International Waterfowl Research Bureau

WOODCOCK AND SNIPE RESEARCH GROUP

Newsletter Number 7 December 1981

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EDITORIAL

The rapidly increasing demand for the "Woodcock & Snipe Research Group" Newsletter - this one is number seven - reveals the general interest in those mysterious bird species as well as in the work of the people dealing with them. In the following I will try to summarize the activities of this year.

1. Research

- Kill statistics

With regard to species with a very secretive behaviour as woodcock and snipe, reliable data of the numbers killed in connection with ringing data provide at least some ideas of population size and other parameters. Efforts in calculating the bag are now also made in France (Office Nationale de la Chasse) and Britain (WAGBI), while the newly established "Working Group on Game Statistics" of the International Union of Game Biologists may initiate further activities in all European countries. A study on the snipe, prepared in the Netherlands (see page 32) demonstrates the usefulness of these data for population calculations.

- Telemetric studies

Radio-transmitters shed light into some aspects of the woodcok's life history, especially breeding and feeding. In France (C. Fadat) and Britain (G. Hirons) the projects were continued in 1981, the latter by financial aid of the German delegation of CIC and the Ministry of Agriculture, Rheinland-Pfalz, Federal Republic of Germany. The interesting results will be published soon. However,

the British project had to be interrupted for financial reasons. Since the woodcock is a species of general interest in all EEC states, it is hoped to continue this project with the financial aid of the EEC Commission. Monitoring habitat requirements by telemetry is one of the main future research items.

2. Meetings

Several members of the WSRG joined the 27th Annual Board Meeting of IWRB at Debrecen, Hungary, 26 - 30 October 1981, where I presented a brief report on the group's activities. A more detailed paper will be given at the 28th Board Meeting in 1982.

As announced already by a circular letter, the Second Woodcock and Snipe Workshop will be held in Britain in March 1982. For details see page 4.

G. Hirons and myself were invited to present papers on woodcock management in Europe at the 18th International Ornithological Congress at Moscow, August 1982.

3. Publications

First of all I want to thank all contributors for notes and manuscripts to be published in this Newsletter as well as for publications on Snipe and Woodcock to be reviewed. However, since my knowledge of foreign languages as well as my time is limited, I am looking for colleagues to review French (i.e. "La Mordorée") and Italian (i.e. "La Regina del Bosco") journals or articles. Who can help?

Last not least, I want to express my thanks to Dieter Hoffmann editors, Mainz, Federal Republic of Germany, who again printed this Newsletter and took over the costs.

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Herby Kalchreuter
December 1981

2nd Announcement

Second European Woodcock and Snipe Workshop
March 30th, 31st and April 1st, 1982 at
The Game Conservancy, Fordingbridge

As announced by a first circular letter of 21 July, we will meet again, this time in England, hosted by the Game Conservancy and under the auspices of the "Conseil International de la Chasse" (CIC).

Technical sessions will be devoted to various aspects of woodcock and snipe research and management, such as:

Habitat, feeding and breeding ecology, behaviour, winter ecology. Ringing results, migration, population dynamics, hunting. Telemetry, kill statistics, wing collection.

A field trip and time for informal discussions (including aging demonstrations; bring along wings which are difficult to identify!) will also be scheduled.

Although the Workshop will primarily concern the European woodcock and snipe we heartily welcome the American colleagues and relevant papers on their research. Persons wishing to present a paper (in English) should send a title and abstract to

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not later than 28 February. Papers presented will be published as "Proceedings of the Second Woodcock and Snipe Workshop", sponsored by CIC.

Persons intending to participate should directly contact

Charles Coles, The Game Conservancy, Fordingbridge, Hampshire SP6 1EF, England.

A modest registration fee to cover some of the expenses of the Game Conservancy will be required from the participants.

Charles Coles Herby Kalchreuter

Announcement of the Wader Study Group

We have received a report on two woodcocks in Leicestershire, England, carrying orange colour rings. The Wader Study Group currently has no colour marking projects for this species registered. Who has any idea who might have marked them?

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AUSTRIA

Philipp Meran

Some Observations on Spring and Fall Migration 1980

Later than in other years the woodcocks arrived at the provinces "Niederösterreich" and "Burgenland" (Eastern Austria). Real migration was not observed before 27 March 1980, probably due to coldspell and snowfall of the previous days. During April more woodcocks were observed than during the last 40 years, and many stayed till the end of April, since the soil of their habitats was very moist this year.

The peak of fall migration was also late, and not before the first days of November.

An observation of 4 April 1970 concerning roding might be of interest: from a bunch of three birds chasing each other I heard sounds as never before. They resembled the croaking of a female Mallard or the barking of a dog. Two of them shot were both males.

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FINLAND

Eero Perttunen

Selection of Habitat of the Woodcock (Scolopax rusticola) in Joutseno (Finland) in 1980

The considerable variation in woodcock numbers according to habitat types as well as the very short flushing distance makes it rather difficult to count this bird by line transects as performed by Merikallio (1958) in Finland. My observations may encourage others to work out more sophisticated counting methods.

1. Material and Methods

The habitat studies were conducted on the same areas in Joutseno, SE Finland (61°10'N, 28°31'E) as the roding male count was performed (see PERTTUNEN 1980). Three woodcocks flushed close to the roding male count areas are also included in this study. Habitats from which woodcocks have been flushed have been recorded by myself in connection with nest and brood searching and by flushing alighted birds when doing roding observations in the evening. The autumn recordings were made in connection with finding out how long the woodcock will stay in Joutseno. Observations were started on 18 April 1980 and ended on 13 October 1980 on the study island and on 24 October 1980 on the control area. The first snowfall was on 22 October, the second on 24 October. There was 10 cm of snow on the following day and 25 cm on 26 October. Altogether there were 52 observations of flushed woodcocks during 133 hours of walking in the woods.

Habitats were classified as groves (Oxalis-Maianthemum Type = OMaT), damp forests (Oxalis-Myrtillus Type = OMT or Myrtillus Type = MT), dry forests (Vaccinium Type = VT), marshlands, fields, meadows and others. There were no recordings from the last four environments. The height of the canopy was estimated in metres and the height of the under vegetation in centimetres. The density of the trees was expressed by canopy cover from 0 (open) to 10 (fully covered). Flushing distance was estimated in metres.

2. Results and Discussion

First woodcock was flushed on 18 April 1980. Last woodcock was seen on 15 October 1980 on the control area and on 13 October 1980 on the island used for roding male count by shooting. The open season for woodcock in Finland starts on 1 September and is closed on 15 October, so woodcocks could be hunted to the last day of the season in Joutseno during this autumn.
The results of the habitat studies are given in periods of two months in Table 1.

Table 1. Habitats from which woodcocks were flushed in Joutseno in 1980.

P = Scots pine (Pinus sylvestris) dominated
S = Spruce (Picea abies) "
B = Birch (Betula sp.) "
A = Alder (Alnus sp.) "
As = Aspen (Populus tremula) "
R = Rowan (Sorbus aucuparia) "
L = Linden (Tilia cordata) "
BC = Bird-cherry (Prunus padus) "

April (n = 2)

Damp forest 2 observations

-P 2 "

Average height of trees: 18m

" density -"- 5 (range 4-5)

" height of ground cover: 10cm

" flushing distance: 15m (range 10-19m)

May-June (n = 19)

Damp forest	12	Grove	7 observations
-P	2		-
-S	3		1
-B	4		1
-A	1		2
-As	-		1
-R	1		-
-L	1		-
-BC	-		1
-open	-		1

Average height of trees: 11m (4-20m)

" density -"- 4 (0-9)

" height of under vegetation: 21cm (3-60cm)

" flushing distance: 11m (1-35m)

July-August (n = 8)

Damp forest	4	Grove	1	Dry forest	3 observations
-P	2		-		3
-B	2		-		-
-A	-		1		-

Average height of trees: 14m (8-18)

" density -"- 4 (1-8)

" height of under vegetation: 30cm (10-100cm)

" flushing distance: 9m (2-30m)

September-October (n = 23)

Damp forest	16	Grove	5	Dry forest	2 observations
-P	7		-		2
-S	2		-		-
-B	2		-		-
-A	5		4		-
-BC	-		1		-

Average height of trees: 13m (7-18m)

" density -"- 4 (0-8)

" height of under vegetation: 32cm (5-100cm)

" flushing distance: 11m (3-50m)

Adding up damp forests with deciduous trees dominating and groves (deciduous trees dominating in all except one, which has been subtracted) we see that 54% of the woodcocks have been flushed from deciduous woods.

The shortest flushing distance of one metre during May-June was kept by a juvenile bird, which flew slowly and at a low altitude. There were three recordings of the flushing distance of two metres. An incubating bird was flushed from her eggs in two cases and a female, which showed distraction display, was flushed from her brood in one case. An individual, which was flushed at a distance of two metres on 11 July, was presumably moulting its

feathers and therefore it was reluctant to fly. Most birds during September-October were flushed at a distance of less than 10 metres, but there were four recordings ranging 30-50 metres. All recordings are summarized in Table 2.

Table 2. Habitats of woodcock in Joutseno in 1980.

Month	Damp forest (OMT or MT)	Grove (OMaT)	Dry forest (VT)	N
Mar-Apr	2	-	-	2
May-June	12	7	-	19
July-Aug	4	1	3	8
Sept-Oct	16	5	2	23
Total	34	13	5	52
%	65	25	10	100%

Most woodcocks have been flushed from damp forests (OMT or MT), which are the most important habitats for woodcock, since deciduous woods cover only 2% of the area studied.

According to SAARI (1979) deciduous woods comprised 50% of the habitats in Rymättylä, SW Finnish archipelago (60°17'N, 21°56'E), which is 4% less than in this study. It is evident that woodcock favours deciduous woods wherever possible. If deciduous woods are not available, woodcock moves to mixed forests (mostly OMT and MT) and then to coniferous damp forests, which mostly are spruce dominated.

Acknowledgements

I wish to express my sincere thanks to the German delegation of the CIC for financing this and my other woodcock studies.

