INTERNATIONAL WATERFOWL RESEARCH BUREAU

WOODCOCK & SNIPE RESEARCH GROUP

NEWSLETTER

NUMBER FOUR DECEMBER 1978

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CONTENTS

	PAGE
EDITORIAL	1
Roding Behaviour Study using Tape-recordings and Sonograms. By G. Hirons.	2
Winter Food of Woodcock in Great Britain. By G. Hirons.	3
Behavioural Studies of Breeding Woodcocks, using Radio Telemetry. By G. Hirons.	4
The Impact of 1% Potassium Antimony Tartrate Emetic on Snipe. By J. Swift.	7
Notes on Methods for the Collection of Helminth Parasites. By R. J. Knowles.	9
A Check-list of the Helminth Species Recorded from the Woodcock Species. By R. J. Knowles.	14
Short Report on the Woodcock Season in Belgium. By Count L. Lippens.	24
Woodcock Hunting in Norway. By A. Krafft.	25
The Woodcock and Snipe Group Reports from Finland. By L. Saari and E. Perttunen.	27
The Influence of the Physiognomy of Forests on the Age-Ratio of the Woodcocks Shot with Pointer Dogs. By C. Fadat.	29
Migration of the Woodcock to Rumania. By M. Maties and D. Munteanu.	
Some Impressions of the Sixth Woodcock Symposium, Fredericton, New Brunswick, Canada. By H. Kalchreuter.	42
Woodcock Wing Collection: Italy 1977/78. By S. Spano and A. Cheline.	44
A Preliminary Analysis of the Mapped Flights of Unmarked Woodcock. By J. Wilson.	48
Snipe Measurements. By B. Stronach.	53
Woodcock Wing Survey: Great Britain 1977/78. By J. Swift.	54
Historical Notes.	57
Notes (a) Other U.K. News.	61
(b) Appeal	61

CONTENTS (CONTD.)

	PAGE
Bibliography	62
List of WSRG Members	63
Editors Note	64

Editorial

This is our fourth Newsletter - it seems hard to believe that we had so much difficulty in putting together the first one, now we get so much material that some contributions have to be left our and others drastically reduced.

You will see from the contributions that work has continued in many countries and our wing surveys are producing positive results. However, the most exciting news this year is that Graham Hirons has been able to radio tag a number of 'roding' woodcock and follow their behaviour. You will see from his contribution that this is a major breakthrough. Other countries are thinking of using radios to monitor winter feeding habits.

Hopefully the seminar in Helgoland will be useful and that we will be able to discuss our future plans.

Brian Stronach

December, 1978.

GREAT BRITAIN

Graham Hirons

Roding behaviour study using tape-recordings and sonograms

Individual males were distinguished by the pattern of croaking sounds they produced during roding. The calls of all birds which passed close by an observer were tape-recorded and later analysed on a sonograph machine. Six or seven birds regularly overflew an area of mainly deciduous woodland measuring 5.2 km^2. There was no indication of exclusive territories and the ranges over which individuals could be followed varied between 28 and 73 ha. It was not possible to relate the number of roding males to the number of nests on the area (none were found) and there was no attempt to project an assessment of the female population at this stage. It was shown, however, that males are "self-marked" by their roding calls, and if it can be shown that the number of calling males bears a constant relationship to the number of breeding females a comparative index to breeding densities may eventually be possible.

Code	No. observations	Period identified	Area (ha)
A	8	18 April - 4 May	61.7
B	10	18 April - 4 July	48.6
C	10	24 March - 27 June	27.8
D_1	6	21 April - 28 June	43.7
E^2	24	23 March - 28 June	73.0
	34	19 March - 4 July	62.4
F	1	24 March	
G	2	16 May - 16 June	9.6
H	1	16 June	
I	2	28 June	

Table 1. Roding males[1] identified March-July 1977 from sonographic analysis of their calls, together with the periods and areas in which they were recognised. [1]The calls of E^1 and E^2 were very similar and it is just possible that the two sets of sonograms refer to the same individual. See Fig. 1 for map of areas within which individual woodcock were recognised.

