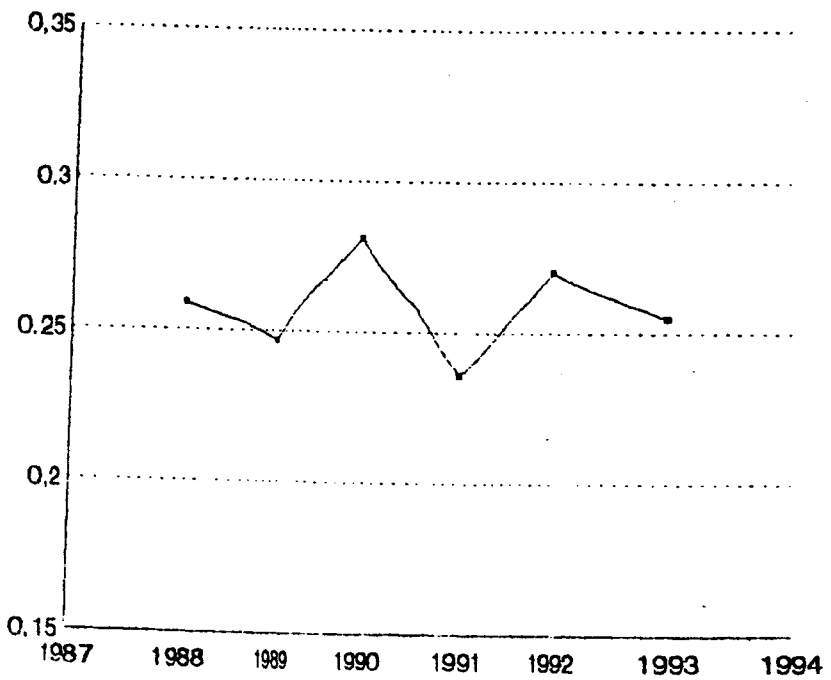

Fig. 2: Variations interannuelles du taux d'occupation global (Tg) du milieu forestier par les bécasses mâles à la croule en par les France (mai-juin).

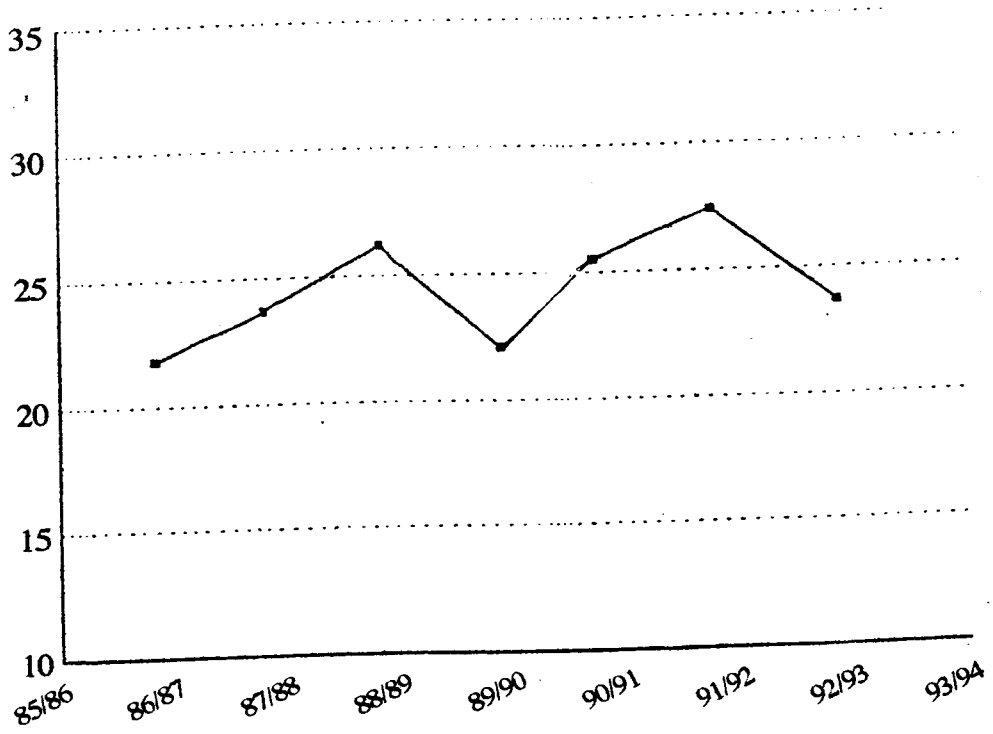

Fig. 3: Variations interannuelles du temps de port de bague (Tpb) des reprises directes (bécasses reprises au cours de l'hivernage où elles ont été baguées à moins de 20 km du lieu de baguage)

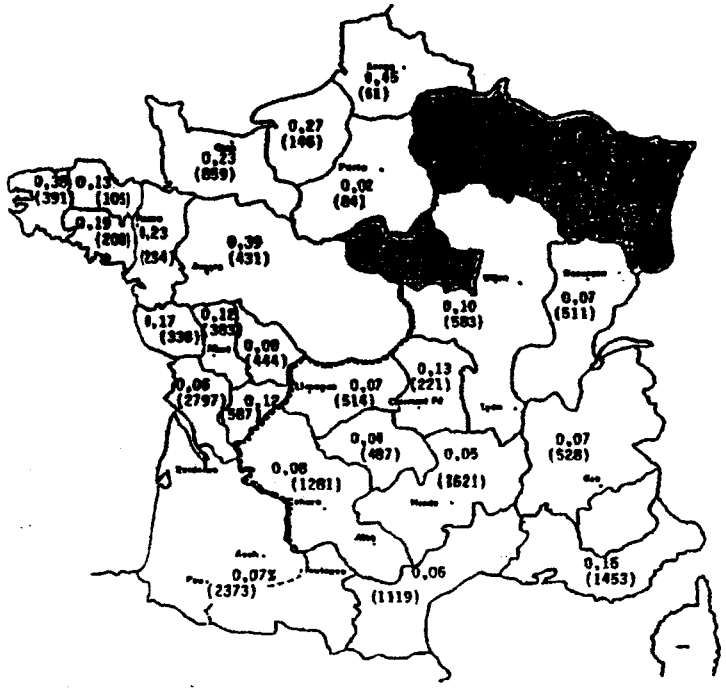

Fig. 4: Densités de bécasses recontrées par les chasseurs, exprimées en Indices Cynégétiques d'Abondance (I.C.A. 2p.) pour la campagne 1992/93 (octobre à février indus) Entre parenthèses, est indiqué le nombre de sorties de chasse retenues pour les calculs. Ces indices sont proportionnels aux nombres de bécasses prélevées par chasseur et par jour de chasse, ainsi qu'au nombre total de bécasses présentes dans la région considérée.
La ligne en pointillé sépare la zone externe de la zone interne.

