

INTERNATIONAL WATERFOWL RESEARCH BUREAU

**WOODCOCK & SNIFE
RESEARCH GROUP**

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WOODCOCK AND SNIPE RESEARCH GROUP

Newsletter Number 8

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EDITORIAL

The demand for the "Woodcock & Snipe Research Group" - Newsletter is still increasing and so is the interest in the groups activities, that can be summarized as follows:

Meetings

1. Fordingbridge

This year the Second European Woodcock and Snipe Workshop was held from March 29 till April 1 at Fordingbridge (UK). It was hosted by The Game Conservancy under the auspices of the International Foundation for the Conservation of Game (IGF). 32 specialists directly or indirectly involved in woodcock and snipe research from eight European nations participated in this meeting and discussed the 16 papers and practical demonstrations presented there. They revealed a tremendous progress in our knowledge of both species that had been achieved during the three years since the first meeting held at Kalø (DK) in 1979. The papers given will be published as "Proceedings" and the costs taken over by IGF. We are very grateful for this offer, also to the Game Conservancy people, who had organized the meeting perfectly and to the Conseil International de la Chasse (CIC) for financial support.

2. Edmonton

At the 28th Executive Board Meeting of the International Waterfowl Research Bureau (IWRB) from May 24 to 28 at Edmonton (Canada) I gave a detailed report on the groups activities. In relation to a letter sent to IWRB Headquarters by a WSRG-member I was further asked to make a statement on a subject which had arisen at the Fordingbridge meeting. Participants had been asked to approve a Recommendation to governments and politicians about proper hunting seasons, in the light of available knowledge. There had, however, been no majority for the Recommendation. In my view, the role of research groups was to carry out research, without emotion in either direction and not in political activities. It is important on the

other hand to discover whether hunting traditions such as shooting roding woodcock were harmful to the population or not. In seeking answers to these questions, the Woodcock and Snipe Research Group is in line with what had just been heard from the Hunting Rationalization Research Group. It is also important to discover the effectiveness of banning Woodcock shooting in hard weather.

3. Moscow

Unfortunately Graham Hirons was not able to join the 18th International Ornithological Congress held at Moscow (USSR) from August 17 to 26. Within the frame of a Symposium "Populations of Game Birds" we were asked to report on recent studies and relevant findings on the woodcock. I could however include some of Hirons results presented at Fordingbridge in my paper on woodcock management.

Research

Some long-term projects are undertaken by the group. Kill statistics and ringing results are very important for obtaining some idea of total population size of those secretive birds which could only be counted with difficulty, if at all. There for WSRG cooperates closely with the "Working Group on Game Statistics" within International Union of Game Biologists (IUGB). At Fordingbridge we decided also to go on with wing sampling in spite of the difficulties of evaluation, since wings of the European Woodcock can not be sexed as of the American species. Most countries do their own collection, but the data will be centralized by John Harradine (British Association for Shooting and Conservation, BASC).

Further research plans of the group depend mainly on the possibility of financing them. It had not been easy in the past to keep the important project of G. Hirons running in Britain, though success had been achieved thanks to financial support from one of the state governments in the Federal Republic of Germany and from the German delegation to CIC. At the recent

Workshop researchers had concluded that a five-year programme should enquire into several major questions. One is the impact of changing habitat on Woodcock populations, especially important in the light of different forestry policies recommended by the EEC. Another is population dynamics, several parameters of which were not fully understood; thus information is not available on what part of the population is double-brooded, nor on the level of predation rates in conditions of high predator density. These parameters have to be studied with computer simulation models, which are necessary to discover factors governing population dynamics and compensatory mechanisms. Then the impact of hunting on Woodcock populations is far from being fully understood, especially in wintering areas. Several methods of harvesting Woodcock are practised, and it is important to discover which are the most conservative. We hope that finance can be found for this five-year project. The person carrying out the research needs to be familiar with the Woodcock and with research methods. We hope that Hirons will be able to carry on this work.

Publications

This Newsletter number eight contains only few scientific papers, since most of the researchers presented their studies at Fordingbridge and they will be published within the Proceedings of the Workshop. So I want to thank all contributors for short notes and observations to be published in this Newsletter as well as for publications on Snipe and Woodcock to be reviewed. However, no colleagues have been found yet to review the numerous French (i.e. "La Mordorée") and Italian (i.e. "La Regina del Bosco") journals and articles. This is really pitiful, since some interesting studies are going on especially in France, as we recognized at Fordingbridge. Who is able and willing to improve the contacts to the colleagues working in the main wintering areas of our birds? Language problems should no longer be such a barrier.

Last not least, I want to express my thanks to Dieter Hoffmann

editors, Mainz, (FRG), who again copied this Newsletter and took over the costs.

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Herby Kalchreuter
December 1982

Announcement of the Wader Study Group

Among several other wader species Common Snipes are tagged with permanent leg flags, especially in East Germany (Vogelwarte Hiddensee). Observers seeing birds marked with flags (or other marks) should send the record with as much detail as possible to M.W. Pienkowski, Wader Study Group, Dept. of Zoology, University of Durham, South Road, Durham DH1 3LE, England.

AUSTRIA

Philipp Meran

On the phenology of Woodcock Migration in Eastern Austria 1981

Spring Migration: In spite of the hard and long lasting winter 1980/81 woodcocks arrived as early as March 7 in Burgenland and Steiermark. Warm winds from the South, cloudless nights with moonlights formed the weather all through March (except 18./19.3.). So woodcocks went through quickly and unobtrusive. Peak of migration seemed to occur around March 15 to 20. Most woodcocks had passed before the cold spell of April 5 and 6. Preferred dwelling habitats were very dry, so birds stayed only for one or two days, where they did for one or two weeks in other years.

13 woodcocks shot were all males.

Fall Migration: First migrants were observed end of September in the lowlands. From October 10 on, woodcocks, probably arriving from the north, were seen in many parts of Steiermark. They stayed in spite of the sudden winter weather beginning October 22, but concentrated on the so far snowfree hills, where six to eight birds were seen daily during morning and evening flights at several locations. The birds also persevered the next cold period from November 7 to 21, longer than usual. November 22 brought very warm weather and until December 10 woodcocks were shot occasionally on drive hunts for other small game. Morning and evening flights ceased however around November 25.

From ten woodcocks shot this fall by myself and analyzed four were females and seven were juveniles.

Some Observations on Spring Migration 1982 in lower Austria.