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Ring Recoveries of Finnish Common Snipes (Gallinago gallinago)

1. Introduction

The common snipe (Gallinago gallinago) is a species which migrates to Finland. A great number of common snipes are breeding in Finland: LAMPIO (1980) estimates the number of the snipes in spring to be 150,000 pairs. The aim of this paper is to clarify the migration pattern and the age structure of those common snipes which visit Finland in summer.

2. Material and Method

This study is based on the ring recoveries returned or reported to the Zoological Museum of Helsinki. First common snipes were ringed in Finland in 1914 and I could get the recovery data up to 23 November 1979. It is regrettable that I was lacking the recoveries of the end of 1979, since shooting goes on till the New Year and even after that in many countries. Thus several rings are returned at the turn of the year and after that. E.g. I found out after I had completed my analysis that a 12.4 years old common snipe had been recovered on 11 November 1979 (SAUROLA 1980), but this fact was not known on 23 November 1979, when the ringing file was put into a computer. The lack of the information up to the end of 1979 may have effected the recovery percentage, the population structure and the mortality.

This material has been studied mainly by the method CLAUSAGER (1974) used when analyzing the ring recoveries of the Scandinavian woodcock. Life tables were constructed according to KREBS (1972).

3. Results

3.1. Recovery figures

5,108 common snipes have been ringed in Finland during 1914-78 (STEN 1974, the file of Zool. Mus.). 351 (6.9%) birds have been recovered by 23 November 1979. If retraps are excluded, the number of recoveries is 309 (6.0%). 266 jack snipes (Lymnocryptes minimus) have been ringed during 1958-78 and 18 (6.8%) (excluding retraps 7 (2.8%)) have been recovered by 23 November 1979.
20 great snipes (Gallinago media) have been ringed during 1938-78 and two (10%) have been recovered by 23 November 1979, one of these exactly from the marking place after nearly three years.

3.2. Migration period, wintering areas and migratory direction

Distribution of the ring recoveries of the common snipe is shown in Table 1.

Table 1. Recoveries of common snipe ringed in Finland. Retraps from Finland during the year are omitted.

Country of recovery	Month VII	VIII	IX	X	XI	XII	I	II	III	IV	V	VI	Σ	%
Finland (excl. Åland)	2	9	7	-	-	-	-	-	-	2	10	1	32[a)]	9.6
Denmark	-	3	7	8	4	2	1	-	-	-	-	-	25	7.5
Norway	-	-	-	1	-	-	1	-	-	-	-	-	2	0.6
USSR	-	2	1	-	-	-	-	-	-	-	-	-	3	0.9
Poland	-	-	-	-	-	-	1	-	-	-	-	-	1	0.3
W Germany	-	-	1	1	1	-	-	-	-	-	-	-	3	0.9
Holland	-	-	3	2	3	-	2	-	-	-	-	-	10	3.0
Belgium and Luxembourg	-	-	1	1	1	-	-	1	-	1	-	-	5	1.5
Great Britain	-	-	-	4	1	7	8	5	-	-	-	1	27[b)]	8.0
Eire	-	-	-	1	1	4	4	1	-	-	-	-	14[c)]	4.2
France	-	3	3	10	30	38	22	9	6	-	-	-	129[d)]	38.6
Switzerland	-	-	-	-	1	-	-	-	-	-	-	-	1	0.3
Spain	-	-	1	1	11	10	6	1	1	-	-	-	32[e)]	9.6
Portugal	-	-	-	-	7	4	5	-	-	-	-	-	19[f)]	5.7
Italy	-	1	-	4	7	3	1	-	2	-	-	-	18	5.4
Greece	-	-	-	-	-	1	-	-	-	-	-	-	1	0.3
Morocco	-	-	-	-	6	2	2	1	1	-	-	-	12	3.6
Total	2	18	24	33	73	71	53	18	10	3	10	2	334	
%	1	6	8	10	22	22	17	6	3	1	3	1		100.0

a) Includes a recovery in 1977 of which only the year is known.
b) -"- of which the letter was dated on 16 January 1973.
c) Includes three recoveries the dates of which are not accurately known.
d) Includes eight recoveries the dates of which are not accurately known.
e) Includes a recovery of which the letter was dated on 2 January 1973.
f) Includes three recoveries the dates of which are not accurately known.

The earliest recoveries abroad have been made in Denmark on 16 August (two birds), in the Kalinin area in the USSR on 20 August, in France on 20 August (two birds) and in Italy on 26 August. Last individuals in the winter quarters have been recovered in Morocco on 15 March, in Spain on 7 March, in Italy on 24 March and six birds in France dating 21-27 March. The last recovery from abroad during spring has been made in Belgium/ Luxembourg on 17 April. The earliest arrivals in Finland have been recovered on 20 April in Central Tavastia and on 25 April in South Karelia. Several birds have been recovered on May, which suggests that migration is well going during that month.

By far the most recoveries have been made in France, which together with the British Isles and Spain serve as the most important winter quarters for Finnish snipes.

The average distance between the place of ringing and recovery (RR-distance) during August-April (the migration and wintering period) is 2,172 km (n = 154) for adults and 2,005 km (n = 33) for juvenile birds. The transitional date between age groups was 1 August. The mean for all age groups (including those not aged) is 2,135 km (range 301-4,253 km) (n = 294). The average direction between the place of ringing and recovery (RR-direction) during August-April is 233° for adults and 226° for juveniles. The mean for all age groups is 225° (range 54-263°), so the main migratory direction of Finnish common snipes is southwesterly. The data of the RR-direction have been grouped in Table 2.

Table 2. RR-direction of common snipes ringed in Finland and recovered abroad during August-April.

RR-direction	No. of recoveries	%
50-100°	2	1
101-150°	1	+
151-190°	1	+
191-200°	5	2
201-210°	17	6
211-220°	65	22
221-230°	131	44
231-240°	44	15
241-250°	25	9
251-260°	2	1
261-270°	1	+
Total	294	100%

The actual wintering period is considered to last from December to February. The average RR-distance for that period is 2,255 km (n = 141). Comparison of the RR-direction and RR-distance is shown in Table 3.

Table 3. Mean RR-distance in relation to RR-direction for common snipes ringed in Finland and recovered abroad during December-February.

RR-direction	No. of recoveries	Mean RR-distance km
171-200°	2	2423
201-210°	4	2391
211-220°	33	2630
221-230°	68	2273
231-240°	17	1872
241-250°	14	1884
251-270°	3	1310
Total	**141**	**2255 km**

Snipes migrating WSW (247.5°) and W (270°) need to cover shorter distances than those migrating SSW (202.5°), since winters are milder in West Europe than they are in the same latitudes in Middle and East Europe. The longest distances have been covered by common snipes which migrate to Morocco. One of them has travelled 4,253 km and another one 4,244 km. The longest distance covered by a jack snipe (Lymnocryptes minimus) is 2,257 km

(to France) and a great snipe (Gallinago media) has migrated 8,816 km as far as to Namibia.

3.3. Migration speed

The migration speed can be seen in Table 4.

Table 4. Migration speed of Finnish common snipes.

Distance km	Time elapsed days	km/day
1070	24	45
1720	26	66
2626	32	82
2423	28	87
751	6	125
1943	11	177

$\bar{x}$ = 83 km/day

There is one example for the migration speed of the jack snipe: one individual has travelled 1,746 km during 24 days, which equals 73 km/day.

3.4. Homing

Four individuals, which were ringed during the breeding season (May-July), were retrapped or found in the marking place during following years. One individual was retrapped 130 km and another was found 160 km from the ringing place. The average time elapsed between the ringing and retrapping or finding in the same year was 19 days (n = 24).

3.5. Population structure and mortality

A life table (Table 5) gives a good concept of the mortality rates and the proportions of different age classes in the population. However, since I have included the recoveries of recent years, mortality rate and proportion of young birds might be overestimated in Table 5.

Table 5. Life table of Finnish common snipes ringed as pulli (57) and as older birds (250). All birds shot and found dead up to 23 November 1979 included.

x = age (living year 1 August - 31 July) and time between capture and recovery respectively (years)

d_x = number of individuals dying during the age interval x to x+1

l = number of survivors at start of age interval x

T_x = individuals multiplied by time units

e_x = mean expectation of life at start of age x

x	d_x	l_x	T_x	e_x	Mortality-%	
1	183	307	437.5	1.43	59.6	
2	51	124	222.0	1.79	41.1	
3	34	73	123.5	1.69	46.6	
4	18	39	67.5	1.73	46.2	
5	9	21	37.5	1.79	42.9	46.9
6	5	12	21.0	1.75	41.7	
7	4	7	11.5	1.64	57.1	
8	-	3	6.5	2.17	0	
9	1	3	3.5	1.17	33.3	
10	2	2	1.0	0.50	100.0	
11	-	0	-	-	-	

n = 307

The oldest Finnish common snipes have been recovered 9 years 2 months 22 days and 9 years 1 month 22 days from the ringing date. The latter was an adult when ringed, so it was in the 11th year when recovered. I could not get the ringing data up to the end of 1979 to my analysis, but SAUROLA (1980) reports a common snipe, which reached the age of 12.4 years.

Shooting was reported to account for 73% of mortality (Table 6). If retraps are excluded 80% of the snipes were recovered as shot.

Table 6. The proportions of the different causes of recovery.

Cause of recovery	n	%
Shot	257	73
Found (no details given)	40	11
Retrapped	29	8
Captured	5	2
Unknown	4	1
Killed by cat	3	1
Only leg with ring found	3	1
Hit wires	2	1
Hit by vehicle	2	
Killed by hawk or eagle	1	1
-"- other bird	1	
-"- unknown animal	1	
Found oily	1	1
" on road or street	1	
For sale in bird shop	1	
Total	351	100%

4. Discussion

4.1. Recovery figures

The Zoological Museum of Denmark has ringed 3,688 common snipes during 1949-75, of which 8.3% have been recovered. The Game Biology Station of Denmark has ringed 660 snipes during 1968-71, of which 6.8% (retraps have been omitted) have been recovered (FOG 1978). The recovery percentage for snipes ringed in Belgium during 1960-69 was 9.5% (n = 3,036) (DHONDT & VAN HECKE 1977). These recovery figures resemble those of this study.

4.2. Wintering areas and migratory direction

According to HILDEN & TIAINEN (1979) the autumn migration of the Finnish common snipes begins after mid-July and it terminates by the end of October. Common snipes arrive in Finland during April and the first half of May.