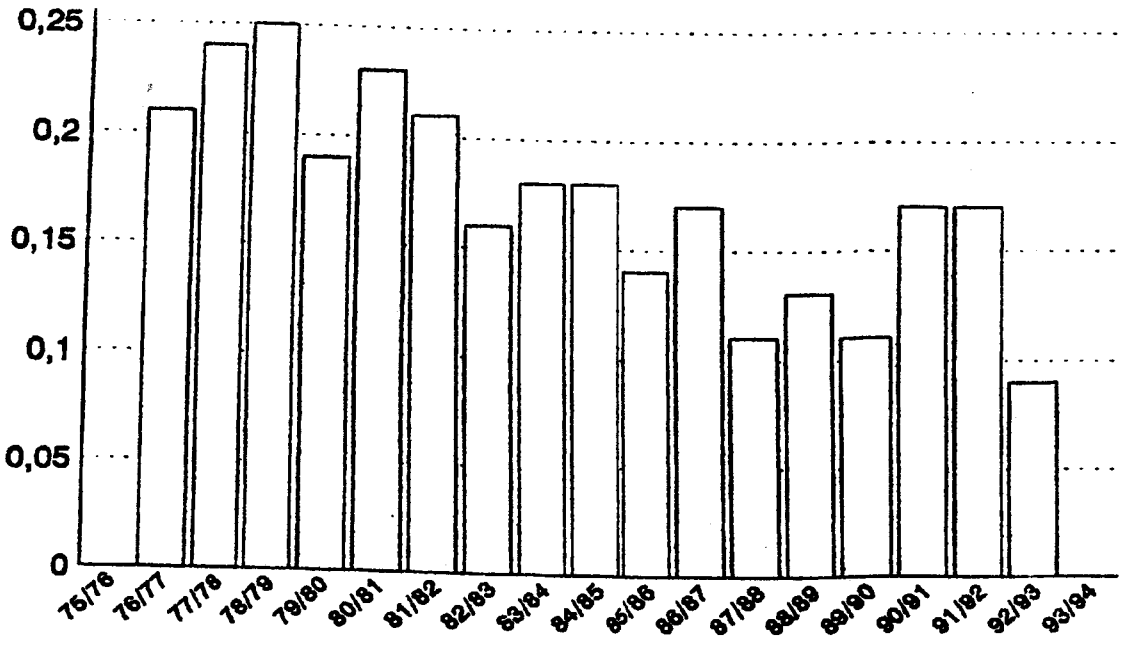

Fig. 5: Variations interannuelles des densités de bécasses rencontrées par les chasseurs exprimées en indices cynégétiques d'abondance (I.C.A.2p) au cours des 17 dernières campagnes de chasse, sur l'ensemble du territoire national.
L'indice 1992-93 correspond à un tableau moyen de 11 à 12 bécasses, prélevées en 35 sorties de chasse d'une demis-journée chacune dont 9 à 10 seulement furent positives (une bécasse au moins prélevée).