During Mid-March and early April 1982 an even larger number of woodcocks than in 1980 migrated through the eastern parts of Austria, close to the Hungarian border (Batthyainy near Güssing). In the mornings and evenings I have seen at least

50 birds during this period, but know of colleagues that had observed more than 100. From March 27 until April 4 I could make 15 to 20 observations daily over one small area. The hunting bag however was not representative since many hunters followed an advice not to shoot more than one bird per season. Some birds shot in eastern Austria during spring 1982 were analyzed as follows:

date		sex	time shot	weight(gr.)	bill length (cm)
15.3.	Siegenderf	♂	6.36 p.m.	280	6.3
15.3.	"	♀	6.36 p.m.	340	7.1
16.3.	"	♂	5.21 a.m.	330	6.3
16.3.	"	♂	6.32 p.m.	305	6.8
17.3.	"	♂	6.35 p.m.	335	7.4
19.3.	"	♂	5.36 a.m.	310	7.3
19.3.	"	♂	6.30 p.m.	290	6.2
22.3.	"	♂	5.25 a.m.	300	6.4
22.3.	"	♀	5.25 a.m.	350	7.5
24.3.	"	♂	5.19 a.m.	308	7.0
25.3.	"	♂	6.43 p.m.	320	7.1
26.3.	Pottendorf	♂	6.45 p.m.	295	6.6
27.3.	Petronell	♂	6.50 p.m.	315	6.9
28.3.	Siegenderf	♀	4.50 a.m.	312	6.5
28.3.	"	♂	5.10 a.m.	325	6.7
29.3.	"	♂	6.52 p.m.	300	7.3
30.3.	"	♂	5.07 a.m.	340	7.0
2.4.	Güssing	♀	6.35 p.m.	323	6.8
2.4.	"	♂	6.50 p.m.	285	7.0
2.4.	"	♂	7.00 p.m.	332	7.7

One woodcock male shot during a roding flight on April 3 was healing out a broken leg using a bandage of feathers glued with blood. The bandage was very tight around the still swollen leg. A small patch on the lower breast indicated where the feathers originated. The bird was in good condition and is

now kept at the Hunting Museum at Graz. A photograph was published in "Wild und Hund" 1982/8 p. 46.

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BRITAIN and IRELAND

Pál Máriássy

Some observations on Woodcock during the cold spell in January 1982.

Guernsey (Channel Islands): The sudden cold spell around January 9 and 10 caused a considerable influx of woodcocks. They probably had dropped the night before, were still tired and sat very tight. Up to three or more flushed from nearly every bush. A friend of mine got 21 birds in three hours, then stopped shooting. On January 14 to 16 there were still many woodcocks on the island, but they had spread over a larger area.

Ireland: According to local people (near Enniskillen, North Ireland) the cold spell had brought many woodcocks. Then it started raining and after January 18 we could not find any birds at locations which usually holds them, and very few at higher moors and fells. A similar situation we found at two places of Co. Clare on January 25. Nobody could explain this unusual situation.

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A Study of the Breeding Biology of Common Snipe (*Capella gallinago*) on Lowland Water Meadows in Cambridgeshire, England

Rhys Green

This work began in April 1982. The study areas are parts of a large tract of grassland which is flooded in winter by river water and grazed by cattle and sheep in summer. Soils are peat or alluvial clay. Dominant grass species are *Glyceria maxima*, *Phalaris arundinacea*, *Agrostis stolonifera* and *Poa trivialis*. In the first season of fieldwork three areas of 50 - 100 ha were compared. These areas varied in soil type, flooding pattern and grazing. The abundance of invertebrates in soil and in the mud at ditch margins was monitored and soil penetrability measured to assess their accessibility to probing snipe. Counts of drumming snipe and nest searches were made at approximately weekly intervals. Rope-dragging was used to find nests. Repeat drags were used to estimate the efficiency of finding incubated nests as 40% per drag. Chicks were recaptured after leaving the nest using the same method. Faeces were collected from adults and chicks for diet analysis.

Nesting began as soon as winter floodwater receded in mid April with a peak of nest initiation in May and another in June. A temporary flood in late June destroyed nests present then but there was a striking peak in nest initiation in July when the water had receded. The total number of nests started per km² during the whole season was 4 - 5 times the maximum number present at any one time. Using marked birds next year it is hoped to find out whether this is because of repeated nesting by individual pairs or because of successive use of the area by different pairs. Peak nest densities ranged from 19 - 47 nests/km² on the three study areas. These densities were similar in each case to the number of drumming birds counted in April. Drumming declined from April to late June but there was a striking resurgence after the temporary summer flood coinciding with the July peak in nest initiation.

Most feeding by adults and broods took place in fields without surface water. The study area with the highest nest density had no surface water but had a high water table, soft, penetrable soil and a relatively high biomass density of lumbricid worms and dipteran larvae which were the main foods. Chicks were fed by the parents for at least a week after hatching; the brood being divided between male and female at hatching. Chicks hatched early in the season had the highest growth rates and survival and showed the smallest day-to-day movements before fledging. It is hoped to study brood movements and the location of nocturnal/crepuscular feeding places of adults in more detail in 1983 by radiotelemetry.

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István Sterbetz

The status of the Woodcock in Hungary

The Woodcock breeds only sporadically in Hungary. Even decades ago this was not much different (SCHENK 1943). Table 1 presents some ringing data that suggest, Hungarian woodcocks winter in France, Spain and Italy. The first two however point to a post-breeding migration of young woodcocks to the north (as it is known from British birds).

Table 1

Some records of birds ringed as young or recovered in Hungary

1. Diósjenő, 31.5.1932 /Hungary/	Mistved Peppi, 27.7.1932 USSR
2. Diósjenő, 31.5.1932 /Hungary/	Tartu, Dorpat 27.7.1932 USSR
3. Diósjenő, 31.5.1932 /Hungary/	Brescia, 3.11.1932 Italy
4. Brenbergbánya, 24.5.1935 /Hungary/	Soulac-sur Mer, Gironde, 27.11.1935 France
5. Lubanas, 21.4.1937 /Lettland, USSR/	Lesenceistvánd, 4.4.1940 Hungary
6. Diósjenő, 15.5.1958 /Hungary/	Wapnica, 18.4.1962 Poland
7. Diósjenő, 20.5.1958 /Hungary/	Mahon, Menorca, 2.1.1959 Spain
8. Diósjenő, 24.5.1958 /Hungary/	Királyrét, 26.3.1960 Hungary
9. Zagyvaróna, 17.5.1965 /Hungary/	Valle del Angitola, 5.11.1965 Italy
10. Zagyvaróna, 17.5.1965 /Hungary /	Iglesias, Sardinia, 5.12.1965 Italy

Spring migration takes place during 15 to 20 days in March or April, depending on weather conditions, but showing in most

Table 2

Number of killed birds in Hungary

<u>Year</u>	<u>Woodcocks bagged</u>
1936	16989
1937	15255
1938	13266
1939	15530
1940	13326
1941 - 1959	?
1960	698
1961	1064
1962	880
1963	789
1964	957
1965	905
1966	801
1967	584
1968	615
1969	1020
1970	1867
1971	1539
1972	1731
1973	1492
1974	1037
1975	1799
1976	1328
1977	1791
1978	1672
1979	1482
1980	1732
1981	1777

years a peak at the end of March. Culmination usually coincides with warm winds from the Atlantic reaching the Ural mountains (SCHENK 1924, 1931; PATAI 1951; SZABOLCS 1971). Autumn migration extends much longer, lasting from September to December. Food requirements of the woodcock have been searched by sampling intestines (Kiss & Sterbetz 1979, 1981).