The Danish common snipes mainly migrate to France, the British Isles and Spain in this order, which countries are favoured by the Finnish snipes, too. The furthest recoveries of the Danish snipes have been made in Morocco and Algeria (FOG 1978).

The Swedish common snipes have been recovered from Denmark and Belgium during August, from France and Portugal during October-January and from the British Isles during November-January. Common snipes from the Baltic countries have been recovered from Italy during the wintering period (TUCK 1972).

About half of the common snipes breeding in Belgium spend their winters in France, about 20% in Spain and Portugal, small numbers

in Great Britain and Ireland as well as in Morocco, and about 19% remain in Belgium (DHONDT & VAN HECKE 1977).

4.3. Migration speed

Waders migrate at a speed of 70-90 km/day. The average migration speed for the ruff (Philomachus pugnax) is 61 km/day (max. 438 km/day) and for the dunlin (Calidris alpina) 87 km/day (max. 480 km/day) (SOLONEN 1979). DHONDT & VAN HECKE (1977) have calculated the average speed of about 80 km/day for two common snipes, which corresponds well with the 83 km/day obtained in this study. The common snipe migrates faster than the ruff, but slower than the dunlin.

4.4. Mortality

BOYD (1962) has calculated the annual mortality of 56.1 ± 4.80% for Scandinavian snipes, 51.4 ± 8.2% for the snipes of Iceland, 48.3 ± 5.65% for the snipes of Great Britain, 58.3 ± 4.59% for the snipes of Belgium, Germany and Holland and 52% for the first year olds of all the countries mentioned above.

The mean annual adult mortality for Danish snipes is 47.1 ± 2.8% (FOG 1978) and 56.7% for Belgian snipes found shot and 52.0% for birds found dead (DHONDT & VAN HECKE 1977). TUCK (1972) gives the mortality rate of 50.2 ± 5.8% for the Wilson's snipe (Gallinago gallinago delicata) in North America.

The mean annual mortality of 46.9% of this study corresponds well with the rate of the Danish snipes, but it is smaller than that calculated for the Belgian snipes.

The oldest common snipe in Europe was ringed in Hungary and found in France 16 years later (TUCK 1972). The oldest individuals ringed in Great Britain and Germany reached an age of 12.3 and 11,5 years respectively (SAUROLA 1980). TUCK (1972) reports a Wilson's snipe in North America, which was in its 13th year when recovered. The maximum age attained by a Finnish common snipe was 12.4 years (SAUROLA 1980).

90% of the Danish common snipes were recovered as shot if retraps are excluded (FOG 1978). In Belgium 82% of the snipes were reported as shot, 6% as dead and 12% were retrapped. Omitting retraps 93% were recovered as shot and 7% were found dead (DHONDT & VAN HECKE 1977). Only 46% of the Wolson's snipes ringed in North America have been recovered as shot. According to TUCK (1972) shooting is not a remarkable cause of death. Fewer common snipes (80% if retraps are excluded) have been recovered as shot in Finland than in Denmark and Belgium, but more than in North America.

Acknowledgements

This study was supported by the German delegation of CIC. Mr. Mr. Pertti Saurola put at my disposal data from the Brid Ringing Office, University of Helsinki. I wish to express my sincere thanks to both mentioned above.

Summary

The ring recoveries of Finnish common snipes were analyzed from the records in the archives of the Bird Ringing Office of the Zoological Museum of the University of Helsinki. A total of 351 (6.9%) Finnish common snipes were recovered by 23 November 1979.

The migratory direction of the Finnish common snipes is 225° (southwesterly) and the most important winter quarters are in France, in the British Isles and in Spain. The average distance between the place of ringing and the wintering areas is 2,255 km. The Finnish common snipes spend their winters in the same areas as the Danish snipes do. The average migration speed is 83 km/day.

The mean annual mortality for all age classes was 46.9%. The maximum age attained by a Finnish common snipe was 9 years 2 months 22 days, but SAUROLA (1980) gives the maximum age of 12.4 years. Excluding retraps 80% of the snipes were recovered as shot.

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Finland

FRANCE

Ch. Fadat, Y. Ferrand, R. Ostermeyer

A Three-Year Study on Breeding Biology of Woodcock in France (summarized from Bulletin Mensuel de l'Office National de la Chasse, No. 34835, 1980).

The preliminary report presented in this publication provides several aspects that are either of general interest or provide ideas to similar research projects.

1. Breeding season and distribution

An evaluation of 160 brood records (from 1919-1979) of several regions allow the following conclusions:

- The breeding season in France lasts from the end of January till August, with a pronounced peak in March (50% of the records), and an indication of a second lower peak in June. All late clutches are thought to be replacements after predation.
- Time differences according to regions or elevation are not obvious, but the peak is about one month earlier in France than in Great Britain and West Germany.
- Yeatman's statement ("Atlas des oiseaux nicheurs de France de 1970 à 1975") of 10,000 breeding females in France is thought to be considerably too low, since recent monitoring in several areas has revealed relatively high densities (i.e. an average of 12 clutches on the 1,500 ha study area of Compiègne.
- Ring recoveries of this study area show a high fidelity to the place of hatching (58 birds ringed, 6 out of 7 recoveries from Compiègne).

2. Roding behaviour by telemetric studies

One male, named "Picardie", equipped with a radio transmitter was observed for two months, two other radio-tagged birds for a shorter period. The behaviour can be summarized as follows:

- Picardie flew every evening he was controlled. The evening flight was interrupted 3.5 times on an average for pauses of about 6 minutes. The first flight was the longest and lasted about 13 minutes, the later ones only about 5 minutes. The overall flying time was about 40 minutes per evening.
- Picardie landed mainly on open spots as clearings, forest roads etc. Another bird landed several times on a spruce tree.
- The regional flight pattern of Picardie varied considerably: on 27 May only the centre of his "home range" was intensively circled, while on 5 and 6 June he made longer "inquiry trips" up to more than one kilometer in several directions. Up to 50 kilometers could have been flown per evening.
- Most observations were made in the "barycentre" of his polygonous roding home range, which was estimated at a maximum size of 360 ha. However, not more than an average of 60 ha was covered per evening.
- It is assumed that the availability of clearings or parts of very scattered forest might be one factor determining the size of the roding home range. Open spots are obviously important to meet females.
- Roding areas can be used by several males.

- The birds stayed on open spots during night, and in wooded areas with moist soil during day, obviously feeding there.
- After roding ceased at the end of June, Picardie still used the same flight routes from diurnal to nocturnal stays.

3. "Pair" flights

The authors describe two types of flights which involve more than one bird: One "peaceful and silent", where one partner may, but must not be a female, the other one more loud and aggressive, with both partners being roding males, probably determining their social hierarchy in the air. Of all pair flights observed in 1979 more than 85% belonged to the latter type.

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NETHERLANDS

Drs. S. Siebenga

Migrating and Breeding Woodcock in the Netherlands

This contribution gives a survey of the number of woodcock breeding birds as well as some data about their migration. Besides, some data resulting from field observations carried out by Ir. F.A.M. Aukes have been worked into it.

According to various reports the woodcock was only breeding here and there in the 19th century, if in all provinces. For example woodcocks have been known to breed in Friesland around 1900. When the ground was broken up in breeding areas the woodcock obviously disappeared as a breeder from southwest Friesland (Gaasterland).

During migration, however, many woodcocks pass over Friesland. The total catch (netting woodcocks) in Gaasterland proves that migration reaches its peak in the second half of October and November. Some data about catching and numbers shot since 1954 give some information about the extent of migration. From this follows that the extent of migration has not decreased. Again the figures on the number shot concerning six different fields in the Netherlands show that the annual numbers of woodcocks fluctuate at a constant level.

The number of breeding woodcocks has increased in the past twenty years, as is shown by counts in the dunes of Noord-Holland, for example, where a considerable increase in the number of breeding birds has been established in various places.

Noord-Holland Dunes Sanctuary: 1946 - 2 breeding woodcocks
1964 - 30 breeding woodcocks
1966 - 60 breeding woodcocks
1977 - 70 breeding woodcocks

Dunes between Den Helder and Schouwen: 1962 - 88 breeding woodcocks
1978 - 282 breeding woodcocks

The entire number of breeding woodcocks in the Netherlands is estimated between 2,000 and 3,000.

Observations (Aukes) have been carried out in a 75 ha area situated in an 1,800 ha sanctuary in the province of Zuid-Holland, which mainly consists of young dunes. The water level is not regulated and may fluctuate by one meter per year. Accordingly the soil is quite wet in spring and autumn. Some 30 per cent of the area is mixed wood. The remainder is young calciferous dunes with a lot of sea buckthorn.

This wood offers shelter from cold seawinds to migrating birds and it is an ideal habitat for breeding woodcock. The first migrants in fall usually show up shortly after the frost in Northern Europe has set in. Observations of over 18 woodcocks sitting on the ground (seen per 15 minutes of walking) are no exception. Most woodcocks will be seen just before twilight.

The severe winter of 1978/79 surprised a lot of woodcocks. They looked for shelter in the leaf-filled drains and ditches of the wood.

Woodcocks that died in the wood (temp. -10°C) had an average weight of 190 ± 1 gram, those that died in a heated greenhouse (temp. +12°C) had an average weight of 180 ± 1 gram.

On 6 December 1978 and 19 January 1980 lice have been found on the heads of two woodcocks. They were found to belong to 4 varieties by Dr. J. Jansen of the Instituut voor Veterinaire en Parasitaire Ziekten. Three could be identified: Rhynonirmus, Cummingseella aurea and Sacmundsomia clayae.

According to our observations, there are two peaks of roding activity with at least 3 months between the culminating points. In this area an increase in breeding (now an average of 1 per 15 ha) has been noted.

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A "Working Group on Common Snipe" was established in the Netherlands to monitor the European Snipe populations under several aspects, including impact of hunting, drainage programmes etc. A paper was issued under the title "Analysis of ringing data from some North and Northwest European countries concerning the Common Snipe" (Dutch with extensive English Summary). This brochure which summarizes the paper of Beintema & Müskens (see Bibliography) is available from:

Ministerie van Landbouw en Visserij,
Postbus 346,
2700 AH Zoetermeer
Netherlands.