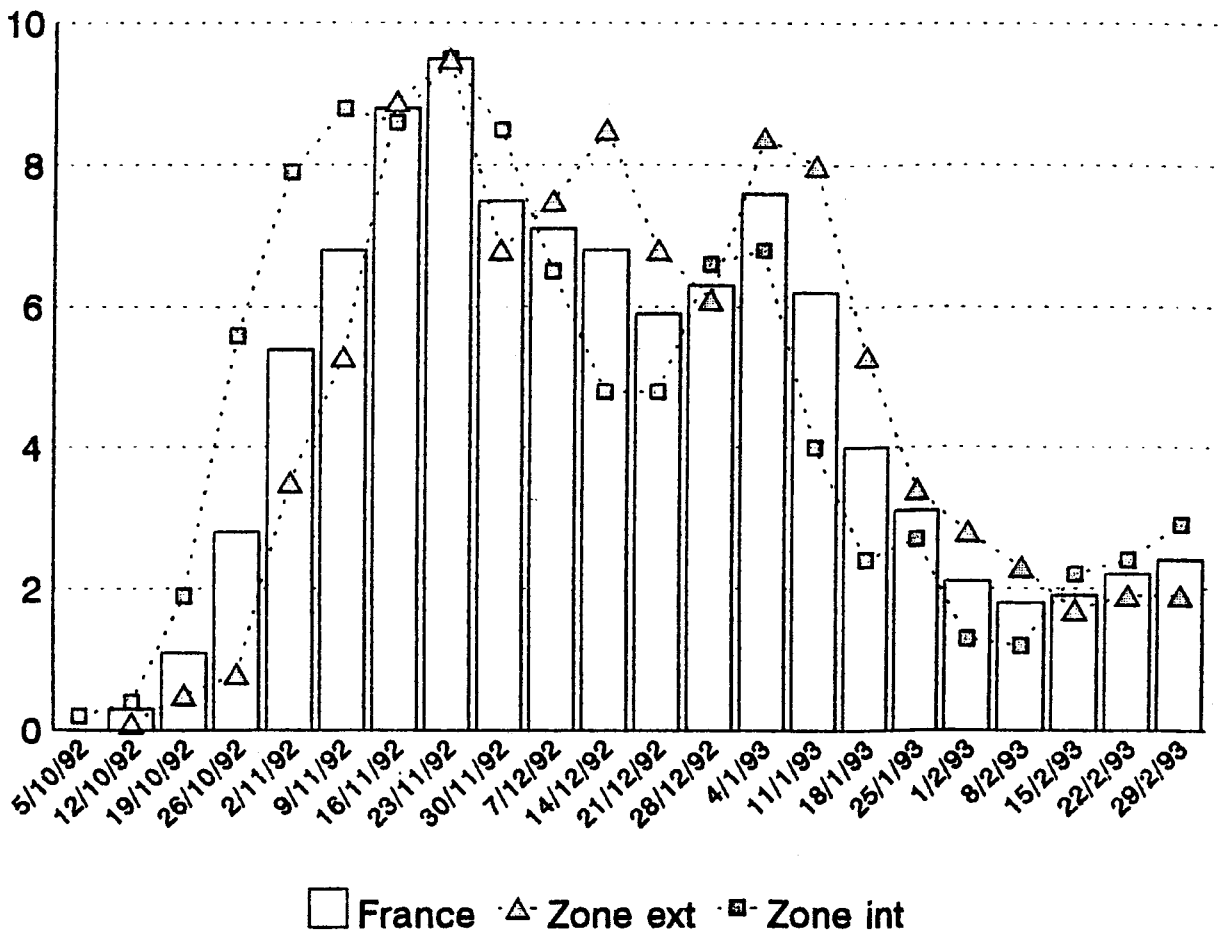

Figure 6 : Variations hebdomadaires des densités de bécasses d'après les tableaux de chasse prélevés en France (92-93) ; voir la figure 4 pour la distinction de la zone externe et de la zone interne.

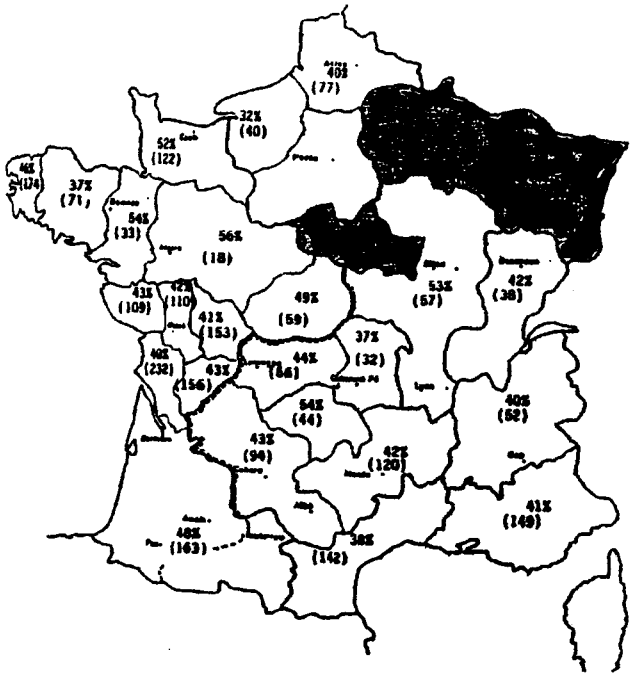

Fig. 7: Variations régionales du sexe-ratio (% de mâles) des tableaux de bécasses 1992/93. Entre parenthèses est indiqué le nombre de bécasses sexées pour chaque région.

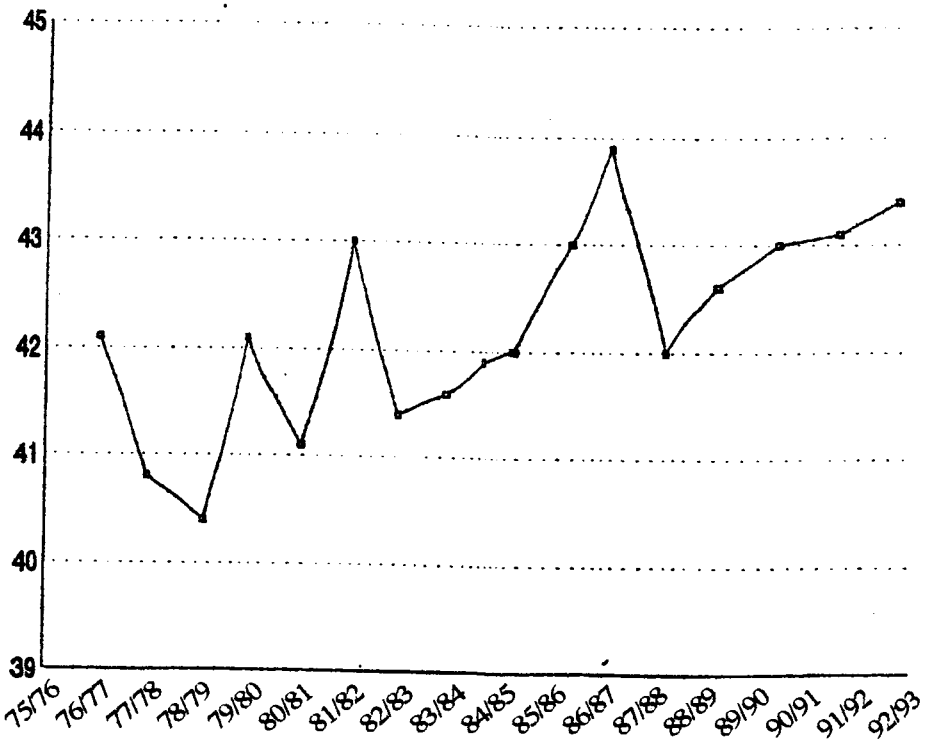

Fig. 8: Variations interannuelles des sexe-ratios des tableaux de bécasses en France. On observe une tendance à un légère augmentation (1,5 point en 10 ans).