Towards the end of the roding period two students engaged in a study of breeding woodcock in France for the Section Becasse of the O.N.C. (M. J. Martinel and M. G. Chantrel) visited this research area. Various methods of live capture were discussed.

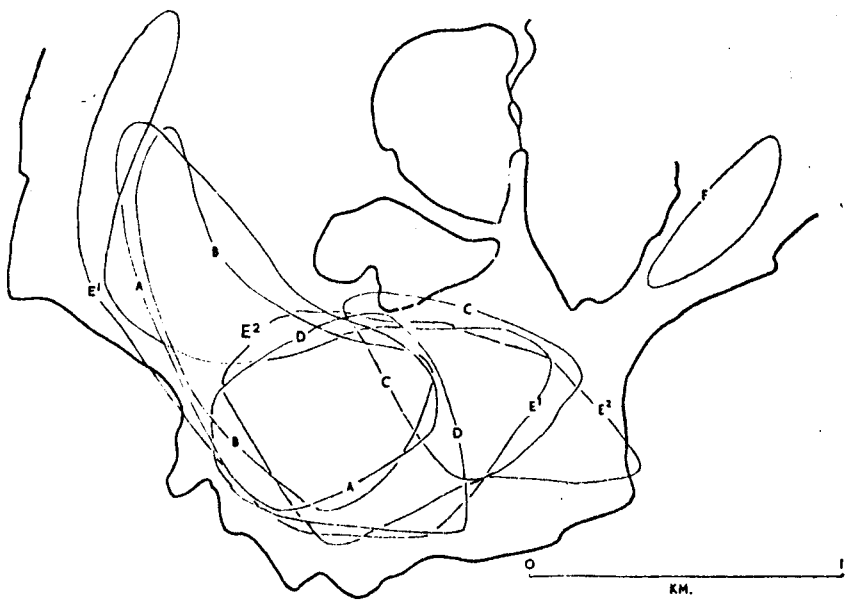

Fig. 1. The areas in Wytham within which individual woodcock were recorded roding in March - June 1977 (code letters as in Table 1).

Winter food of woodcock in Britain

During the shooting season of 1977-78 visits were paid to shoots in Cornwall, Lincolnshire and Norfolk, and stomachs collected from freshly-killed woodcock were fixed and labelled with the hour and place of collection. More than 160 examples, taken at various times of the day, are being analysed in an investigation of diet and feeding activity. Collection will continue this winter to span the entire 24 hours. Food remains are identified and their volume and stage of digestion noted. Preliminary inspection suggests a regional difference in the proportion of earthworms ingested in relation to woodlice (Isopoda), millipedes (Myriapoda), earwigs (Dermaptera), beetles (Coleoptera, especially Carabids and Staphylinids) and fly larvae (Diptera). The stomach contents of woodcock shot in Cornwall soon after dawn revealed

quantities of leatherjackets (Tipulid larvae) and fly larvae associated with disintegrating cattle dung. See Fig. 2. During later radiotelemetry studies in Derbyshire it was shown that birds appear to feed mainly at night in late winter, and almost exclusively on permanent pasture. They flew up to 1½ miles from their day-time cover to do this. In summer when nights are short, the grass long and the ground hard, the birds usually remained in the woods throughout the 24 hours. They fed during the day but not, apparently, at night. This may possibly be due to the risk of predation - one radio-tagged woodcock was found in a nestbox containing Tawny Owl chicks.