NORTH AFRICA

J.A. Wadsack

Some Notes on the Woodcock in Morocco

Morocco is part of the North African wintering area of the woodcock. In some years as in 1980/81 the abundance of woodcock is quite high, especially where accumulating in areas of moist soil after a time of low precipitation. 12 to 15 woodcocks were flushed in areas of 5 to 10 ha.

The first woodcocks arrive within the first days of November, rarely at the end of October, they peak in December and January, and leave their wintering areas in February or March, depending on the weather in northern countries.

Several publications on woodcock state an enormous kill in the winter quarters. This is, however, not true for the Maghreb countries, as I could find out during many years of hunting in Tunisia and Morocco.

In the latter country it is only allowed to hunt with the pointing dog. Drive hunts and shooting birds flying to the feeding ground in the evening is forbidden. So the bag is usually small, and therefore woodcock hunting is not intensively practised by local people. Some are shot by chance when hunting other game birds.

The weight of the woodcocks bagged varied between 250 and 345 g.

J.A. Wadsack

The Woodcock Situation in Tunisia

Tunisia is a passage and wintering area for many migratory birds, such as geese, herons, ducks, woodcocks, lapwings, snipes, starlings, fieldfares, quails and pigeons.

Migration and wintering

Owing to its mild, rainy winters, with precipitation in the north ranging between 300 and 1,500 mm, and owing to its annual temperature of 12°C on an average, the country offers excellent wintering conditions to migratory birds. To date land improvement measures have not been carried out to any significant extent, and from mid-December, the high amount of precipitation leads to a periodical flooding of ample areas.

Vegetation consists of evergreen forests; it is composed of cork oaks, interspersed with durmast oaks and underbrush like strawberry, laurel, pistachio, juniper, brier, climber and liane, as well as of afforested eucalyptus forests with dominating undergrowth of Calycotome spinosa and pine forests.

The forest is followed by maccia, an evergreen 2- to 3-metre-high brushwood, consisting of the above-mentioned species of undergrowth as well as of kermes oaks, sweet citrus, broom, myrtle, rosemary, etc.

The occurrence of woodcocks is confined to the hill region of the coastal area and to the coast itself. They are mainly found in those areas of the Mogods and Kroumerie which have the heaviest

rainfall, i.e. between 700 and 1,500 mm per year. More than 90 per cent of this amount falls from September to April. These areas start approximately 30 km from Bizerte, extending in the direction of Tabarka, stretching via Sedjenane, Nefza and Tabarka to Ain Draham, and end south of Ain Draham where the mountains gradually change into the plain of the upper Mejerda valley.

Smaller numbers of woodcocks are found in the coastal area of Bizerte in the direction of Sedjenane (ca. 30 km) and of Bizerte - Tunis as well as in the hill country of Cap Bon, predominantly in the northern part. In the grain-growing zone stretching from Bizerte to Beja, where precipitation amounts to 600 mm p.a. at a maximum, the woodcock was found less frequently.

Hardly any occurrence of woodcocks was reported both from the mountainous area south of Tunis and from central Tunisia.

Over a nine-year period of observation in the area of Sedjenane, the first woodcocks were seen to arrive regularly at the end of October/beginning of November. For three years, I shot the first woodcock between the 4th and the 6th of November. The year 1974 formed an exception, since the woodcocks arrived a fortnight later. Woodcock migration terminated round mid-December. The exact point of time is difficult to determine, since, until early December, a sufficient quantity of water is available in wet places only and since woodcocks tend to concentrate there, i.e. they choose them both as nocturnal sites and as feeding places. From mid-December woodcocks fly on all flight routes I know of in the area of Sedjenane and are also found on the nocturnal sites I am familiar with.

From 10 March the woodcocks can be expected to start their spring migration, which means that they may disappear from one day to the next.

Sites preferred by woodcocks consist of humose, deep, moist sands with dense brushwood and small clearances. Such places are not only found in the cork oak forests still existing but also in the eucalyptus forests with Calycotome spinosa as main undergrowth as well as in valleys with low shrubs. In that area I once had the opportunity to watch five woodcocks fly off from a wet place of 20 m^2. It seems that the woodcock is mainly dependent on the soil and its condition and that, at least in winter, vegetation plays a less important role.

Woodcocks fly silent in Tunisia. During the evening flight in autumn from roosting to feeding places, E. Schülke once counted 16 woodcocks; my own counts yielded 13 and 11 each. This, however, is very scarce, and groups of 3 to 6 flying woodcocks are seen more frequently. In most cases, the woodcock flies solitarily; however, I observed two woodcocks flying together four to seven times per winter. The afore-mentioned figures are, however, incorrect, since Mr. Schülke and I often stood by the flight routes which, on the preceding evening, had been watched by Tunisians who had given us the number of flying woodcocks. The woodcocks deviated laterally from the main flight route by 70 m at a maximum, particularly at night and depending on weather conditions, whereas variations in height might have ranged between 40 and 50 m.

Flight routes may lie close together. In some places woodcocks cover long distances. As a rule they prefer valleys, either because of the vegetation or because of their soil conditions. Woodcocks show a relatively high fidelity to their flight routes. They may, however, alter them partly as a result of severe disturbances (shooting) for some days or even for ever. If woodcocks do not return to their flight routes, the question arises whether they might have been hit and died. I observed that woodcocks always approach certain trees and bushes on the same flight route exactly within one metre; if they were shot at they stopped flying for some days and then suddenly reappeared.

In very stormy and rainy weather the woodcock does not always fly.

Another reason for altering the flight route might lie in disturbances on their nocturnal sites.

If woodcocks are flushed by day they rarely fly far, some hundred metres at the most.

Hunting

The hunting season normally starts in early October/November and ends in mid-March. There is no restriction to certain methods of hunting. Since 1973/74 woodcock hunting has been prohibited for tourists.

In most cases, woodcocks are hunted on their evening flight to the feeding places. This type of hunting is, however, predominantly practised by resident foreigners. Tunisians rarely hunt

woodcocks on their evening flight, since the expenditure on cartridges exceeds the value of the meat. Good sportsmen must be expected to use at least 5 to 7 cartridges per woodcock on an average. Hunting woodcocks on their evening feeding flight is, in some respect, the easiest of all types of hunting, as one must only know the flight routes. The local people have, of course, the best knowledge of flying woodcocks, which they sell to interested, non-resident hunters, for a - mostly small - charge.

Woodcocks nearly always fly downstream and from the beginning of dusk until shortly before darkness or dawn, i.e. in the evening and in the morning for about 15 to 20 minutes, depending on weather conditions (density of cloudness, moonlight, etc.). The shooting of woodcocks is easier in the morning, since dawn is and still becomes lighter from one minute to the next; furthermore, they are fully fed and mostly fly upstream, i.e. somewhat more slowly. Frequently they take different routes to arrive in the evening and in the morning.

Drive hunts on woodcocks have taken place in Tunisia for quite some time, but to a limited extent only. They require a very precise knowledge of the roosting places as well as of the direction of the evening flight routes. The drives are organized with 4 to 6 beaters and an equal number of hounds. Each drive must be expected to last between 15 and 20 minutes, plus the time necessary to place the hunters.

The only drive hunts I heard of took place in the area of Sedjenane (Mogods). Today, such drive hunts are almost exclusively

held in young plantations of eucalyptus with dense undergrowth of Calycotome spinosa. The procedure is as follows: The hunters are placed along the fly paths, which may be in clearings, on small tracks or also in dense stands where the shooting range rarely exceeds 5 or 6 m. The beaters slowly walk through the hunting area, continuously shouting and beating the trees and bushes with their sticks. If a woodcock is flushed, this is indicated by a special call. The hounds search some metres in front of the beaters. This type of hunting requires great attention and a quick shot to be successful, especially since the woodcock approaches silent.

There are 14 to 18 drives per day. Besides woodcocks, snipes, rock partridges and wild boars often get into the drives.

Hunting just with dogs is rare. It requires a very precise knowledge of the terrain, vegetation and woodcock occurrence. The maccia should not be higher than 120 to 150 cm, otherwise the sight is too limited. 3 to 8 sportsmen - alone or accompanied by up to 5 beaters with hounds - walk through the hunting area in a line at intervals of some 40 m. For this purpose, hounds are of great use. Woodcocks mostly fly off forward towards the hunter so that he is able to shoot them.

Dogging requires both good hounds and a good knowledge of the terrain. As good hounds are rare in Tunisia, this type of hunting is less and less practised, since woodcock hunting was prohibited for tourists. The number of woodcocks killed per hunt depends

on the skill of the sportsman. Most frequently the bag consists of one woodcock only, often it is two, but seldom three or more.

Bagging woodcocks during the evening flight requires the greatest shooting skill, for the woodcock approaches silent, the sportsman's sight is impaired by dusk or darkness, he often does not see the woodcock until very late, because he himself also needs a minimum of cover - otherwise the woodcock will turn off.

The average bag of a hunting party comprises 20 woodcocks per day. The higher rate of woodcocks shot in drive hunts in comparison with the number of those shot during evening flights is attributable to better conditions of sight as well as to the fact that, by day, the woodcock flies off more slowly.

The annual bags of E. Schülke and J. Wadsack ranged between 11 and 48 woodcocks over a period of 6 hunting years.

It is not possible to estimate the overall woodcock bag. In my opinion, however, only a small proportion of the wintering woodcocks are killed for the following reasons: hunting in relation to the result is relatively difficult. It requires at least a 60-kilometre car ride to the hunting areas. There are hardly any teams of beaters who really know their job. Since the Tunisians themselves seldom practise this type of hunting, woodcocks are not or hardly hunted in large areas which are almost inaccessible.

Woodcocks are mainly hunted by foreigners, who, however, are primarily interested in rock partridges, wild boars, fieldfares, starlings, ducks, snipes and geese rather than in woodcocks.

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Unfortunately our knowledge of the woodcock and snipe situation in their vast breeding areas in Eastern Europe and Asia is very insufficient. One handicap to most biologists is language.

Therefore it might be useful to publish the following chapters from "Fauna and Ecology of Waders", Issue 1, Moscow University Press 1973 (151 pp.). They are papers presented at a symposium held in Russia from 29 - 30 March 1973.