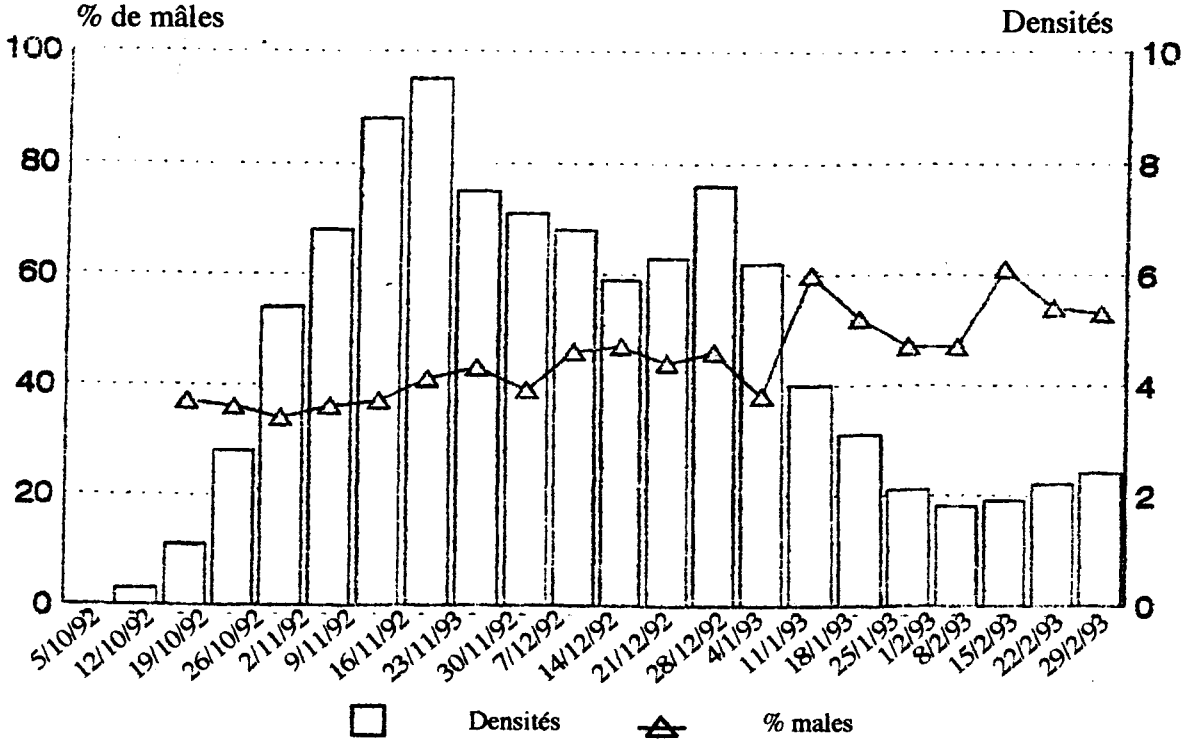

Fig. 9: Variations hebdomadaires des densités et des sexe-ratios (% de mâles) des tableaux de bécasses prélevées en France (92-93).

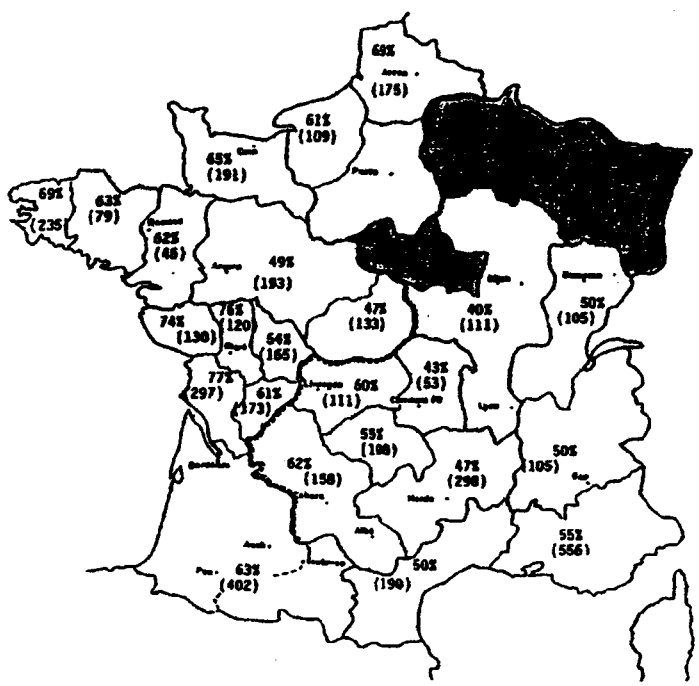

Fig. 10: Variations régionales de l'âge-ratio (% de jeunes) des tableaux de bécasses (1992/93). Entre parenthèses est indiqué le nombre de bécasses examinées pour chaque région. Les âge-ratios régionaux sont en diminution dans toutes les régions par rapport aux années antérieures.

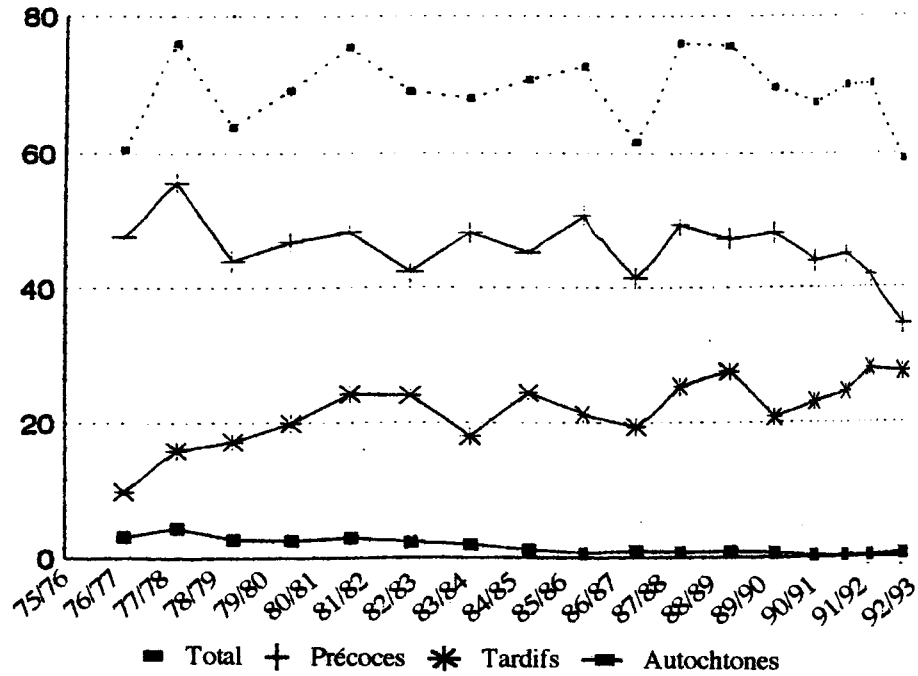

Fig. 11: Variations interannuelles des âge-ratios des tableaux prélevés en France (total des jeunes en distinguant les jeunes précoces, tardifs et autochtones).