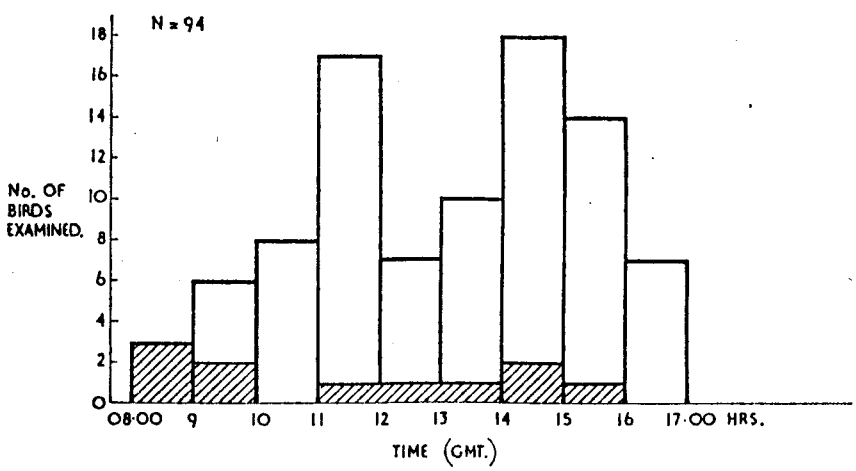

Fig. 2. A number of stomachs examined from woodcock shot at different times of the day. Birds which had fed recently are shaded.

Behavioural studies of breeding woodcocks, using radiotelemetry

The study area consists of some 171 ha of mixed, mainly deciduous woodland in Derbyshire. Beech (Fagus sylvatica), sycamore (Acer pseudoplatanus) interspersed with Quercus and Betula spp. predominate. Although there has been a wood on this site for some time, most of the existing trees were planted about 30 years ago. There are other woodlands nearby and the surrounding country contains permanent pastures and arable land.

Transmitters weighing 7-8 g with 6-inch whip antennae were strapped to the backs of birds with an elastic harness passing around the breast. Batteries with a life of 2-2½ months provided power for a pulsed signal which could be detected at a range of 200-400 metres when the birds were on the ground in thick cover (less if the herbage was wet). Signals from birds in the air could be received at distances of over 2 km. Behaviour appears to return to normal 2-3 days after a radio package is attached, and birds then rode as before. Radio-equipped females have mated and laid eggs. The total weight of the package in relation to bodyweight was within the acceptable 5% limit: females weigh around 300 grms during the breeding season and roding males begin by weighing 300-320 grms, reducing to 220-260 grms by the end of the season.

Two main techniques were used for capture: (a) In late winter mist-nets were placed along rides before dawn. Twenty nets, each 40 ft long, were used across rides or in open clearings. Birds returning from fields outside the wood usually alighted in such places and then walked into cover, and were intercepted by the nets during their final low glide (15-20 m) before landing. Both sexes were caught in this way, on average 1 bird every 2-3 days. (b) To capture roding males, 2 nets were set across a ride, one on each side of a hide built at the ride's edge and about 8 m apart. When a roding bird came within sight an observer hidden in the hide tossed out a bantam between the nets. Providing it is still fairly dark males seeing the bantam immediately fly fast towards it and are caught in a net. This method was especially effective on dark evenings when 2-3 woodcock could be caught in a single session.

Between 3 March - 8 July 1978, 29 fully-grown woodcock were ringed, of which 23 (19 males, 4 females, according to tail/bill measurement ratio) were equipped with radio transmitters. Eight nests were found (4 successful) and in addition 27 chicks from 8 broods were ringed.

The data from this work have still to be analysed in detail, but some very provisional conclusions are offered:

Breeding system

(i) One male will mate with several different females in succession. Males do not incubate and do not care for the young.

(ii) The function of roding is probably to find females with which to mate. Mate choice is probably made by the female, but basis of choice unknown.

(iii) Once a male finds a receptive female he stops roding and stays with her until she starts to incubate when he starts roding again, presumably to find other females. On average the "honeymoon" period lasts 7-10 days and during this time the birds remain very close to the subsequent nest site. Some evidence suggests that a female may change her mate during this period.

(iv) Males do not maintain exclusive territories although some birds are undoubtedly dominant over others and aggressive encounters occur frequently between males. Some males are more successful than are others at finding females.