Hunting regulations have been altered several times during the last decades. Until 1969 the hunting season lasted from September 1 to April 30, however drive hunts with dogs had been prohibited since 1959. The kill statistics (table 2) shows a clear drop in the number of birds bagged thereafter. Since 1970 only hunting roding woodcocks was allowed during March and April, since 1977 this season was limited to March 1 till April 20. The hunters bag is limited to two woodcocks per evening. Only about a thousand of the 30.000 Hungarian hunters are after woodcock. This practice does not seem to cause hazards to the population.

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MALTA

A.E. Zammit, M.A.

Some Notes on the Woodcock in Malta

Twenty-seven kilometres long and fourteen kilometres across its widest part, Malta is the main island of one of the smallest archipelagos in the world. Gozo, the second largest island, lies only seven kilometres to its north-west. There are approximately 2000 people to the square kilometre, which make the islands among the most densely populated in Europe.

Rainfall occurs mainly during the autumn and early winter, and ranges between 350 and 600 mm. This relatively meagre amount of rainfall normally transforms a parched dry landscape into a beautifully green wet countryside in the weeks of the woodcock migration.

This migration normally starts in the last week of October and carries on until the first week of December. However, there have been years when woodcock were sighted around mid-October; and in 1971 there was a considerable passage on 13th December and the days immediately following.

The appearance of woodcock in Malta seems to have nothing to do with the abundance or lack of rainfall. Woodcock have occurred even in dry autumns; as a matter of fact, in some years when it did not rain more woodcock appeared than in years when it did. However, in years of good rainfall, woodcock are more prone to prolong their visit; whereas when the ground is hard and dry, they do not remain longer than one day, unless in two or three localized spots with water all the year round. Another remarkable fact about the woodcock in Malta: the bird has shown complete preference to certain areas in a particular year whereas other areas with what seem to me the same conditions were barely frequented. The reverse happened the next year, when the areas preferred the previous year were shunned. This

is all the more remarkable when one considers that in most cases such areas are only a few hundred metres away from one another.

The birds arriving at the Maltese archipelago seem to favour light winds from the North, North-East and South-East, although I have notes of the birds occurring in considerable numbers on calm windless days when the earth is dripping all over with dew and there is a frosty chill in the air. This is by no means saying that the birds do not travel with winds from North-West, West and South-West; but their preference is clearly not these latter winds.

The birds that remain to winter in Malta are very few owing to inadequate feeding conditions, and, to a greater extent, the constant human disturbance, since there are hardly any areas on Malta and Gozo where no human being sets foot at some time or the other at day time. Minor movements of birds have been noted in late December and early January, and these may be due to some sudden worsening of the weather in neighbouring countries which force the woodcock on a short migration.

The return migration towards the north usually begins in the first week of March and ends by the first week of April, although earlier and later occurrences have been recorded. Invariably though the spring migration through the Maltese islands is so small that the taking of a woodcock in March or April makes the headlines of shooting news. As a matter of fact there is to my knowledge not a single Maltese hunter who speaks of going woodcock hunting in late winter and early spring. The odd woodcock taken is a purely accidental affair.

Where the woodcock reaching the Maltese islands in autumn come from and the route or routes they take are not exactly known. Nor is it known why the great majority of birds heading back north take a different route from that used in autumn. It is also not known where the few individuals occurring in early spring originate from.

Although there is a high number of hunters in Malta compared

with the size of hunting territory, the number of specialized woodcock hunters is very limited. There are various reasons for this, the main one being that the woodcock, although a regular passage migrant, is not thought a special game-bird in Malta. Its hunting requires a great deal of time, and the amount of effort and energy needed in hunting it here does not produce correspondingly encouraging results. It is not considered worthwhile except by the real woodcock devotees, who consider themselves the happiest men on earth if they bag just one in a whole season! Moreover, the appearance of woodcock coincides with the migration of golden plover and wild ducks, which attract the attention of Maltese hunters much more, according to individual taste.

The number of woodcock hunters in Malta and Gozo would seem to average from 5 to 12 hunters per village or town, which taken collectively would give a reasonably correct figure of more or less 600 enthusiasts. In a good year about 60% of this number will bag from 3 to 5 woodcocks each, 30% will bag 2 or less, and the remaining 10% will bag from 6 to 15 birds. In 1975, for example, which was a very good year, I had already shot 6 woodcock by the 31st October. In a poor year, 1972 being by far the worst, the number of woodcock taken in the Maltese islands most probably do not exceed 300.

The use of dogs for woodcock shooting in Malta is essential. There is no such thing as a driven shoot. Much of the territory favoured by the bird in Malta consists of rough rocky ground, sparsely vegetated and very difficult to walk through. The bird may also be encountered in the valley-beds some of which are overgrown with bamboos, brambles and hawthorn bushes, as well as on slopes interspersed with carob-trees, acacia, pine-trees and other Mediterranean vegetation. Hunting is carried out singly or at most by a pair of hunters with one, two or a maximum of three dogs. Woodcock are hunted also on their morning flight when they have just arrived on Maltese shores or are going back to the place where they spend the day. This type of hunting has its thrills as well, but generally the keen woodcock hunter

looks upon it with ill favour. This reaction is caused mainly because flushing the bird is considered an essential part of woodcock shooting.

I have heard a woodcock's voice only once, although I have been hunting the bird for a considerable number of years. This was on a hill in Gozo: the bird uttered a fairly audible thin "tswick" just before it passed overhead, barely four metres above the ground. The bird is otherwise in Malta very silent. One which had been caught alive by a local trapper, and which I kept in my garden for two weeks, did not utter a single sound.

The birds always arrive at night. There have been very rare exceptions which merely confirm the rule. I have observed that particularly in the early phase of migration the birds tend to concentrate on arrival in areas close to the coast, and if they do not depart they move inland the next day. It is mainly when the weather is rough and rainy that woodcock are found inland after arrival. They are usually flushed as single birds.

Woodcocks shot in Malta weigh 320 grams on average. I have shot also specimens little bigger than the common snipe, and on the other hand very large and heavy birds. The colour of some individuals is more rufous than normal. And I must add that one particular bird which I shot in November had a markedly and unmistakable greenish hue which strongly reminded me of a golden plover.

My findings suggests that woodcocks taken in the Maltese islands form an insignificant fraction of the European population. It is to be hoped that studies of this wonderful game-bird will continue in order to safeguard its future, and so to ensure its continued appearance in the Maltese archipelago.

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NORTH AFRICA

J.A. Wadsack

Some Notes on the Woodcock season 1981/82 in Morocco

The preceeding winter (1980/81) was very dry and so was the first part of this one. While usually the first rains start in October they didn't fall before December 6. Precipitation amounted only 133 mm by end of December at Rabat. Cork-oak habitats have suffered considerably by the drought and even more by overgrazing. Maccia has locally disappeared.