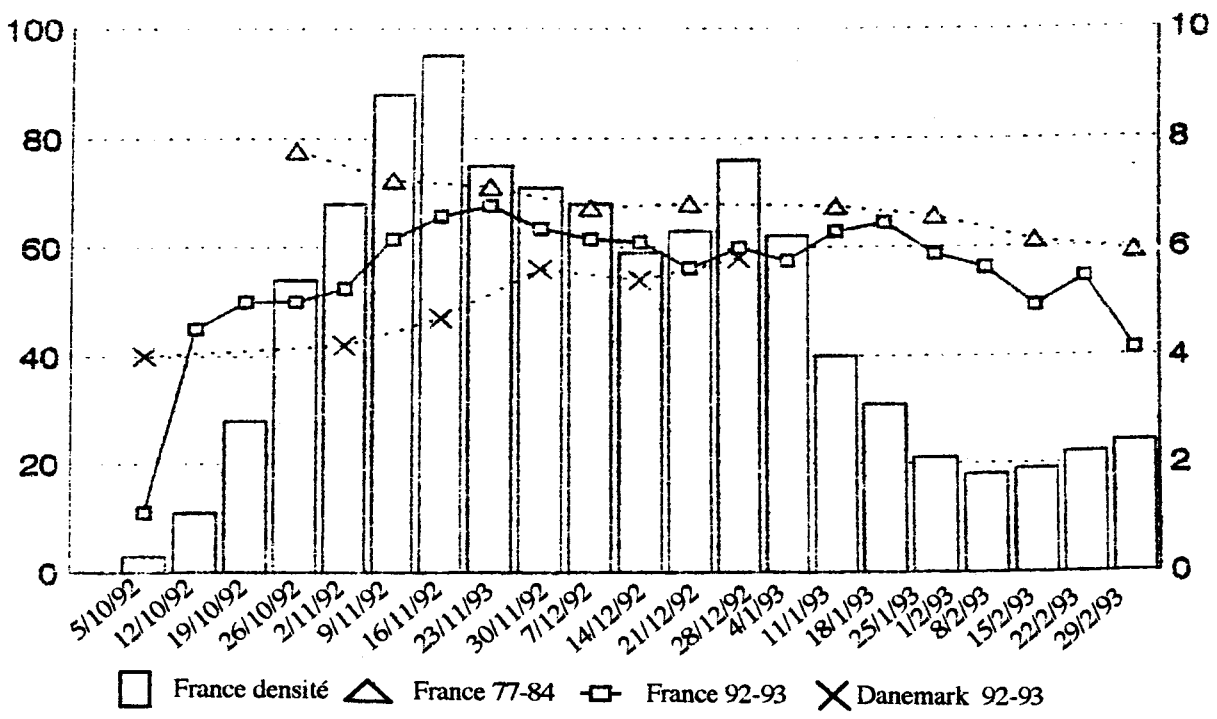

Fig. 12: Variations hebdomadaires des densités et des âge-ratios (% JUV) des tableaux de bécasses prélevées en France (92-93 moyenne des années 77 à 84) et au Danemark (92-93).

THE GAME CONSERVANCY TRUST'S SNIPE PROJECT IN BRITAIN

Andrew Hoodless

Three years ago The Game Conservancy Trust conducted some preliminary work on common snipe *Gallinago gallinago* which involved documenting the decline in the numbers of wintering snipe in the UK and assessing the extent to which landowners currently employ habitat manipulation to benefit snipe. This revealed a steady decline in the annual snipe bag in the UK since the turn of the century, with the most dramatic fall immediately after the second world war when there was an increase in field drainage (Hoodless 1991). The current snipe bag in the UK is estimated to be less than 40% of that during the 1920s.

During 1992 we commissioned the British Trust for Ornithology to conduct an analysis of European common snipe ringing recoveries, with particular emphasis on hunting rates. The report was received in 1993 and clearly showed that the hunting rate on snipe had declined in all European countries, with the possible exception of France, since 1950 (Henderson et al. 1993). Hunting has clearly not been the cause of the decline in snipe numbers and further research should concentrate on habitat use and methods of improving the existing habitat for snipe.

To this end we have already done some groundwork in Cornwall, south-west England and are now set to conduct an intensive study during the next two winters. Initial data suggest that snipe make far greater use of fields at night than previously realised. As with the woodcock *Scolopax rusticola* (Ferrand & Gossman 1988, Hoodless & Coulson, in press), common snipe seem to select particular fields at night, generally ones that are wetter than those used by woodcock. Some of the topics we aim to investigate next winter are as follows:

- The timing and location of feeding and resting by common snipe
- The diversity of habitats used for feeding and the fidelity of individual birds to particular sites.
- The diet of snipe in different habitats, primarily marshes compared with fields.
- The structure and species composition of the vegetation, the soil penetrability and the soil moisture in feeding and resting locations.
- The use of bogs that have been managed in different ways compared with the use of bogs that have been left unmanaged for the last five years.

To achieve these objectives, counts of birds flushed during the day and seen with a spot-lamp at night will be employed. We also intend to radiotrack some snipe, something that has not been done in winter before.

Although we will not be studying the migration of snipe through the study area in any detail, we hope to collaborate with Dr. Michel Devort by supplying him with samples of wings and tails to support his valuable work.

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SNIPE WING SURVEY

SOME NOTES ON THE 1992-1993 SEASON

Michel Devort

Many data concerning the 1992-1993 season indicate that the common snipe's (*Gallinago gallinago*) productivity has been certainly low at least on the northern breeding zones of Russia and Scandinavia during the very dry spring of 1992.

Here are some data we could collect thanks to the wing and tail survey on the continental flyway during the 1992-1993 season:

- Thanks to Ib Clausager we know that the Danish age ratio has been the lowest at least since 1986 with only 68% juveniles (n = 300).
  Moreover, in this country, as in most parts of France and in Portugal, the densities were low.
- The age-ratio of the southern half of France, which proved previously to be correctly linked with the Danish age-ratio, concerning productivity, has been extremely low: 60.6% this year, in contrast to 73.6% in 1989-90, 74.2% in 1990-91 and 71.7% in 1991-92.
- In France the main migration of juveniles and adults takes place during September and October. The age-ratio during this migration varied from a ten days period to another from one to two juveniles per adult instead of three to four the preceeding seasons.
- The age-ratio has been incredibly low in Portugal: 34.9% of juveniles (n= 109). It had been 64% in 1990-91 and 49% in 1991-92. This figure can not only be explained by the very mild and humid winter in Europe which induced many juveniles to stay north of this country.

To all these corresponding age-ratio data, we can add the following observation: The adult females crossing France in September, probably the northernmost breeders and obviously the southernmost migrants exhibited an exceptional rate of suspended moult. This mould coefficient (calculation in Devort 1992) climbed from two (1991-92) to three in 1992-93.