(v) Some males tend to rode over specific areas within the 171 ha wood, others roded over several different woodlands, either on successive evenings or on the same evening. Two roding birds were frequently monitored over 4 different woods (up to 2 miles apart) on the same day.

(vi) No birds equipped with radios that functioned from 3 March to late June/early July ceased roding during that time.

(vii) Roding birds seldom stay in the air for more than 15 minutes at a time. During evening display the average performance consists of 2-4 flights each lasting for about 8 minutes.

(viii) Two radio-equipped first-year males did not rode, and all other radio-equipped birds which roded were adults. There was insufficient evidence to show whether females breed in their first year.

(ix) Woodcock which lose a brood can re-lay. Whether some individuals are truly double-brooded has not yet been established.

(x) No evidence was collected that suggested females to be territorial. Nests were found as little as 46 m apart.

(xi) Males frequently spend the day in one area and rode over a different area that evening. Several males may spend the day in close proximity (27 m apart).

These tentative conclusions will be reconsidered after next season's work. The radiotelemetry study was made possible by a private grant most generously provided by Dr.'s H. N. and K. Southern for the purchase of equipment. The work is otherwise supported by a N.E.R.C. grant, under the supervision of The Game Conservancy. Warmest thanks are due to John Ellis and other members of the Whitwell Wood Natural History Group for their invaluable field assistance at all hours and in all weathers.
Dr. G. Hirons, The Game Conservancy, Fordingbridge, Hampshire, England.

John Swift

The impact of 1% potassium antimony tartrate emetic on snipe, Gallinago gallinago

Introduction

Herrera (1975) has reported the effects of 1% Potassium Antimony Tartrate solution on granivorous and insectivorous passerine species. He warns that the emetic may produce delayed effects. Prys-Jones et al (1974) reports that birds which regurgitated were recaptured or resighted significantly more often than birds which received the emetic but did not regurgitate. Non removal of the emetic from the digestive tract may contribute to poisoning the bird.

Herrera also reports that successful regurgitation occurred in 56% of treatments of granivorous individuals, and 28% of treatments of insectivorous individuals. This compares with 33% success when Snipe are feeding mainly on rapidly digestible prey in early autumn, and with 86% success when coarser foods are being taken in later months (unpublished Thesis). This paper reports a limited experiment on the impact of a dangerous emetic on Snipe.

Method

Diet was studied during 1975/76, 1976/77 and 1977/78 under licence from the Nature Conservancy Council. Mistnetted Snipe were intubated with a soft rubber 2 mm diameter catheter inserted into the oesophagus as far as the proventriculus. The catheter was attached to a plastic disposable syringe containing 1% potassium antimony tartrate in acqueous solution to be used as an emetic. The emetic (0.5 cc.) was slowly introduced into each Snipe's proventriculus. Treated Snipe were then placed for 20 minutes in a cardboard shoebox with a securely fastened lid and a lining of absorbant tissue paper. The matter which the Snipe vomitted, commonly called "a result", was isolated, labelled and stored in a small glass or plastic tube containing 5% formalin solution.

The experiment involved treating alternative captured Snipe with the emetic and comparing the incidence of recapture of treated and untreated groups.

Results

The capture/recapture data is set out in Table 1.

	Observed frequencies		
	Rec'd emetic	Did not receive emetic	Both
Not recaptured	44	25	69
Recaptured	3(6%)	5(17%)	8
Both	47	30	77
	Expected frequencies		
	Rec'd emetic	Did not receive emetic	Both
Not recaptured	42.12	26.88	69.00
Recaptured	4.88	3.12	8.00
Both	47.00	30.00	77.00

X^2 = 0.08 + 0.13 + 0.72 + 1.13
= 2.06 (Not significant at 0.05 without Tate's Correction factor).

Table 1. Capture - recapture data of Snipe receiving and not receiving the emetic.