In the Mamora forest and the Zaer region, where I am hunting much less woodcock were observed this year compared with previous seasons. The birds were dwelling here mainly in dense vegetation along river beds, in other regions (i.e. Ksar El Kebir) they stayed on irrigated sugar-cane plantations.

According to kill reports the first woodcocks arrived by November 8 in some areas. At Zaer the first bird was shot November 29. Observations during drive hunts for wild boar may provide at least some idea of the occurrence of wintering woodcocks: on areas of 600 - 1000 ha between one and eight flushed birds were observed by hunters during January 1982.

The weights of some woodcocks shot was lower than in previous years:

date	number shot	weight (gr.)	age (estimated)
2.1.82	3	275	juv.
		285	juv.
		320	ad.
9.1.82	1	320	ad.
16.1.82	1	310	ad.

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NORTH AMERICA

Seventh American Woodcock Symposium

As mentioned in Newsletter No. 6 four members of WSRG had joined this symposium, which was held at The Pennsylvania State University, Pennsylvania, 28 - 30 October 1980. The American colleagues further had arranged a very instructive post-congress excursion for us European, which demonstrated several aspects of waterfowl management in Pennsylvania and ended up with a two days visit of the famous Office of Migratory Bird Management at Laurel, Maryland.

The American Woodcock (*Philohela minor* = *Scolopax minor*) is closely related to her larger European sister. This implies a close cooperation of the researchers working on woodcock on both sides of the Atlantic. To inform WSRG-numbers about the activities of their American colleagues the abstracts of the papers presented at the symposium are given on the following pages. In the meanwhile the symposium papers are published as Wildlife Research Report No. 14 of the U.S. Fish and Wildlife Service titled "Woodcock Ecology and Management" and to order at
U.S. Fish and Wildl. Service
Editorial Office
Aylesworth Hall, CSU
Fort Collins, Colorado 80523.

Assessment of some important factors affecting the singing-ground survey

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Abstract: A brief history of the procedures used to analyze singing-ground survey data is outlined. Some weaknesses associated with the analytical procedures are discussed, and preliminary results of efforts to improve the procedures are presented. The most significant finding to date is that counts

made by new observers need not be omitted when calculating an index of the woodcock population. Also, the distribution of woodcock heard singing with respect to time after sunset, affirms the appropriateness of recommended starting times for counting woodcock. Woodcock count data fit the negative binomial probability distribution.

Regional Population Inferences for the American Woodcock

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Abstract: Woodcock (*Philohela minor*) bandings and recoveries from 1967 to 1977 were analyzed from two large banding reference areas corresponding to existing Eastern and Central harvest units. We examined temporal, age-specific, sex-specific, and geographic variation in both survival and recovery rates, using recently developed stochastic models. Survival rate estimates for females were higher than those for males, and higher for adults than for young. There was no significant difference in recovery rates between young and adults. Recovery rates of Eastern unit birds were higher, and overall survival rates were lower than those of Central unit birds. Survival rate estimates were used with crude production increase were 1.2 to 1.3 times higher in the Central reference area.

Age Determination of American Woodcock Chicks by Bill Length

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Abstract: A formula for age determination for chicks of American Woodcock (*Philohela minor*) has been in general use by investiga-

tors of woodcock breeding biology since 1967. A critical assessment of this technique was made, using additional data from 184 examinations of 127 chicks with known hatching dates. Regression techniques confirm the accuracy of this rule-of-thumb formula (age in days = bill length in millimeters - 14 - 2) for use with chicks until they reach 15 days of age. Additional data from at least two examinations of 191 chicks whose age was not known support this conclusion, as well as furnishing a key (albeit less reliable) to aging chicks from 15 to 35 days of age. Records from a few sexed chicks indicated that the differential growth rates of males and females do not introduce any serious error in age estimation until at least 15 days of age.

A Revised Technique for the Identification of Individual Woodcock

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Abstract: The purpose of this study was to determine the usefulness of color banding for the identification of individual woodcock. Reflective color bands were placed on 302 birds captured at singing grounds and/or summer fields. These marked birds were subsequently shined with an aircraft landing light to ascertain the color and position of the bands. Over 500 observations made during a 2-years period resulted in a successful identification rate of 86%. The mean distance at which birds were identified was 15.2 m (range = 3.05 to 62.5 m). Woodcock showed little to no aberrant behavior as a result of being spotted.

Woodcock Singing-Ground Counts and Breeding Habitat

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Abstract: A comparison of woodcock (*Philohela minor*) singing-ground counts, number of nesting hens, and available habitats in northern Wisconsin indicated a strong relationship. The singing-ground survey provides valuable information on relative breeding densities and population trends and may be the best indicator of breeding habitat trends.

Discriminant Analysis of the Peent Call for Identification of Individual Male American Woodcock

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Abstract: Peent calls of male American woodcock (*Philohela minor*) were recorded on 24 singing sites in Centre County, Pennsylvania. Nine measurements of frequency, duration, and pulse rate were used to characterize the peent call sonagrams. The feasibility of applying discriminant analysis of peent call sonagrams to identify individuals was examined by using the calls of four birds over 8 to 11 display periods. The analysis correctly assigned 82% of the peent calls to the proper bird. The usefulness of sonagraphic analysis of woodcock peent calls for identifying large numbers of individual woodcock is limited by the high degree of overlap among the calls. However, the technique could be used effectively in studying the turnover of males on a small number of singing sites, particularly if the calls were examined in conjunction with behavioral cues.

Changes in Habitat Structure on Woodcock Singing Grounds in
Central Pennsylvania

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Abstract: Fifteen woodcock (*Philohela minor*) singing grounds found in the Bald Eagle Valley in central Pennsylvania and recorded on aerial photographs 20 to 30 years ago were relocated. Fifteen singing grounds now in use were found by walking census routes during 1977. A 0.04-ha plot, centered on the woodcock's primary contact point on the singing ground, was used to delimit a sampling area for describing the habitat on the basis of 40 variables. Mean values for 4 variables were consistent with values for the same variables reported in previous studies. Comparisons of habitat features between new and old singing sites, showed that differences in habitat structure resulted from vegetation on old sites being in a later seral stage. Twenty-one variables, showing significant differences between new and old sites, may be useful for determining whether suitable habitat is approaching an unsuitable stage. All 30 sites were correctly classified as either new or old by using a discriminant function consisting of 6 variables: litter cover, density of small woody stems, density of large shrubs, percent bare ground, distance to water, and stand age. The discriminant function may be useful for classifying habitat as suitable or unsuitable. In all, 25 key variables showed potential use for describing suitable habitat as suitable or unsuitable for woodcock singing grounds.