What does this mean?

Unsuitable conditions during the breeding season, for instance excessive drought, lead to losses of eggs, nests and chicks. Therefore many more adult females attempt a replacement brood and have no time to complete their postnuptial moult before starting their migration.

The high level of suspended moult of adult females, as well as the low juvenile rate in the bag indicate an unsuccessful breeding season in the northeast-European breeding range.

It was therefore interesting to find out what happened in Ireland were the spring has been wet enough.

For this purpose we received 210 wings and tails collected in the Republic of Ireland by French sportsmen and 374 gathered in Ulster by B.A.S.C. members thanks to the active assistance of Mickael McMeekin. Both samples have been lumped and provided an Irish ratio of 50% juveniles in 1992/93, compared with previous values of 55.0%, 48.4%, 56.8%, 58.2% and 48.6% from 1987 to 1992.

Figure 1 shows the monthly age-ratios of the last three seasons.

In October and November 1992 the age-ratio was average, even higher than in 1991-1992. But, while during the two preceeding years the age-ratios were constant or increased until December, they dropped in December and January of this season.

This indicates a good local productivity (densities have been normal all over the island as far as we know), but a low number of "foreign" young birds in the end of the season.

As well, the global suspended moult coefficient of adult females in Ireland, did not increase between 1991-1992 and 1992-1993 as in France (Fig. 2). Fig. 3 shows the evolution of this coefficient month after month. Obviously the suspended moult was higher than usual in the adults bagged in October: 2.7 instead of 1.7. Do these "first" adults represent the northernmost birds that started migration first, as is suspected in France?

There are no ringing studies yet to support this hypothesis.

This example stresses the importance of close cooperation between the Wing Survey Group and The Game Conservancy, UK, that is going to analyse all obtainable ringing data on snipe. It certainly will provide more insight into European snipe populations and their migrations.

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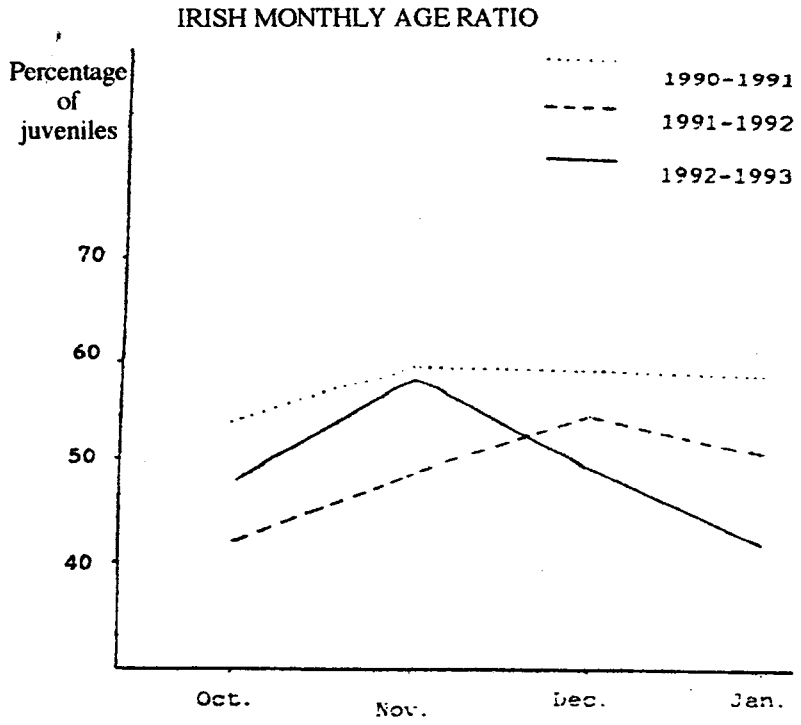

Fig.1: Age-ratios of the Common snipe per month over three consecutive seasons

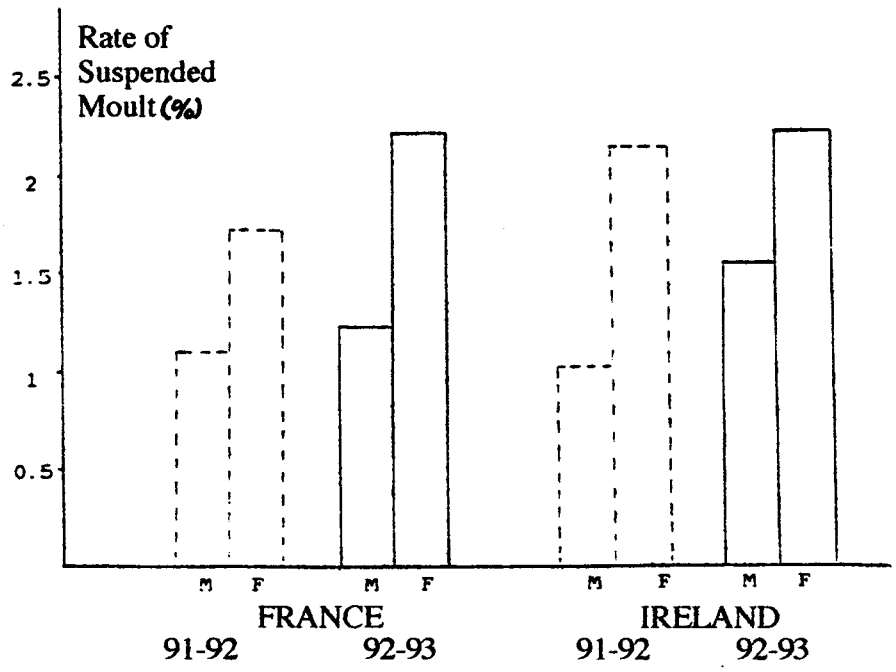

Fig. 2: Rates of suspended moult (males and females) in the Common snipe in France and Ireland.