Six per cent of treated Snipe were recaptured in comparison to 17% of untreated individuals. The difference is not statistically significant although, taking into account the warnings of other authors, suggestive of an additional mortality.

References

Herrera, C. M. (1975). Note on the emetic technique. Acta Vertebrata Vol. 11, No. 1: 77-82.

Prys Jones, R. P., Schifferli, L. and MacDonald, D. W. (1974). The use of an emetic in obtaining food samples from passerines. IBIS 116: 90-94.

John Swift, W.A.G.B.I., Marford Mill, Rossett, Wrexham, Clywd, Wales.

R. J. Knowles

Notes on methods for the collection of helminth parasites

The checklist of helminth parasites recorded from Philohela minor and Scolopax rusticola summarises past work on this subject and it is to be hoped that by providing this information in an accessible form it might perhaps stimulate and encourage further work in this somewhat neglected field of study.

With regard to S. rusticola, over the years many helminth species have been described and recorded from this host, but our knowledge of these is not as extensive as at first might appear. A great many of these species are poorly described and are in need of revision. Also there is a good chance of other helminth species being discovered, for there are many cases of the host's range where it's parasites have not been studied. For this purpose good, properly fixed material is essential (all too often helminths have been described, either from material collected from long

dead hosts or from badly fixed, distorted fresh material, often from preserved organs). Preferably helminths should be collected and preserved as soon as possible after the host's death, at most within a few hours, otherwise specimens rapidly deteriorate and essential diagnostic features may be lost or distorted making identification difficult if not impossible. To this end a simple and rapid method of collecting helminths is described involving a minimum of time, equipment, reagents and handling of specimens and which should result in the majority of specimens collected being fixed and preserved in an extended uniform manner. It must be stressed that these notes are not addressed to the experienced parasitologist working in a well equiped laboratory rather to the worker in other disciplines, perhaps working in the field and with limited facilities, who may have access to freshly dead hosts and be interested in collecting parasites from them.

Equipment required for Helminth Parasites

Dissecting instruments:- Scissors, forceps, scalpels, etc.

" trays:- Plastic plant propagating trays approximately 30 cm x 21 cm x 5 cm are ideal for this purpose.

Beakers and fars:- A number of these of at least 500 ml. capacity.

Specimen tubes:- 75 mm x 25 mm, is a convenient size.

Normal saline:- 0.85% Sodium Chloride. (NACL) in distilled water. Working under field conditions, a convenient method of making this is to use one teaspoon measure, approximately 5.45 gm of NACL to one pint, 600 c.c. of water. Alternatively the NACL can be preweighed in 5.45 gm lots and stored in phials ready for use.

Formal saline 4%:- Consisting of 12 parts of commercial formaldehyde to 100 parts of 0.85% saline. In emergency water can be used instead of saline.

Dissecting microscope or a large diameter handlens c. x 10.

Heat Pouree and Labelling Paper

Ecto parasites

Plastic bags, Benzene and Chloroform

80% alcohol:- 100 parts of pure spirit (95°) to 21 parts of water. In emergency, whiskey, vodka, gin, etc., can be used as a substitute.

Method

The intestinal tract should be examined first as most parasites occur therein. This should be removed, stripped of its mesentery and carefully so as to avoid damaging any large specimens that might be present, be cut into a number of lengths. Each portion should then be slit lengthwise and be placed in a container along with a quantity of saline. The containers should then be shaken then left standing for about 30 minutes, after which time the majority of parasites present, with the exception of Acanthocephala sp. which will be dealt with separately, should have dropped off. Parasites still attached to the gut wall can be detached by removing the intestine from the saline and very gently scraping the mucosa with a glass microscope slide, after which the intestine and scrapings are replaced in the saline. When it is considered that the parasites have left the gut wall, it should be removed and the contents allowed to settle to the bottom of the container. The supernant should be carefully poured away and replaced with fresh saline. Again the contents are allowed to settle and the procedure repeated. This procedure should be carried out at least 3 times. The specimens should now be ready for fixation, the procedure for which is as follows. The saline should be decanted and a quantity of 4% formal saline heated until it steams (c. 80° C) is quickly poured over the worms which immediately kills and fixes them in an extended position. Should one be working under difficult conditions