Abstract: Evidence is given to support low selectivity in choice of nest site by woodcock (*Philohela minor*). Habitat characteristics measured at 30 woodcock nest sites were compared with non-nest control sites in Huntingdon County, central Pennsylvania. Mean nest density per year was 1 per 4.8 ha within the 54 ha study area. Of 14 characteristics measured, higher shrub stem density at nests was the only variable significantly different ($P < 0.05$) from controls by univariate t-test. A multivariate t-test showed no significant difference ($P > 0.05$) between habitat characteristics at nests and controls. A computed discriminant function also indicated little distinction between nests and controls. Spatial distribution of nests for each of the 3 years did not depart significantly ($P > 0.05$) from a random distribution. Although evidence is given for little overall selectivity, greater shrub stem density at nests and associations related in part to "edge" habitat may be important in the location of substantial numbers of woodcock nests. The mean distance from nest site to nearest tree (1.0 ± 1.1 m) and to nearest shrub (22.8 ± 17.8 cm) was significantly less ($P < 0.01$) than for controls. Woodcock production in a variety of habitats will be enhanced through additional research on woodcock nest site selection.

Woodcock Brood Ecology in Maine

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Abstract: Captures of 102 American woodcock (*Philohela minor*) broods, including 338 chicks, from 1977 to 1980 provided data on age-related production by breeding females and on growth and survival of chicks. Although broods of second-year females are smaller and hatch at slightly later dates and the growth of the chicks is slower than that of broods of after-second-year hens, we could detect no difference in survival of the chicks. Yearly

variation in the sex ratio of fledged young was probably the result of selection for or against larger female chicks during different environmental conditions. Brood mates associate with each other throughout the summer, and there are differences in habitat preferences between young (1-5 days old) and older (> 5 days old) broods. Older broods prefer more open, mature forest stands with fewer trees per hectare.

Association Among Woodcock Brood Members After Brood Breakup

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Abstract: Seven broods of American woodcock (*Philohela minor*), including 19 chicks and 5 adult females, were radio-tagged in east central Alabama in spring 1976 and 1978. The broodrearing period ranged from 31 to 38 days (average, about 34 days). The association of brood members following brood breakup was determined for four broods. After brood breakup, chicks were more closely associated with other brood members than with adult females. During the first 2 weeks after breakup, close association (< 50m distance between brood members) occurred primarily in diurnal coverts. After the third week, close association among chicks occurred mostly at night. The final close association among members of two broods occurred during the fifth and sixth weeks after brood breakup (64 and 72 days of age, respectively). This study suggests that most social bonds among members of a woodcock brood are lost by the sixth week following brood breakup.

Changing Forest Land Uses and Opportunities for Woodcock Management in New England and the Maritime Provinces

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Abstract: Land use trends in New England and the Maritime Provinces include continued loss of land to urban uses, decrease in the amount of farmland reverting to forests, greatly intensified forest management of large areas, and expanding public interest and influence in forest land management. Fragmentation of small woodlots has increased the number of urban-oriented owners who seek a variety of amenities from their land; timber management often is not a primary objective. Larger ownerships are commercially oriented and many new intensive silvicultural practices are being applied to meet rising demands for wood. All of these changes will significantly affect the habitat of woodcock (*Philohela minor*).

Wildlife managers are challenged to use existing educational and financial assistance programs and to participate through regulatory processes at the policy level to influence land uses to benefit wildlife.

Relationships between Land Use and Woodcock Habitat in Pennsylvania, with Guidelines for Rangewide Research

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Abstract: An apparent decline in the breeding population of woodcock (*Philohela minor*) in Pennsylvania since 1967 triggered interest in identifying possible factors influencing woodcock numbers in the State. Changing patterns of land use were suspected of playing a major role; consequently, trends in the major categories of land in Pennsylvania were examined to determine possible relations between land use and woodcock populations

and their habitats. Land-use data published by the U.S. Soil Conservation Service and the U.S. Forest Service during the mid-1960's and the late 1970's were compared. Pastureland, sapling-seedling stands, and nonstocked forest areas (potentially useful to woodcock) have declined during this period, whereas sawtimber, as well as urban and built-up areas (generally not suitable to woodcock) have increased since the mid-1960's. These trends in land use are consistent with the downward trend in Pennsylvania's breeding woodcock population during the same time. Based on expected socioeconomic developments, projections of land use in Pennsylvania during the next 10 to 20 years were made. Cropland and pastureland acreages are not expected to change much, whereas forest lands are predicted to decline and urban and built-up lands are expected to increase. In general, the future of woodcock habitat in the State does not appear to be promising. Shortcomings in the existing data base are recognized, and a framework for future research to fill these voids is proposed. The framework consists of an integrated and ordered set of procedures representing a consolidation of earlier research recommendations.

Response of Several Game Species, with Emphasis on Woodcock, to Extensive Habitat Manipulations

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Abstract: The Michigan Department of Natural Resources, in 1971,

began a program of reclaiming the intolerant stage of forest succession to increase the white-tailed deer (*Odocoileus virginianus*) population. This program allowed Wildlife Research to devise a research project to evaluate the effects of large-scale habitat manipulation on animal populations associated with the intolerant stage and on attitudes of the user public. Six experimental areas, totaling 140 km², were clearcut, two each at 25, 50, and 75% of the area. Woodcock (*Philohela minor*) populations were monitored by singing male counts, ruffed grouse (*Bonasa umbellus*) populations by spring drumming male counts, and deer populations by spring deer pellet surveys and summer track counts. Numbers of singing male woodcock increased in proportion to the percentage of area cut; grouse have not responded to the treatment as yet; and deer increased the most on areas cut at 50% and least on areas cut at 75%. A concurrent study of the user public found that hunters agreed with cutting; grouse and woodcock hunters also reported a high proportion of good and very good hunts.

Woodcock Response to Habitat Management in Maine

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Abstract: A study was initiated in 1975 at the Moosehorn National Wildlife Refuge to develop habitat management techniques for woodcock (*Philohela minor*) that could be used by small landowners as well as in commercial forestry operations. Use of selected diurnal covers by adult female and juvenile woodcock increased after strips were clearcut through these covers.

Woodcock use of clearcut strips for feeding was equivalent to that in adjacent uncut areas after only 6 years of growth. Small clearings created by firewood cutters in a 1,200-ha hardwood stand increased singing male activity, but commercial forest operations were necessary to increase singing male use in relation to the rest of the refuge. The age structure of courting males on new clearings favored second year males (65%), but older males (55%) were more common on established singing grounds. Spring burning of commercial quality blueberry fields increased roosting activity during the summer of the burn. Roosting woodcock also preferred clearcuts adjacent to active summer fields in which the slash had not been treated. Management recommendations are also given.