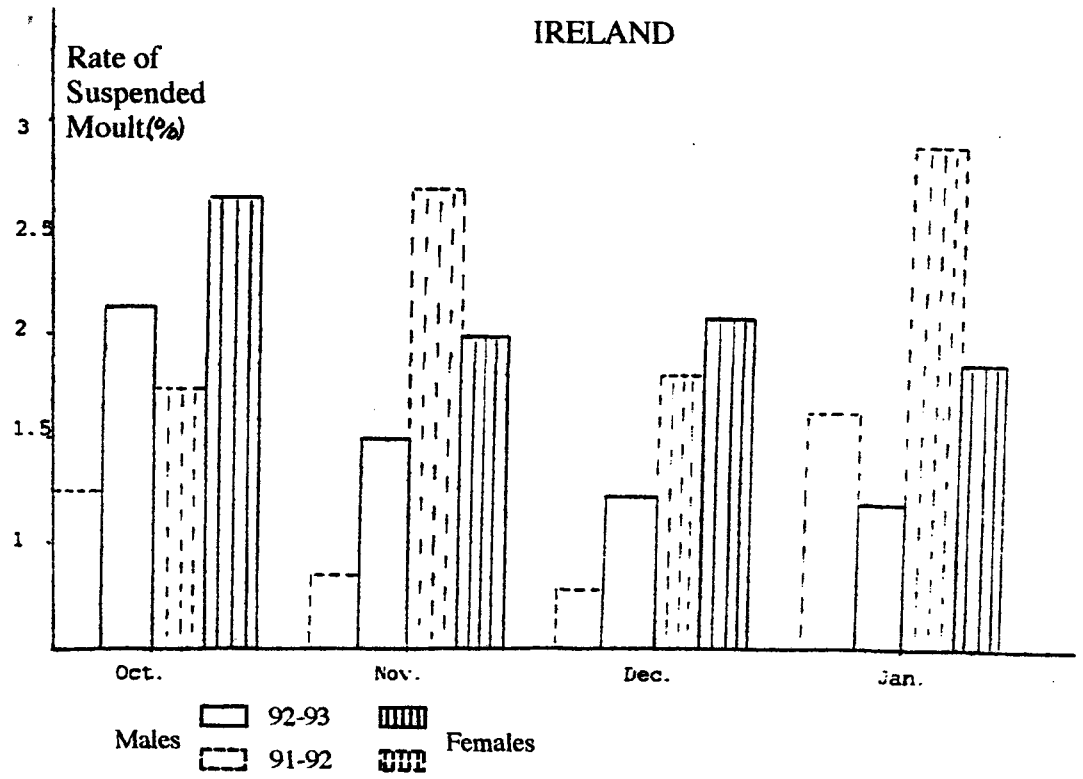

Fig. 3: Monthly variation of rates of suspended moult in Common snipes in Ireland.

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Anonymus (1993): Stabilité ou légère augmentation des populations de bécasses? La Mordorée (Organe du Club National des Becassiers) 188: 118-120.

Analysis of data on woodcock (*Scolopax rusticola*) bagged in Morocco since the 1930ies by J.A. Wadsack and M. Y. Alaoui revealed a rather stable or slightly increasing trend of the number of wintering woodcock over six decades.

In France the breeding population has slightly increased during the last ten years. The number of wintering birds have slightly decreased, but this trend was reversed during the last three years.

H.K.

Clausager, I. (1993): Vingeindsamling fra jagtsaesonen 1992/93i Danmark. Faglig rapport fra DMU, nr. 85. 58 pp (Danish; English summary).

This report on the wing survey from the hunting season 1992/93 provides an overview on ducks, geese, gulls and waders harvested in Denmark. Age-ratio of the 628 wings of Woodcock (*Scolopax rusticola*) was extremely low (0.9, compared with an average of 2.1 juv./ad.) in 1992. Breeding success was also below average (2.1) in the Common snipe (*Gallinago gallinago*), derived from 339 wings. Also 42 wings of the Jack snipe (*Lymnocryptes minimus*) had been sent to the Department of Wildlife Ecology at Kalø.

H.K.

Devort, M. (1993): Contribution a l´etude des migrations et de la biologie des becassines, Saison 1991-92. C.I.C.B. Paris (in French and English), 55 pp.

This publication of the International Club of Snipe hunters presents the author's results of sampling wings of the three European and one eastern-Asian snipe species. One chapter deals with moult and migration of the Great snipe (*Gallinago media*) in Benin (Westafrica).

H.K.

Gossmann, F. & C. Bastat (1993): Rapport Baguage de la Becasse des bois (*Scolopax rusticola*). La Mordorée 185/1: 4-8, 18-20.

Summary of the ringing activities concerning woodcock in France, Russia and the Baltic States, organized by the Office National de la Chasse (ONC). 982 woodcocks wintering in France had been ringed in 1991/92, and 34 in Russia. Three of the latter have been recovered in France after fall migration the same year.

H.K.

Granval, P., Aliaga, R. & P. Soto (1993): Effet des pratiques agricoles sur les lombriciens (*Lumbricidae*), les becassines des marais (*Gallinago gallinago*) et la valeur pastorale du milieu dans les marais de la dives (Calvados). Gibier Faune Sauvage 10: 59-73 (French, English and German summary).

The impact of different agricultural management practices on earthworms and consequently on some of their predators, i.e. Common snipe (*Gallinago gallinago*), was tested on four types of soil and vegetation. Grazing and fertilizer use provided the highest earthworm biomasses.

H.K.

Henderson, I.G., W.J. Peach & S.R. Baillie (1993): The hunting of snipe and woodcock in Europe: a ringing recovery analysis. BTO Research Report No. 115. BTO, Thetford, U.K. 57 pp.

The Game Conservancy Trust, UK, has commissioned the British Trust for Ornithology to analyse ringing and recovery data of Woodcock (*Scolopax rusticola*) and Common snipe (*Gallinago gallinago*) in order to provide information on hunting pressure on these species in Europe. A total of 6.391 snipe recoveries and 1.714 woodcock recoveries were available for analysis.

By whatever reason, data of woodcock ringed in France are missing in this study. Lack of any ringing information east of the Baltic states lead the authors to assume the Fennoscandian populations to comprise 60% of all woodcock and snipe in Europe, and thus ranking highest in importance. In contrast, according to Beintema & Müskens (1983, Proc. 2nd Woodcock & Snipe Workshop, IWRB) 60-70% of the European population of the Common snipe originate from the (former) USSR.

Since both species were hunted in almost all European countries recovery rates are high compared with nongame species. The relation of recovery rates of birds shot and those found dead by other reasons is considered as an indirect measure of hunting pressure. Timing of the recoveries reflected the hunting seasons in European countries.