We are grateful to the IWRB headquarter for organizing the translations.

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Distribution, numbers and hunting of Scolopax rusticola in some regions of the European part of the USSR

N N Bakeyev

Studies have been carried out over many years in the forests of the Stavropol Plateau, in the broadleaved forests of the forest-steppe zone (Korocha Region in Belgorod Oblast) and in the central taiga forests of Kirov Oblast (Zuyevka Region).

The forests of the Stavropol Plateau are the wintering zone of S.rusticola in the northern Caucasus. S.rusticola winters here every year in small numbers. From 1948 to 1972 Ye N Bakeyev and I recorded S.rusticola from December to February. Here it frequents the unfrozen marshy areas near the outlets of springs along the terraces of forest ravines. S.rusticola disappeared from these sites only in the especially severe winters of 1950, 1954 and 1972.

Spring migration of S.rusticola in the Stavropol Plateau begins at the end of March and ends in the first week of April. Breeding as such is not recorded here. Spring hunting a few years ago was carried out during the evening flight of the birds, when both the male and female were shot.

S.rusticola does not breed in the mainly oak forests of Korocha Region in Belgorod Oblast although this area is included in the breeding range (Dementiev et al, 1951). It is possible that data on the distribution of S.rusticola dating from the beginning of this century are now out of date because of changes in natural conditions. Dry oak forests with springs that dry up in summer are not suitable at the moment for S.rusticola breeding.

In the Korocha forests S.rusticola migration begins at the beginning of April and ends at the end of April. It is extremely intensive with large flocks and clearly expressed courtship display. At dusk it is often possible to see 10 to 17 displaying S.rusticola and to shoot between 2-3 and 5 males. In May neither we nor the foresters and hunters that we asked saw roding S.rusticola. This agains emchasises the absence of breeding of S.rusticola in this region.

In the marshy forests of the central taiga in Kirov Oblast S.rusticola inhabits leafy undergrowth which springs up after tree felling. Judging from the number of roding birds at sunset, the population density of S.rusticola is comparatively low. At sunset in the Kirov forests an average of 3.2 S.rusticola (maximum 9) roded. In Tula Oblast in

various years the average was 5.4 to 8.2 (maximum 20) (Sapetin, 1965) and in Leningrad Oblast the average was 6.9 to 14.7 (maximum 24) (Voronin, 1967).

In 1971 and 1972 in the hunting reserve of the All-Union Scientific Research Institute for the Conservation of Nature and State Reserves (VNIIOZ) a full census of shot roding S.rusticola was carried out. A total of 34 hunters here killed 69 S.rusticola in 1971 and 32 hunters shooting for 129 hunter/days shot 61 S.rusticola in 1972 from an area of 36 000 ha covered in forest (1.9 and 1.7 birds per 1000 ha respectively). 15% of roding S.rusticola were shot. In 1972 out of 32 hunters 10 shot no S.rusticola, 10 shot 1 each, 5 shot between 2.4 and 3 each and 3 shot between 5 and 7 each during a 10-day hunting period.

In each area most suited to courtship display, hunting was carried out daily for 10 days, during which 10 to 13 S.rusticola males were shot in sites in an area 2 km long and about 0.5 km wide bordering the forest (ie an area of 0.75 to 1.0 sq km). Such hunting does not have an adverse effect on the breeding intensity. In the last days of the hunt at these permanent hunting sites up to 7 S.rusticola were accounted for at evening.

Breeding intensity depended on the weather. On cold evenings with a temperature around -3°C S.rusticola hardly roded at all and the intensity decreased 7 to 9 times compared with warm peaceful evenings. When the weather was cloudless, roding at 58°20'N began on 30th April at 20.40 and continued for about an hour. On each of the following days S.rusticola began to rode 5 minutes later (on 7th May it began at 21.10). When it was overcast, roding began 30 minutes earlier.

In Kirov Oblast in spring 10 days of shooting roding S.rusticola cannot cause damage to the population of this species.

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Biology of Scolopax rusticola in the southwestern Ukraine

V S Grekov, V P Sidenko, L D Stepankovskaya, M V Malikova, Z N Nekhoroshikh, T N Varisheva, I V Berezyuk, G K Volkova

The collection of data was made between 1959 and 1972 in Odessa, Nikolayev and Kherson Oblasts. 328 birds were shot with a subsequent morphometric processing and study of stomach contents. Age was determined by the development of the gonad and by the condition of the bursa of Fabricius, and fat deposits according to the 5-point system. The results of the study were divided into age, indication of sex and colouring (pale, medium, dark) as a means of throwing light on the question of 'gypsy' S.rusticola (small and dark) and 'king' S.rusticola (large and pale). The organs and blood of each bird underwent a selective virological and serological examination.

During autumn migration from 1947-1948 to 1959-1960 the number of S.rusticola decreased threefold, from 1961 to 1965 it fell again twofold and in 1967 to 1970 was at a very low level. In autumn 1971, however, it unexpectedly rose to the 1965 level, ie it was not less than three large migration waves, during which there were 2 to 3 S.rusticola per 1 km stretch of wood.

Spring migration is not prolonged. The first birds have been recorded on 12th March (in 1969) and on 20th March (in 1964). The main body is recorded between 30th March and 15th April and the last birds have been seen on 30th April (in 1965).

Autumn migration is prolonged. In the Black Sea State Reserve the first sightings have been recorded on 7th September 1935 (Klimenko, 1950) and in the area of Kherson on 22nd September and 24th September (Pachoski, 1909).

In Odessa Oblast S.rusticola has been shot in the first week of September (in 1966) and has been recorded on 21st September (1961), 24th September (1964) and 30th September (1970), when in nearly each stretch of wood 1 bird was flushed per 1 km. At the beginning and middle of October migration intensifies, reaching a peak at the end of October and ending at the middle and end of November. Sharp cold spells at the end of October and beginning of November reduce the length of the migration period to 3rd-5th November (1965, 1969). In years when frosts have been later (1959 to 1964), migration continued to the end of November and the beginning of December. About 2% of the young stay until the first frosts (22nd December 1962, 25th December 1961, 15th January 1961). Data collected over many years show that on average peak migration (28.9% of the birds)

occurs at the end of October. Analysis of the results of autumn hunting showed that of those shot 39.5% were adults and 60.5% young. Of the adults shot, females formed 46.7% and males 53.3%. Correlation of sexes among the young was 46.9% and 53.1% respectively.

In autumn the moult was recorded in all age and sex groups. On the whole it was indicated by increased growth of down on the body, neck and head and, less frequently, by the growth of contour feathers along the body and by alteration of the tail feathers. Two males shot on 30th December 1960 had down on their neck and head but a young female showed intensive moult with alteration of the tail feathers.

Data on S.rusticola food are given in the Table. On migration the birds continue to feed during the day too, proof of which is the fresh dirt on the beaks of shot birds, and worms and beetles in the gullet. However, in some of the birds the guts proved empty.

The presence in the guts of a significant quantity of surface and subterranean forms (crickets, earwigs, beetles, Carabidae, weevils etc) shows that in addition to probing S.rusticola also takes food from above ground. This is also confirmed by the presence in the guts of aquatic forms (water beetles, Notonectidae, Naucoris, larvae, dragonflies) which the birds could find only in pools.

During the study of colour variations of S.rusticola ('gypsy' and 'king') it appeared that they are peculiar to all age and sex groups and the average significances of biometrical data are similar in the pale, medium and dark birds, or differ very insignificantly. Thus, assessment of the categories is subjective. As a rule, experienced hunters classed all large birds as 'king', independent of colouring (at the same time as a maximum weight of 411 g with fat deposits of 5 points was recorded in a medium-coloured adult female).

There are some characteristic patterns in the behaviour of dark birds: on migration they begin to gather together from the second half of October but from the second half of November show a preference for vineyards and kitchen gardens. In river floodlands some of the birds hide in reeds which fringe woods. To find a decisive answer to the question of 'gypsy' and 'king' S.rusticola, it is necessary to gather data, including ringing data.

In some forms of blood serum in S.rusticola positivie immunological changes have been discovered with regard to the arthropod borne encephalitides virus.

Study of the brain and parenchymatous organs has enabled one for the first time to separate the ornithosis virus in these birds.

Table Typical food of Scolopax rusticola

Place shot	Odessa Oblast								Nikolayev Oblast			Kherson Oblast			
	River Dnestr				Dry waterless valleys										
	Frequency of sighting		Intensity of feeding		Frequency of sighting		Intensity of feeding		Frequ. of sight.	Intensity of feeding		Frequency of sighting		Intensity of feeding	
Type of food	No	%	No	%	No	%	No	%	%	No	%	No	%	No	%
Earthworms	60	46.2	143	30.8	3	2.5	20	3.1	7.7	1	1.1	2	25	5	3.85
Land beetles	62	47.7	130	28	103	71.5	337	52	84.6	70	77	8	100	84	64.6
Crickets	-	-	-	-	15	12.9	64	9.75	-	-	-	-	-	-	-
Insect larvae	31	23.8	59	12.7	38	32.6	82	12.95	61.6	19	20.8	3	37.5	11	8.45
Aquatic insects and their larvae	41	31.5	60	12.95	-	-	-	-	-	-	-	2	25	4	3.1
Leeches	6	4.6	11	2.35	-	-	-	-	-	-	-	-	-	-	-
Earwigs	12	9.2	26	5.7	41	35.35	86	13.25				2	25	3	2.3
Others Woodlice Spiders Myriapods Molluscs	21	16.1	35	7.53	37	31.8	60	9.22	7.7	1	1.1	5	62.5	23	17.7
Vegetable remains	61	47			27	23.3			38.5			1	12.5		
Total			465	100	144		649	100		91	100			130	100

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Roding of Scolopax rusticola and boundaries of the geographical complexes

D N Yevgenov, V A Kuzyakin

During the hunting period in the Dolgolugovski Hunting Reserve (Moscow Oblast) and the State Forestry and Hunting Reserve 'Seliger' (Kalinin Oblast) we carried out sample counts of roding Scolopax rusticola. A recording of the intensity of roding was carried out in the second half of April in suitable places - damp, marshy birch, alder and aspen thickets, on the edges of thickstemmed woods, in large tracts of alternating woods and small clearings, shrubs etc. When processing the count data we included all the birds flying over, including those not actually seen but clearly heard, which made the counts in calm weather comparable and not dependent on the field of vision at the different observation points.