Breeding Woodcock Use of Manipulated Forest-Field Complexes in the Aspen Community Type

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Abstract: We examined 23 aspen (*Populus tremuloides*) community habitat complexes in northern Michigan to determine usage by breeding woodcock (*Philohela minor*) relative to forest-field interspersions and food availability. We located 32 solitary birds and 31 broods during 78 h of daylight searching during the two years. Singing male woodcock used 17 and 20 of the habitat complexes in 1978 and 1979, respectively. Three of the habitat complexes were not used at all during the study. Within habitat complexes, the between-year use by singing males and by solitary birds was much more consistent than use by broods. In 1979, a significant correlation existed between the number of broods using the habitat complexes and the number of singing male woodcock. The most consistently significant relation existed between broods and earthworm abundance. The number of

discrete openings and the abundance of earthworms were weakly correlated with the number of displaying males. Management considerations are discussed.

Use of Longleaf Pine Stands by Woodcock in Southern Alabama
Following Prescribed Burning

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Abstract: During the winters of 1979 and 1980, we compared the abundance of American woodcock (*Philohela minor*) among longleaf pine (*Pinus palustris*) stands in the Conecuh National Forest of south central Alabama. Stands were grouped according to the length of time since their last prescribed burn. Three groups of stands were compared in 1979: those burned during the winter of study, and those burned 1 and 2 years before the study. Six groups of stands were compared in 1980: those burned during the winter of study; those burned 1, 2, 3, and 10 years before the study; and unburned control stands.

Woodcock abundance for both years was found to be significantly higher ($p \leq 0.05$) in stands burned during the winter of study than in stands burned 2 or more years before the study. In 1980 woodcock abundance was also significantly higher ($p \leq 0.05$) in stands burned 1 year before the winter of study than in those burned 2 or more years before the study.

Ground cover density appeared to be the most important variable among the burned longleaf stands. Ground cover was very dense in stands burned 2 or more years before the winter of study ($> 80\%$), whereas in stands burned more recently ground cover was $< 50\%$. Total soil invertebrate abundance did not differ among stands, regardless of time since the last prescribed burns.

Serum Protein and Cholesterol Levels as Indicators of
Reproductive Activity in Female American Woodcock Over-
wintering in Alabama

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Abstract: Seventy female American woodcock (*Philhela minor* Gmelin) were collected throughout Alabama from 10 December 1976 to 24 February 1977. Ovary weight and ovarian follicle diameter, levels of serum cholesterol and total serum protein, and the relation between these two blood variables and follicle development were measured. Means for ovary weight and follicle diameter for February were higher ($P < 0.05$) than during December and January. The mean levels of serum cholesterol and total serum protein for February were higher ($P < 0.05$) than those for December but not for January ($P > 0.05$). The positive correlations between total serum protein and follicle diameter ($r = 0.77$), serum cholesterol and follicle diameter ($r = 0.80$), and total serum protein and serum cholesterol ($r = 0.90$) for February were higher ($P < 0.05$) than the respective correlations ($r = 0.28$, $r = 0.47$, and $r = 0.29$) for the December-January period. The present investigation indicated that some female woodcock were beginning sexual recrudescence while others remained quiescent during the "overwintering" period in Alabama. We suggest that total serum protein and serum cholesterol levels may be used as indices of female woodcock reproductive status, enabling separation of breeding from non-breeding living birds in the field.

Breeding Biology of American Woodcock in East Texas

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Abstract: During the winters of 1978 - 80 we counted courtship flights of male American woodcock (*Philohela minor*). Woodcock were collected from mid-November to early March during the wintering periods of 1977 - 78 and 1978 - 79 and during the 1979 - 80 hunting season. Birds were aged and weighed, and length of the left testis or diameter of the largest ovarian follicle was measured.

Males initiated regular courtship flights about 1 January in all 3 years. Frequency of flights showed a bimodal curve each year. In all cases, the second peak, presumably caused by an influx of northward moving migrants, was higher.

Testes lengths ranged from 3.0 to 12.0 mm, with a significant ($P \leq 0.05$) difference in lengths of adults and subadults. Correlation coefficients of length over time were significant for both age classes, and intercepts were significantly different between age classes. Testes recrudescence began about 7 December in adults and about 21 December in subadults. All males collected after mid-February were sexually mature.

Follicle diameters of adult and subadult females were significantly different ($P \leq 0.05$). Correlations of follicle diameter with time were significant in both age classes; coefficients, intercepts, and slopes were significantly different between age classes. Onset of follicle recrudescence began about 1 January in both age classes. Follicle diameter was significantly correlated to bird weight in adults only, indicating that weight is a factor in breeding readiness of adult hens. The 9 hens collected with follicles in the rapid eruption stage were adults; this suggests that only adult hens nest in East Texas. Nest initiation dates ranged from early February to mid-March.

Woodcock Use of Agricultural Fields in Coastal North Carolina

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Abstract: We studied the use of agricultural fields in North Carolina by American Woodcock (*Philohela minor*) each year from 1975 to 1978 during November through March. Captures of 1,184 woodcock were made during this period. Immature males represented 41% of the banded sample. Adult males, females, and immature females were equally represented. Of the recoveries of banded woodcock, 80% (16 of 20) indicated points of origin in north-eastern North America. Results of density comparisons for roosting birds in four types of agricultural fields indicated a strong preference for untilled soybean fields over fields with untilled and rebudded corn; woodcock were never observed in fields planted with winter wheat. Using nearest-neighbor measurements, we found that woodcock aggregated in small clusters within the banding fields. This behavioral trait may be of importance for woodcock in alarming "neighbors" of the presence of predators.

Effects of Habitat Variables on Foraging of American Woodcock Wintering in East Texas

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Abstract: Between mid-December 1979 and March 1980, we conducted a study in the southern portion of Nacogdoches County, Texas, to characterize preferred feeding sites of American woodcock (*Philohela minor*) in young pine plantations. Habitat use was evaluated by using flush counts along transects and probe hole counts on clipped plots of 1-m radius, and on four 2 x 10-m belt transects radiating from each plot. Multivariate regression showed that vegetation characteristics were more important in influencing foraging activities than were soil characteristics. Significant ($P \leq 0.05$) factors included foliage densities at 2 levels, heights of mid-story woody species, soil moisture, soil pH, and percent of ground cover. Use of the major soil types of the area differed significantly, with both vegetation and soil characteristics influencing site selection.

Aspects of the History of European Woodcock (*Scolopax rusticola*)
Populations

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Abstract: Few historical data on woodcock (*Scolopax rusticola*) populations in some European countries show an extension of the breeding range to the west, corresponding with a population decline in the east during the last century. There is evidence of a population movement from west to east beginning about 50 years ago. The hypotheses that have been proposed, such as variations in hunting pressure or alteration of habitat, do not explain this phenomenon satisfactorily. Some indications suggest that more attention should be paid to climatic changes as a possibly major factor for such large-scale changes in population distributions.