For both species the ratio of hunted to non-hunted recoveries was greatest in France and lowest in the United Kingdom, Ireland and Fennoscandia. While there is no evidence of a decline in recovery rates of birds found dead, recovery rates of birds shot have declined in most regions since the 1950s and 1960s for both species. This suggest that r e p o r t i n g rates have probably not changed, but hunting pressure has declined (except snipes shot in France). It is therefor unlikely that population dynamics is nowadays much impacted by hunting.

H.K.

Hoodless, A. (1993): Understanding woodcock populations: Results from ring recoveries. The Game Conservancy Review of 1992: 89-91

673 recoveries of woodcock ringed in Britain (8650) and 238 foreign-ringed woodcock recovered in Britain, from 1902-1990, were analysed. Survival rates are lower than for other waders of similar size. Compared with field data on breeding success in British study areas the author concludes that reproductive rates may not in all years be high enough to offset losses, due to high chick mortality from drought and predation.

76% of chicks were recovered within 10 km from the nest site in the following spring, suggesting high faithfulness of British woodcocks to breeding sites. Recoveries from winter revealed they more or less stay in the area all year round. During winter they are accompained by large numbers of woodcocks from the continent, especially in southern and south-western Britain, where half of the recoveries originated from abroad. Considering the very few birds ringed in eastern Europe it can be concluded, that the majority of woodcock killed in these areas are foreign migrants.

H.K.

Kålås, J. A., Bretten, S., Byrkjedal, I. & O. Njåstad (1994): Radiocesium (^{137} Cs) from the Chernobyl reactor in Eurasian woodcock and earthworms in Norway.

To understand the ecological effects of the Chernobyl reactor accident, radiocesium (^{137} Cs) levels in Eurasian woodcock (*Scolopax rusticola*), earthworms (*Lumbricidae*), litter (dead organic materials lying on the ground), humus (beneath litter 2 cm deep), and mineral soil samples (3-6 cm deep) from a heavily effected (20-60 kBq/m^2 [1 Bq = 1 nuclear fission/sec]) area in Norway was investigated. The highest concentrations measured in earthworms (1988 median = 142 Bq/kg) and woodcock (1986 median = 730 Bq/kg) were below levels that should affect animal health. Values above the European Economic Community's limit for human food (600 Bq/kg fresh mass) only were found in woodcock during 1986. Radiocesium concentrations decreased ($p < 0.001$) in earthworms (40%) and woodcock (95%) from 1986 to 1990. There was no reduction in total radiocesium in soil over the same period. The relatively high radiocesium concentrations in woodcock during 1986 and the decreasing radiocesium in woodcock to earthworm during the first years following fallout could have been caused by woodcock ingesting abiotic radiocesium with earthworms. The decrease bioavailability of radiocesium during the first years after fallout rather than by radiocesium disappearing from the ecosystem.

H.K.

Krementz, D.G., Seginak, J. T., Smith, D. R. & G. W. Pendleton (1994): Survival rates of American woodcock wintering along the Atlantic coast.

Because American woodcock (*Scolopax minor*) populations have been declining, ratio transmitters were attached to woodcock at coastal plain sites to determine if survival during winter was involved in the decline. Sites were in Georgia (1982-84, 1989-92), South Carolina (1988-89), and Virginia (1991-92). Survival rates were not different between age or sex classes. Survival rates differed among years. Daily survival rates were lowest (S = 0.987) during 1982-83 in Georgia and highest (S = 0.999) during 1990-91 in Georgia than in the other years and locations combined (S = 0.996). Since there was no hunting all mortality was attributed to raptors and mammals. Compared with other periods of the year, winter was a time of low survival for woodcock. Lower survival rates were possibly a cause of population decline.

H.K.

Longcore, J.R. & G.F. Sepik (eds., 1993): Proceedings of the Eighth American Woodcock Symposium. US Fish and Wildl. Serv. Biol. Rep. 16.

These proceedings update our knowledge on the American woodcock (*Scolopax minor*), since ten years have passed after the Seventh American Woodcock Symposium in 1980. Progress has been made in research on breeding biology, migration, feeding ecology and habitat management. The American Woodcock Management Plan, issued in the late 1980ies, to reverse the declining eastern populations, is critically reviewed. The proceedings also contain some papers and abstracts on the European woodcock (*S. rusticola*) of France, Italy and Hungary.

H.K.

Marcström, V. (1992): Lär känna morkullan. Svenska Jägareförbundet, 47 pp (in Swedish).

A brief monography of the woodcock (*Scolopax rusticola*) with special reference to Sweden. Focal points are the results of the author's own research projects on reproduction and breeding behaviour, as well as on hunting roding birds.

H.K.

Muys, B., Lust, N. & Ph. Granval (1992): Effects of grassland afforestation with different tree species on earthworm communities, litter decomposition and nutrient status. Soil Biol. Biochem. Vol. 24/12: 1459-1466.

The ecological effects of grassland afforestation have been investigated in a comparative study between different tree species on a sandy-loam substrate. After 20 years of forest, the earthworm communities and litter decomposition rates differed considerably, depending on the quality and quantity of the litter fractions produced. Under *Quercus palustris*, earthworm biomass diminished and litter accumulation and soil acidification had begun. The results have practical consequences for the choice of tree species in new forest plantations.

H.K.

Sapetina, I. M. & S. G. Priklonski (1990): *Scolopax rusticola* hunting in the European part of the USSR. In Matthews, G.V.T. (ed.): Managing Waterfowl Populations. Proc. IWRB Symp., Astrakhan 1989. IWRB Spec. Publ. 12, Slimbridge, UK: 115-116.

There have been serious declines in the numbers of woodcock shot, particularly in those areas of mass autumn hunting, rather than where the birds are shot during "roding" (almost exclusively males). 400.000 woodcock are shot within, and 2-4 million outside the (former) USSR.
Especially the latter figure is supposed to be the main reason for the decline. This hypothesis is however contradictory, since bags have only declined in eastern Europe, but not in the west; in spite of an annual bag of 1.5-2 million woodcock in France alone. On the other hand, there are examples of long-term stable populations, where vegetation has changed very little, and of increases after forest management was in line with woodcock habitat requirements.

H.K.

Spanò, S. (1993): Il punto sulla beccaccia. Stato della conoscanze scientifiche al 1993. Firenze, 215 pp (in Italian).

A monography summarizing the most recent stage of knowledge on the woodcock (*Scolopax rusticola*), based on own experience and search of literature, with special reference to Italy. Many illustrations, black and white, as well as colour photos.

H.K.