In the Dolgolugovski Reserve, between 1 and 3 birds were recorded flying over some of the observation points at dusk, while between 12 and 19 were recorded at other sites, despite the outward similarity of the observation points. We did not record any intermediate stage between these extreme figures. It was discovered that all the places with highly intensive roding were situated in a narrow strip (0.5 to 1 km) in the region of a strong but, in this particular area, not very sharp division between two physico-geographical provinces (Smolensk-Moscow and Meshcherski) which at the same time serves as a landscape boundary within the reserve. The places with less intensive roding were situated outside this transitional boundary strip.

To find out the dependence of the intensity of roding on the boundaries of smaller geographical complexes: districts, local areas etc, material collected in the 'Seliger' Reserve (see Table) was analysed. Independent of the character of the observation points (scrubs with clearings, sharp boundaries of woods and field, combination of thickstemmed woods with clearings, sharp boundaries of woods and field (sic), combination of thickstemmed woods with clearings (sic) etc) all the observation points were grouped together according to classification of boundaries of the geographical complexes on which the count sites were situated. There were 4 classifications of observation sites: boundaries of landscapes; boundaries of districts; boundaries of local areas and areas inside these local areas; boundaries of sub-areas and facies.

As can be seen from the Table the intensity of roding of S.rusticola increased with the higher classification of the boundaries of the geographical complexes.

We did not succeed in explaining this pattern that we discovered. In the Dolgolugovski Reserve the boundary of the provinces coincides with the 200 m contour line and it could be supposed that the main path of spring migration followed this line. In the 'Seliger' Reserve the count made from April to the end of July did not indicate a well-defined mass migration. Thus the S.rusticola there was 'local'. The idea that the macrorelief plays a leading rôle in the siting of the main migration routes cannot be accepted. The analysis of the distribution of the vegetation groups showed that even the character of the vegetation did not have great significance.

It is probable that the concentration of S.rusticola on the boundaries of the large natural territorial complexes is a manifestation of the so-called 'boundary effect'. As with other well-known cases of animals concentrating at natural boundaries, it is caused by the large variety of natural conditions there and of 'ecological niches'. There is no doubt that this conforming to a pattern which we have mentioned must have a more fundamental explanation. If it is confirmed, then it may become very useful for hunting, as it will allow one to find the place of the highest roding intensity by using a physical map of the hunting areas rather than bird counts, or at least by using a reduced amount of census data.

Table Roding intensity depending on the classification of the boundaries of the geographical complexes, 'Seliger' State Forestry and Hunting Reserve, April to July 1967 and 1968

Observation sites	Number of observations	Number of birds counted per observation	
		average	maximum
Inside the local areas (boundaries of sub-areas and facies)	16	2.7	5
Boundaries of local areas	14	5.1	9
Boundaries of districts	22	9.1	13
Boundaries of landscapes	10	19.9	28

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Some aspects of Scolopax rusticola biology

M A Rodionov

For the last few years articles have been published which report the very late appearance of Scolopax rusticola clutches and broods in the northwestern oblasts. For example, B Podkorvyrkin (1972) gives information on full clutches of S.rusticola recorded on 18th August 1970 and 25th July 1971 in Leningrad Oblast. N Volkov (1968) reports 2 late S.rusticola clutches in July 1964 and 1965 in the Central Forest State Reserve. Both authors suggest that S.rusticola can have 2 clutches a year.

According to our data in Leningrad Oblast in the period 1950 to 1955 unfledged young S.rusticola and even downies have been regularly recorded in July. Late clutches have also been found. For example, in Volosovo region 4 downies, 2 to 3 days old, were found on 19th July 1953; 2 eggs and 2 recently hatched young and 1 clutch of 4 eggs were found on 22nd July; 3 downies on 17th July of the same year; young, which had only just fledged, on 10th August. In 1955 on 17th July a female actively leading her young away was observed. These observations confirm the idea that in the northwestern oblasts late breeding and rearing of young is common in S.rusticola and happens, in fact, every year. It still remains unclear whether these are repeat clutches or whether the breeding period for S.rusticola is prolonged. The second suggestion seems more likely for the following reasons.

In the northwestern oblasts S.rusticola breeding begins in the second half of April, continuing in favourable springs for the whole of May and also including June in the northerly regions (Karelia isthmus). Undoubtedly the long day during the northern 'white nights' enables breeding to be prolonged. Since intensive breeding lasts almost 2 months, it is highly likely that , as a result, late clutches appear from the second half of June to July and the very latest even in the second half of July. August clutches are an obvious anomaly.

Thus, if the whole breeding period (laying, incubation and rearing of young by the female) normally takes 2 months (55 to 60 days), then in order to be able to achieve two complete reproductive cycles in the warm season, S.rusticola must be able to finish the laying of the first clutch by the beginning of April. It must not be forgotten that after the final fledging of the young, the adult female must have time to prepare for the new breeding period. It is well known to hunters that adult females with signs of completed incubation shot in August are noticeable for their exhaustion and intensive moulting.

In the conditions of the northern region S.rusticola can lay a normal clutch at best no earlier than the end of April, beginning of May and this is for the first reproductive cycle. The female will need the period up to the end of July, beginning of August to regain her strength. In this case, the young of the second 'normal' clutch can appear, in reality, only at the end of August, beginning of September. Similar facts are mentioned in literature.

The above permits one to suppose that S.rusticola has an extended period of spring migration and that breeding also takes place over a prolonged period.

It is also possible to assume that birds arriving late in spring and also young birds from late broods of the previous year are not able to breed and pair until the end of spring or even the beginning of summer. These produce the late July and even August broods. August clutches more than any others should be attributed to repeat clutches after the loss of the first clutch or downies.

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Waders as quarry species in Kirov Oblast

B D Zlobin

In Kirov Oblast Gallinago gallinago, Gallinago media, Philomachus pugnax and Lymnocryptes minimus are quarry species. They are shot in the autumn hunting season.

G.gallinago arrives in the central regions at the end of April. Spring mating is recorded as early as the last week of that month, while the main mating takes place from the beginning of May. Some birds mate even at the end of June. The first clutches are recorded about 20th May. In the river floodlands they have been recorded even later. It is obvious that here the birds breed according to how far the water meadows are free of water. The first broods appear at the beginning of June. A significant number of the broods are found in woodland areas - mossy marshland, marshes and damp deciduous woods. In the second half of summer these broods move to river floodlands and marshland. In an area typical of the River Vyatka floodlands, with flooded meadows and small lakes averaging 4 sq km in area, between 4 and 8 pairs of this species nest every year (near the town of Kirov).

The migration of G.media is slight. Mating is recorded on the same latitude as the town of Kirov up to the end of June. For example, on 25th June 1970 near the village of Gnusino in Kirovochepets Region in the floodlands of the River Vyatka between 10 and 12 G.media came together to mate. However, the clutches of G.media appear considerably earlier. Thus, on 19th June 1971 near Kirov a G.media nest was found with 4 well incubated eggs. Of 9 G.media broods found with the help of setters between 10th and 20th July 1969 to 1970 in the floodlands of the River Cheptsa (Hunting Reserve KSKhI) all had fledged.

We do not have any data concerning the biology of L.minimus in Kirov Oblast. No L.minimus is found in hunters' bags before the first days of September. We shot some poorly flying young as late as 10th September.

The ratio of G.gallinago and G.media numbers in the middle of August, from results of counts using a dog, is approximately 2.5:1 in the floodlands of the River Cheptsa. Changes are recorded from year to year. From 1966 to 1968 G.media, for example, was quite numerous. Since 1969 its density has been steadily decreasing. There was no sharp change in hunting pressure or reduction of habitat at this period. The reason is probably the unfavourable weather conditions for the regions in those years: wet, protracted spring with recurring cold spells, and wet, rainy summer.

In recent years numbers of P.pugnax have noticeably increased. Systematic observations and use of a setter in the study of the habitat has enabled the presence of P.pugnax breeding to be established not only in the northern regions of the Oblast but even on a latitude with Nolinsk. In particular, we discovered a P.pugnax brood on 15th July 1972 near the village of Kolobovo in Nemski Region in Kirov Oblast. Each year clutches of this species are found near the town of Kirov. On 12th July 1971 near the village of Komintern we captured a P.pugnax downy weighing 90.5 g. The highest number of this wader was seen in the Oblast in 1969 when clutches were found more frequently than nests of G.media.

Analysis of hunting with a dog in the central and southern oblasts showed that, of the total number of game shot by the author in the autumn seasons 1967 to 1971, waders comprised from 18.7 to 72.2% (Table 1). Taking into account the charac-

Table 1 Results of hunting with a setter in Kirov Oblast 1967 to 1971

Indices	1967	1968	1969	1970	1971
Number of hunting days	21	25	20	22	19
Number of game shot	110	96	79	107	92
% waders	59.1	53.1	72.2	18.7	47.8

teristics of the hunting of each wader species and the preference of hunters for the more valuable species (G.media) it is impossible to judge from hunting kill statistics their true correlation in the habitats. But these indices allow one to show some pattern in the changes in numbers over several years (Table 2).

Thus since 1968 G.gallinago predominates among those wader species shot. In 1971 it was shot almost three times more than G.media.

It would seem that a reduction in the number of G.media also had an effect on the number of those shot. L.minimus is shot singly and then not every year. There is no special hunting of P.pugnax and it is shot by chance.

From Table 2 it can be seen that 1970 was 'a year of bad wader harvest' because of the scarcity of these species (18.7% of the total bag). In that year there was a drought

Table 2 Numerical correlation of waders in hunting bags

	1967		1968		1969		1970		1971	
	No	%	No	%	No	%	No	%	No	%
Total no of waders shot	65	100.0	51	100.0	57	100.0	16	100.0	44	100.0
G.gallinago	25	38.4	30	58.3	32	56.1	8	50.0	32	72.7
G.media	35	53.9	16	31.4	22	38.6	7	43.8	11	25.0
L.minimus	3	4.6	2	4.0	-	-	1	6.2	1	2.3
P.pugnax	2	3.1	3	5.8	3	5.3	-	-	-	-

in the summer, extremely few G.gallinago and G.media inhabited the thick deciduous woods and there was no interest in hunting them. The birds were emaciated. Up until the middle of September the birds recorded had not moulted. In addition, early frosts were recorded in August 1970 and 1971. Mass migration of G.media southwards takes place before the opening of the hunting season (third Saturday in August).