Value of Biometric Data in the Determination of Age and Sex in the Woodcock (*Scolopax rusticola*)

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Abstract: About 800 woodcock (*Scolopax rusticola*), taken during late winter in Ireland, were examined and age, sex, weight, and body measurements recorded. Clausager's method, using wear of primary feathers, was found to be satisfactory for determining the age of birds until mid-February, after which increased wear

on adult feathers caused some difficulty. There is some evidence that a difference in the structure of the barbules of immature feathers may be responsible for the difference in the pattern of wear. Females were heavier than males but there was a complete overlap of ranges and a tendency for weight to increase during the season. Wing and tail lengths were greater and bill and tarsus lengths less in males, but again there was a complete overlap in ranges. Immature birds were smaller and lighter than adults in all cases. Data were compared with previously published works. There was considerable variation between results, depending on the origin of the sample, condition of the material, time of year, and variations in technique. We infer that such variation renders the use of biometric data less than valuable in assessing the sex of woodcock.

Movements, Home Ranges, and Habitat Use of Wintering Woodcock in Ireland

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Abstract: Twelve radio-marked woodcock (*Scolopax rusticola*) were studied from 14 November 1979 to 16 April 1980 near Rathdrum, County Wicklow. The radio-marked woodcock, 6 adults and 6 immatures, were monitored for a total of 708 transmitter days (range 12 to 124 days). Distances moved and flight times in relation to cloud cover at dawn and dusk were recorded. Movements at dawn and dusk were regular between diurnal and nocturnal locations. The preferred diurnal habitat type was young planted coniferous woodland (thicket stage), whereas pasture fields were selected at night. At night, in cultivated fields (predominantly winter barley), woodcock selected unploughed margins and the small marshy areas situated in some of these fields. The composite home

range area for 11 radio-marked woodcock (excluding one bird located 4.15 km outside the study area) was 251 ha, with individual composite home range sizes varying from 14.9 to 74.4 ha. The recurrence of woodcock at the same wintering sites in successive seasons is discussed in relation to the findings of this study.

Comparative Breeding Behavior of European and American Woodcock

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Abstract: The courtship displays and mating systems of *Philohela minor* and *Scolopax rusticola* are compared. Male *Philohela* are apparently promiscuous and display solitarily above small forest openings, areas which they defend against other males and in which mating takes place. Male *Scolopax* are successive polygynists; they defend neither an exclusive nor a specific area to which females are attracted, but instead perform extensive display flights above the forest canopy in search of females. When a receptive female is found the male accompanies her constantly for several days prior to clutch completion, before resuming display flights. The evolution of the polygynous mating systems found in these species, and the ecological factors that may have favored the observed differences are discussed. We believe that more research is needed, particularly on the behavior and significance of subdominant males.

USSR

Jan Hepburn

Woodcock (*Scolopax rusticola*) Ring Recovery Data from the Estonian SSR.

This paper has been prepared as a result of a request by Dr. H. Kalchreuter for information on woodcock *Scolopax rusticola* ring recoveries reported in Estonian literature.

Material presented in the following tables has been compiled following a search of ring recovery reports contained in 'Loodusvaatlusi' 1970, 1971, the ringing reports 'Loodusvaatlusi II' 1972, 1973, 1974, 1975, 1976, 1977, 1978 & 1979, and part one of the report by Kastepold & Kabal (1982) 'Valjaspool Eesti NSV-d Rongastatud Lindude Taasleiud Eesti NSV-s 1956 - 1980'.

Table 1 comprises details of all recoveries of woodcock ringed in Estonia during the period 1970 to 1979 incl. Tables 2, 3 & 4 comprise details of all woodcock ringed in Britain, Denmark & Netherlands, respectively, and recovered in Estonia during the period 1956-1980. No latitude/longitude co-ordinates are supplied for the recovery locations in Estonia, but as districts are defined a map of the districts is presented in Fig 1 below.

Fig. 1: DISTRICTS OF ESTONIAN SSR

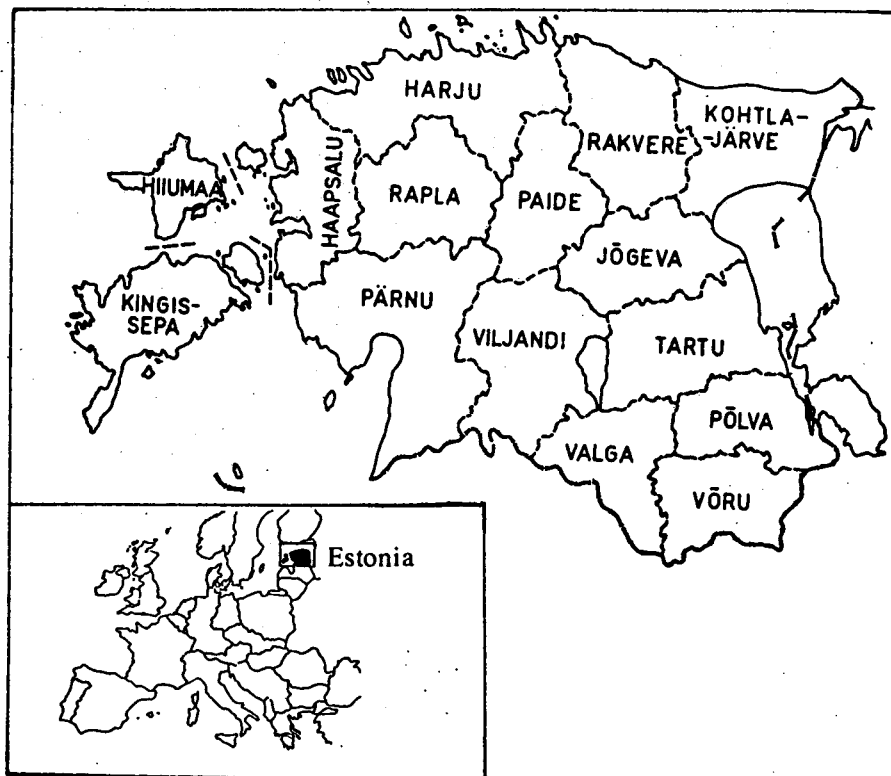


Table 1: Recovery Details for Woodcock *Scolopax rusticola*
 Ringed in Estonia, 1970-1979. (sources: Kastepold
 1974, 1975; Kastepold & Kabal 1980)

Ring Number	Ringling Detail	Recovery Details
U 105	19.10.1971 Adult 58.01N; 24.27E Parnu rajoon, Estonia	12.11.1972 ... 48.14N; 03.33E Villeneuve L'Archevaque 48, Yonne dep; FRANCE Found dead
U 25486	27.06.1973 juvenile 58.34N; 23.10E Muhu, Kingisseppa rajoon, Estonia	26.12.1973 ... (co-ordinates not given) Vibo, Valentia, Catanzaro, Ligure ITALY shot
H 80827	13.07.1976 juvenile (co-ordinates not given) Jaarja, Paruu rajoon, Estonia	11.12.1979 ... 43.23N; 11.13E Sienna, ITALY shot

Table 2: Recovery Details for Woodcock *Scolopax rusticola*
 Ringed in Britain and Recovered in Estonia, 1956-1980
 (source: Kastopold & Kabal 1982.)