In Kirov Oblast 15 000 hunters took part in the count. Amateur hunters of marshland game using dogs (this also includes owners of huskies) did not exceed 1% of these. In practice, not more than 20 hunters regularly hunt waders in this Oblast. It is necessary to take into consideration that the late opening of the hunting season deprives hunters of the chance of hunting G.media, in fact.

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Summer wader populations in some regions of the European part of the USSR

N N Kartashev

For a number of years I spent June and July censusing birds along the waters and shores of the water bodies and their adjacent biotopes in 5 regions of the European part of the USSR. All birds observed from a reliable distance were recorded. These data (see Table) are characterised by zonal differences in specific weight of waders in the summer population of the birds and the ratios of each individual species.

In the Kuban waters (territory of the Primorski-Akhtarski Hunting Reserve) waders are predominant in the bird population, comprising 34.4% of all birds counted (Rallidae, including Fulica atra, make up 19.3%, and Ciconiiformes 16.0%) and reach the very high number of more than 280 individuals per 10 km strip. It is obvious even in the breeding period that non-breeding birds which migrate in flocks of up to several dozen form a large part of the wader population here. Specific local conditions do not permit one to define by species more than half of the birds recorded, among which were Philomachus pugnax, various Tringa species and Calidris species. Limosa limosa comprised about a quarter of all the waders censused (25.9%); much smaller were the numbers of Vanellus vanellus, P.pugnax and Tringa totanus (3.2 to 4.8% of all waders). Many breeding species in this region proved extremely few in number: Glareola pratincola comprised a total of 1.1% of all waders counted; Recurvirostra avosetta 1.2%; Himantopus himantopus and Charadrius alexandrinus only 0.4% each. These species are strongly attracted to open salt-marshes along the edges of river.

In the floodlands of the River Oka and River Pra near the southern limit of the Oka State Reserve waders are less clearly predominant, comprising 29.5% of all the birds censused (Laridae 23.0%, Anseriformes 22.6%) but their numbers here are much lower - a total of 31.2 birds per 10 km strip. Among waders, the most numerous are Tringa hypoleucos (33.9% of all waders counted), V.vanellus (18.9%), Gallinago gallinago (15.2%) and Tringa ochropus (11.0%). The numbers of those Haematopus ostralegus and Charadrius dubius breeding mainly along the sand spits fluctuated sharply from year to year depending on the water level of the River Pra.

Along the shores of the Molozhski Otrog in Rybinsk Reservoir at the southern limit of the Darvin State Reserve the number of waders was small: a total of 7.3 birds per 10 km strip,

comprising only 4.5% of all the birds counted (Laridae 51.1% and Anseriformes 37.2%). Among the waders V.vanellus (21.5%) and G.gallinago (19.2%) were predominant, followed by Tringa ochropus (14.5%), Xenus cinereus (11.7%), P.pugnax (7.7%) and Tringa nebularia (6.7%). H.ostralegus (6.9%) is recorded sporadically. Migrating flocks of Calidris species appear in the second half of July (this species, averaged over 5 years, comprised 4.2% of the waders censused; in 1968 and 1969 it was not recorded at all).

On the Solovetski Islands (White Sea) the total number of waders was also low: 11.5 birds per 10 km strip and 5.8% of all birds censused (Anseriformes comprised 56.0%, Laridae 32.2%). Among the waders those predominating are H.ostralegus (21.3% of all waders), frequenting mainly sandy-shingly and pebbly shallows and spits on the coast, and Numenius phaeopus (20.7%), which keeps to the marshy meadows near lakes and to marshland. Marshes and water meadows are frequented by Tringa nebularia (12.3%) and G.gallinago (6.5%) and coastal waters by Charadrius hiaticula (6.2%). C.dubius (0.2% of the waders counted) are also recorded on the shore.

The number of waders on Seven Islands (Eastern Murman) is extremely low: 1.5 birds per 10 km strip and only 0.1% of the total number of birds counted (Alcidae 48.4% and Laridae 47.1%, Anseriformes 3.8%. Even Corvidae (0.2%) were more numerous than waders). The species composition here is also very limited (see Table). At the end of July, beginning of August the number and variety of waders noticeably increases with migrating and passing birds (Calidris species, Phalaropus species etc) but this period is not covered by our counts.

In all the counts the numbers of Scolopax rusticola and possibly G.media are noticeably reduced.

Table Summer counts (June and July) of waders in various regions of the European part of the USSR

Regions, size of area, years of counts	Seven Islands, Barents Sea, 134 km, 1962, 1964		Solovetski Is, White Sea, 550 km, 1961		Molozhski Otrog, Rybinsk Reservoir, Darvin State Reserve, 1606 km, 1967-1971		Floodlands of the River Oka, Oka State Reserve, 660 km, 1953-1958		Waters of the Kuban, Akhtarski Bay, 135 km, 1965	
Species	Birds per 10 km	% waders	Birds per 10 km	% waders	Birds per 10 km	% waders	Birds per 10 km	% waders	Birds per 10 km	% waders
G.pratincola	-		-		-		-		3.36	1.12
P.apricaria	0.15	10.0	0.04	0.32	-		-		0.45	0.16
C.hiaticula	0.60	40.0	0.71	6.17	-		-		-	
C.dubius	-		0.02	0.16	0.01	0.17	1.07	3.45	-	
C.alexandrinus	-		-		-		-		1.13	0.40
C.morinellus	0.22	15.0	-		-		-		-	
V.vanellus	-		0.07	0.64	1.49	20.47	5.89	18.88	13.46	4.78
H.himantopus	-		-				-		1.05	0.37
R.avosetta	-		-		-		-		3.38	1.20
H.ostralegus	0.30	20.0	2.45	21.33	0.50	6.94	0.85	2.72	0.30	0.11
T.ochropus	-		1.44	12.50	1.06	14.47	3.45	11.02	1.35	0.48
T.glareola	-		0.07	0.64	0.14	1.80	-		-	
T.nebularia	0.07	5.0	1.42	12.33	0.49	6.68	0.03	0.10	-	
T.totanus	-		-		-		0.35	1.11	10.22	3.63
T.erythropus	-		0.02	0.16	0.01	0.08	-		-	
T.stagnatilis	-		-		-		0.74	2.38	2.93	1.04
T.hypoleuca	-		0.42	3.64	0.27	3.77	10.56	33.83	-	
A.cinereus	-		-		0.86	11.73	0.95	3.06	-	

Table (continued)

Regions	Seven Islands		Solovetski Is		Kolozhski Otrog		Floodlands of the River Oka		Waters of the Kuban	
Species	Birds per 10 km	% waders	Birds per 10 km	% waders	Birds per 10 km	% waders	Birds per 10 km	% waders	Birds per 10 km	% waders
P.lobatus	-		0.09	0.79	0.01	0.08	-		-	
A.interpres	0.15	10.0	0.09	0.79	-		-		-	
P.pugnax	-		0.22	1.90	0.57	7.71	1.11	3.54	9.17	3.25
Calidris spp	-		0.24	2.06	0.31	4.20	-		3.53	1.25
G.media	-		-		0.04	0.59	0.17	0.53	-	
G.gallinago	-		0.74	6.48	1.40	19.18	4.74	15.19	-	
S.rusticola	-		0.06	0.47	-		0.03	0.1	-	
N.arquata	-		0.04	0.32	0.04	0.59	-		0.45	0.16
N.phaeopus	-		2.38	20.70	-		-		-	
L.limosa	-		-		0.07	1.03	1.27	4.08	72.93	25.88
L.lapponica	-		0.29	2.53	-		-		-	
Undefined wader species	-		0.71	6.17	0.03	0.51	-		158.27	56.17
Total waders	1.49	100.0	11.52	100.0	7.30	100.0	31.21	100.0	281.80	100.0
Total birds counted	1331.5		197.9		79.6	105.6			716.77	

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Character and intensity of hunting pressure on waders in the Central Volga basin

M I Pavlov

From 1951 to 1971 I carried out a census of all the waders I shot while hunting with a dog and during the breeding season (Scolopax rusticola). These data permit an assessment of the strength and character of sport-hunting pressure on waders in Moscow, Kalinin and Kirov Oblasts. During this period I regularly hunted waders, since 1959 mostly in Kirov Oblast.* Hunting counts of marshland waders showed that during the summer-autumn seasons only once in 20 years was it possible to go out hunting on 34 days (1951), in 6 seasons 20 to 26 hunting days were possible and the average per season was 16 hunting days.

The results of hunting waders are given in Table 1 and the results of hunting in Moscow and Kalinin Oblasts compared with that in Kirov Oblast are given in Table 2.

Thus, the largest number was shown to be Gallinago gallinago, although the main consideration during the hunting had been the search for Gallinago media.

The autumn concentrations of G.media were stable but the size varied from year to year. In some years G.media was recorded comparatively rarely (1954, 1959 to 1962, 1966 to 1967). In these years from 1 to 3 G.media were shot per season. Large concentrations of G.media were recorded in 1951, 1955, 1963 to 1965, 1968 and 1971, when between 22 and 38 were shot per season. A large concentration of G.media was observed in the drought-afflicted August of 1972, when on the damp areas of the water meadows up to 17 G.media were flushed per 1.5 to 2 ha. Obviously the extensive drainage of the floodlands, started in the 1950s, has still had little effect on the numbers of this species so far.** On the whole, the smaller numbers of G.media shot in Kirov Oblast are connected with the later opening of the summer/autumn hunting season (the last week of August), when mass migration is already under way.

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* 1952 was the only year in which no hunting was carried out in these regions.

** The hunter-naturalist N D Shvetsov from Sanchursk in Kirov Oblast came to a similar conclusion. He had hunted for more than 50 years in each of the floodland areas of the basin of the River Bolshaya Kokshaga.