Ring Number	Ringing Details	Recovery Details
EF 63561	07.01.1973	18.04.1973
London	Full grown	...
	51.17N; 00.10E	(co-ordinates not given)
	Sevenoaks Kent	Surju, Parnu rajoon
	GREAT BRITAIN	Estonia
		shot

Table 3: Recovery Details for Woodcock *Scolopax rusticola*
 Ringed in Denmark and Recovered in Estonia, 1956-1980
 (source: Kastepold & Kabal 1982)

Ring Number	Ringing Details	Recovery Details
603487	17.10.1974	28.04.1975
Kalø	After 1st year	...
	55.35N; 08.14E	(co-ordinates not given)
	Bordrup,	Morasoo, Tastu rajoon,
	Klitplantage	Estonia
	Jylland, DENMARK	shot
600169	21.10.1977	24.04.1979
Kalø	After 1st year	...
	55.23N; 08.25E	(co-ordinates not given)
	Fano Klitplantage	Kirna, Paide rajoon
	Fano, DENMARK	Estonia
		shot

Table 4: Recovery Details for Woodcock *Scolopax rusticola*
 Ringed in Netherlands and Recovered in Estonia,
 1956-1980. (source: Kastepold & Kabal 1982)

Ring Number	Ringling Details	Recovery Details
265 454 Leiden	01.11.1958 Full grown 52.52N; 05.29E Rijsterbos, Friesland NETHERLANDS	05.06.1960 ... (co-ordinates not given) Halanga k/n, Parnu rajoon, Estonia Found sick/wounded, later dead.
1 034 595 Arnhem	04.11.1968 Full grown 53.06N; 04.48E Korveskooi, De Koog, NETHERLANDS	16.8.1969 ... (co-ordinates not given) Jaamakula, Kohtla-Jarve rajoon, Estonia shot
1 067 789 Arnhem	26.11.1969 Full grown 52.52N; 05.29E Rijsterbos, Friesland, NETHERLANDS	25.04.1970 ... (co-ordinates not given) Jarvakandi, Rapla rajoon, Estonia shot
1 110 237	27.11.1974 Full grown 52.02N; 05.29E Rijsterbos, Friesland, NETHERLANDS	01.05.1977 ... (co-ordinates not given) Salla, Rakvere rajoon, Estonia shot

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A study on migration and breeding biology of the Common Snipe (*Capella gallinago*) in France in comparison with studies of Tuck in Canada. Peak of spring migration occurs in the second half of March in France. Analysis of birds shot revealed that males migrate about two weeks earlier than females. This coincides with the Canadian findings. Common Snipes are obviously not strictly monogamous. Removal experiments revealed a quick and continuous replacement of males and females in good breeding habitat. Towards the end of the breeding season aggressiveness decreased allowing younger birds to establish small territories and breeding, however with much lesser success than the earlier broods.

Dwyer, T.J. & J.V. Dobell (1979): External Determination of Age of Common Snipe. *J. Wildl. Mgmt.* 43: 754-756.

As wing sampling has been extended to *Capella gallinago* in North America age criteria had been worked out. Inveniles can be distinguished from adults by their light terminal bands of secondary coverts with only 2.5% error.

Fraguglione, D. (1982): La Becasse (*Scolopax rusticola*) fossile. Son origine, son expansion géographique au cours des millénaires. *La Mordorée* No. 143: 11-26. (French, no English summary).

An extensive search of literature (no reference list given) on fossil relicts of woodcock in Eurasia and North America with possible explanations for the development of geographical races and subspecies in connection with climatic changes.

Fritzell, E.K., G.A. Swanson & M.I. Meyer (1979): Fall Foods of Migrant Common Snipe in North Dakota. *J. Wildl. Mgmt.* 43: 253 - 257.

Food ecology of fall migrating *Capella gallinago* based on analysis of crop contents of shot birds. Annual differences were mainly correlated with the amount of precipitation according to them birds were feeding at seasonal, semipermanent or irregularly flooded areas. In the latter case earthworms were taken almost exclusively.

Galbraith, H. & R.W. Furness (1981): Censusing breeding waders on Agricultural Land in Scotland. Wader Study Group Bull. 33: 12 - 13.

Census methods to estimate breeding densities of several wader species were developed to detect changes in the size of populations put at risk by changes in land use.

Common Snipe counts were highly variable and mainly affected by weather conditions. The count unit was drumming or chipping birds on the ground or in flight respectively. Using only a single count a fine evening during the incubation period should be chosen to get a good population estimate.

Kalchreuter, H. (1982): The Woodcock (Photostat of the English translation of the German book "Die Waldschnepfe", edited in 1979). 128 p. Verlag Dieter Hoffmann, Mainz 41, F.R.G.

A monography of the European woodcock based on a search of literature. Aspects of the American woodcock are included. Special attention is given to migration, history of European populations, breeding biology, population dynamics (natality, mortality) and the impact of hunting. Suggestions are given for habitat management and further research.

Kiss, J.B. & I. Sterbetz (1979): Data on the feeding of the Woodcock (*Scolopax rusticola*). *Aquila* 85: 107-112 (English with Hungarian summary).

Investigation of stomach contents of woodcocks collected in Hungary (123) and Roumania (113) during March/April,

September to November and December till February. Earthworms were the predominant food in spring, but not in other seasons.

Nigel, N. & J. Clark (1981): Recent Recoveries of Waders ringed in Britain and Ireland. Wader Study Group Bull. 32: 36-40 and 33: 28-32.

List of waders ringed in Britain and Ireland and recovered in 1980/81 at more than 100 km distance or locally 3.000 days after ringing. Others are summarized. This list holds 13 *Scolopax rusticola*, 14 *Capella gallinago* and three *Lymnocryptes minimus*.

Spano, S. (1982): Il Punto Sulla Beccaccia. Editoriale Climpia S.P.A., Firenze, 213 p.(Italian)

This extensive monography covers all aspects of the biology of the woodcock, such as morphology, breeding, migration, habitat, hunting, with special reference to Italy.

Spano, S. (1982): La Nidificazione in Italia. La Regina del Bosco, 12: 7 (Italian, no English summary).

Summary, including map, of possible brood records of *Scolopax rusticola* in Italy. They concentrate in the Northern parts and at higher altitudes (around 800 m above sealevel).

Swift, J. A. (1978/79): The wintering ecology of Common Snipe (*Capella gallinago*) at Sevenoaks. Verh. orn. Ges. Bayern 23: 203-216.

A study on the feeding and dwelling habits in a British study area. At dusk Snipes tend to gather at relatively small roosting places. Winter movements are mainly initiated by temperature, since it influences the depth of earthworms in the soil. Numbers of Snipes have increased since the creation of new habitats.

Zonfrillo, B. (1981): Food of a Jack Snipe. Wader Study Group Bull. 33: 10.

Analysis of stomach contents of a *Lymnocyrtus minimus* killed in January near Glasgow revealed among others snail shells, larvae of Chironomids and other Dipterae. Comparison with the scarce data found in literature.

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