Table 1 Composition, ratio and number of waders shot (1951 to 1971)

Wader species	Total shot	% of total	Av per season	Max shot per season	Min shot per season	Av per hunting day
Gallinago gallinago	456	49.4	22.8	59	3	1.5
Gallinago media	247	26.8	12.4	38	1	0.8
Lymnocryptes minimus	98	10.6	4.9	18	0	0.3
Philomachus pugnax	109	11.8	5.5	26	0	0.3
Others[1]	13	1.4	-	-	-	-
Total marshland waders	923	100	-	-	-	3.0
Scolopax rusticola	127	-	-	-	-	-
Number in autumn	51	-	2.5	9	0	-
Number in spring	76[2]	-	7.6[3]	12	1	1.0

A high specific weight and an absolute predominance of Gallinago gallinago among those birds shot in Kirov Oblast appears to be the result of its very high numbers up until the second half of the 1960s. In the following years the draining of marshland resulted in a noticeable decrease in the total numbers of G.gallinago. Nonetheless, the number shot fell insignificantly. The reason was that hunting was carried out on the reclaimed land and G.gallinago was forced to concentrate together. In addition, G.gallinago began to breed widely in the cleared areas of woods, where marshy areas remained until July.

Of the other wader quarry species Lymnocryptes minimus and Philomachus pugnax are worth mentioning. Both of these species were shot incidentally during the course of G.gallinago and G.media hunting. The comparatively small number of both

1 Numenius spp, Tringa spp, Tringa totanus, Pluvialis spp, Tringa ochropus, Tringa glareola

2 Data from counts since 1960

3 Calculated for the 10 seasons when spring hunting was permitted

Table 2 Composition, ratio and number of waders shot in Moscow, Kalinin and Kirov Oblasts

Wader Species	7 years' hunting (1951-1958) mainly in Moscow and Kalinin Oblast			7 years' hunting (1959-1965) mainly in Kirov Oblast			6 years' hunting (1966-1971) mainly in Kirov Oblast		
	No shot	Av per season	Av per hunting day	No shot	Av per season	Av per hunting day	No shot	Av per season	Av per hunting day
Gallinago gallinago	110	15.7	0.8	208	29.7	2.1	138	23.0	1.6
Gallinago media	106	15.1	0.8	97	13.9	1.0	44	7.3	0.5
Lymnocryptes minimus	20	2.9	0.1	52	7.4	0.5	26	4.5	0.3
Philomachus pugnax	28	4.0	0.1	66	9.4	0.6	15	2.5	0.2
Total shot	264								
Scolopax rusticola	32	-	-	59	-	-	36	-	-
Number in autumn	32	4.5	-	5	0.7	-	14***	2.3	-
Number in spring	no data	-	-	54*	9.0	1.1	22**	5.5	0.8

* for the 6 seasons when spring hunting was permitted

** for the 4 seasons when spring hunting was permitted

*** including 5 birds shot in Pskov Oblast during 12 days of hunting

L.minimus and P.pugnax shot was caused most of all by the fact that during the summer-autumn hunting season they were recorded for only a short period in these areas: P.pugnax mainly in the first week of September and L.minimus at the end of September, beginning of October, when the cold water limits the search for it with dogs.

While P.pugnax is always numerous during spring migration, in autumn large numbers were seen only in 1964 and 1965 which were unusual in having very wet summers. In the years when P.pugnax bred in the hunting area (1968 and 1971) the numbers shot did not increase.

During the whole of the hunting period Scolopax rusticola was shot in spring, especially in Kirov Oblast where in autumn it is shot only incidentally, since concentrations there are not characteristic. The number of S.rusticola shot in spring, although fluctuating sharply from year to year (1 to 2 in 1961 and 1968, 10 to 12 in 1962 and 1964), fell on the whole between 1966 and 1971, since the breeding in these years was not very intensive because of the cold springs.

On the whole, the number of waders shot during sport hunting is not very great.

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This paper was the fundament for the brochure of the Dutch "Working Group on Common Snipe" mentioned on page 32. In addition, it contains extensive ring recovery calculations. The authors speculate about the reasons for the recently declining recovery rate of shot birds, which results in too high mortality rates, if not taken into consideration. One possible reason might be the switch to other moulting areas, i.e. England. Mortality/productivity calculations also suggest the mortality rates derived from ringing data being sometimes too high. All the appendices containing the scientific data are attached to this paper.

Bühler, P. (1980): Zur Oberschnabelbeweglichkeit der Schnepfenvögel (On the mobility of the upper jaw in waders). Ökologie der Vögel (Ecology of birds) 2/1: 128. (German).

Brief description of the mechanisms enabling long-billed waders, i.e. Woodcock and Common Snipe to move the tip of the upper beak separately when feeding. This is possible by soft parts of some bones of the skull, which harden soon after death, and not by special joints.

Creutz, G. (1981): Schnepfenflug und Schnepfenzug. Unsere Jagd/10: 306-308. (German, no English Summary).

63 observations reported to the author indicate the attempts of the woodcock to winter in the German Democratic Republic (36 from December, 16 from January, 11 from February, no exact data presented). The attached

distribution map shows a preference of lowlands below 200 m of elevation. Fall migration peaks end October/ beginning November, spring migration end March/beginning April (graph).

Fadat, Ch. (1979): Estimation des Variations Relatives de Densités de Bécasses (Scolopax rusticola) par la Méthode des Judices Cynégétiques (An estimate of relative variations in woodcock densities by the method of Cynegetical Indices of Abundance). Bull. mens. Off. Nat. de la Chasse, Déc. 79: 71-110. (French; English Summary).

A trial to calculate seasonal and regional variations in woodcock densities by bag reports.

Hirons, G. (1980): Sex and discrimination in the woodcock. The Game Conservancy, Annual Review No. 10: 67-72.

Preliminary results of a five-year study on breeding and feeding biology of the woodcock in a study area in Derbyshire, England. Telemetric studies revealed three categories of males: birds that did not rode at all (mainly first years), those that displayed for short periods over the wood, and those that displayed for long periods over areas unsuitable to females. Only the second group was observed mating with females. Then they interrupted their display flights for few days. Their breeding behaviour is therefore described as "serial polygyny". The author plans to conduct his study by removal experiments.

Earth sampling revealed a close correlation of earthworm contents and woodcock occurrence. In winter, woodcock mainly feed nocturnally on pastures and diurnally in woods during spring and summer. Some quantitative aspects of woodcock shooting are included, but they seem to represent rather a local situation.

Kålås, J.A. (1980): Migration of Common Snipe (Gallinago gallinago) ringed in Fennoscandia. Fauna norv. Ser. C, Cinclus 3: 84-88.

Recoveries of Common Snipe (n = 961) ringed in Fennoscandia are analyzed. Most birds were ringed as "full-grown" on autumn migration. Recovery places revealed an origin in ENE direction from the ringing place. Fall migration starts in July, and in November the birds have reached their wintering area, mainly the British Isles, France and Spain/Portugal. The moving peaks of recoveries along the flyway indicate the progress of migration, but may be biased by the varying shooting seasons in the different countries, since 95% of the recoveries originate from birds shot. Similarly the importance of the wintering areas might be overemphasized by high shooting pressure (i.e. France). Swedish and Finnish birds obviously winter in the same areas, mainly in western Continental Europe, while Norwegian Snipes migrate to the British Isles by preference. Small numbers of birds were found wintering in Norway, Italy, North Africa, whereas the two most southerly are from Senegal and Equatorial Guinea.

Keil, W. (1980): Untersuchungen zur Biologie und Ökologie der Waldschnepfe (Scolopax rusticola) in Mittelgebirgsregionen (Biological and ecological studies on the woodcock in mountainous regions). Vogel und Umwelt 1: 123-126. (German, no English Summary).

This paper exhibits intentions and "good will" for woodcock research rather than results. Discussing his opinion on woodcock the author mainly refers to an ancient monography on the woodcock of 1887. This applies especially to the interpretation of a relatively high proportion of females (nearly 20%) out of 113 woodcocks shot in spring, which contrasts with other findings concerning

woodcocks shot when roding. The even higher proportion of females (38%) in a spring bag of the last century certainly resulted from other hunting methods (i.e. shooting flushed birds, drive hunts, etc.) which were legal in spring until 1937 in Germany, and is therefore not comparable.

Preuss, N.O. (1979): Om Enkeltbekkasinens traekforhold i Danmark. (Migration pattern of the Jack Snipe in Denmark). Felt-ornithologen 19: 37-39. (Danish, no English Summary).

Seasonal distribution of Jack Snipe (Lymnocryptes minimus) observations (kills at firehouses and -ships, banding records) show a marked accumulation during fall migration with a pronounced peak in October, while only very few records are from spring, mainly April. 358 sexed birds (mainly from firehouses) revealed a considerable preponderance of males in fall (67%) as well as in spring (77%). Distribution map of recoveries of Jack Snipes ringed in Denmark and recovered abroad (11) and vice versa (3).

Schlenker, R. (1977): Ringfunde der Zwergschnepfe, Lymnocryptes minimus. (Ring recoveries of the Jack Snipe). Auspicium 6/2: 179-184.

List of recoveries (45 till 30 June 1974) of Jack Snipes ringed in the Federal Republic of Germany and the German Democratic Republic (Vogelwarten Helgoland and Radolfzell). Distribution map of recoveries: the majority of Jack Snipes were recovered from France, 4 from North Africa, 1 from Greece and 1 from Russia.

Schmidt, F.-U. (1978): Zum Durchzug der Zwergschnepfe (Lymnocryptes minimus) im südniedersächsischen Leinetal. (Migration pattern of the Jack Snipe in Lower Saxony, Federal Republic of Germany). Faun.Mitt. Süd-Niedersachsen 1: 369-388. (German, no English Summary).

From 1970 to 1977 882 Jack Snipes were recorded in a study area in the Leine valley, and 103 birds were caught for biometrical data and ringed. Fall migration starts in early September, peaks from mid-October to early November and ends in late November. Spring migration (February till May, with peak in March/April) is much less pronounced in the study area. Description of habitats. Recaptures revealed a stay of 1 to 40 days. During the first week birds usually lost weight, which was regained during longer stays.

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