the worms can be killed in saline or even water heated to c. 80° C, but this must be immediately replaced with cold 4% formal saline. Following fixation, the specimens should be left for several hours in the fixative which should then be replaced with fresh formal saline and the specimens placed in a tube and a label with the following information written in pencil or Indian ink be placed in the tube:- host, organ, locality, collector, date of collection.

Acanthocephala or spring headed worms. Should specimens of these be present they will invariably be found to be firmly attached to the gut wall by means of their proboscis'. Attempts at removing them by mechanical means usually results in damage to the proboscis. The best way to deal with them is to remove the worms, together with a small area of intestine surrounding the proboscis. These are then placed in water (not saline) and left for about 12 hours. After this time the worms should be dead and they can be fixed in cold formal saline and following fixation any intestine surrounding the proboscis can be removed with dissecting needles.

Other organs and sites which should be examined; and any worms found, removed and fixed in the same manner as for the gut parasites, are: Oesophagus, proventriculua and gizzard, nematodes occur in the oesophagus, proventricular glands and beneath the gizzard lining. Trachea should be slit along its length and examined for nematodes of the genus Syngamus. Trematodes might occur in any of the following organs and sites and they are the most likely places in which to discover unrecorded species. Orbital cavity, air sacs, gall bladder and bile duct, pancreas, portal vein, cloaca and oviduct of females, subcutaneous, especially in the region of the cloaca, kidneys and uretas should be removed, placed between two glass sheets and examined under magnification. Should the presence of filarial nematodes be suspected, the skinned body of the bird should be placed in a container and covered with saline and left overnight.

Any worms present should move into the saline and be collected. Techniques for processing specimens for microscopical examination can be found in most parasitological text-books. Whole mount specimens of trematodes and cestodes are usually stained with a variety of carmine and haemotexylin based stains. As an alternative to these, Einarson's Gallocyanin can be used. Advantages of using this are that it is easily and cheaply prepared and is very simple to use. It stains the cell nucleus only and specimens stained with it do not have to be differentiated by removal of excess stain. For sectioned material, counterstained with eosin it makes a good substitute for Erhlich's haemotoxylin. Touse fixed specimens should be washed in several changes of distilled water, placed in undiluted stain for 12-18 hours, depending upon size. Removed from the stain, specimens should be washed in distilled water, dehydrated through a series of alcohols, cleared and mounted in Canada balsam in the conventional manner. The method of preparing this stain is:- Chrome-alum (10 gm), Gallocyanin (0.3 gm) and Distilled water (200 c.c.).

Method

Add the chrome-alum to the water and heat to dissolve it. Add the gallocyanin and boil gently in a plugged flask for 15-20 minutes. Cool and filter and the stain is ready for use.

Ecto parasites

Note - These should be preserved in 80% alcohol, never formalin, and labelled in the same manner as for helminths.

Birds killed in the field should be immediately placed in clean plastic bags which should then be firmly sealed. This avoids confusion which might arise from parasites transferring from one dead host to another. A small piece of cotton wool, soaked in chloroform, should be placed in the bag and left for about 30 minutes, this should kill or stupefy any parasites which mightbe present. The bird and bag contents should be

shaken over a clean sheet of paper and any parasites picked up with a small paint brush dipped in alcohol and be transferred to a specimen tube containing 80% alcohol. The head, body and wing feathers should then be examined and any firmly attached specimens can be removed with fine forceps. If any ticks are present, an experienced worker using fine forceps should be able to remove them with undamaged mouthparts which are essential for diagnosis. Otherwise they can be dislodged by dabbing them with benzene. Mites might occur in the lungs. These organs should be removed and preserved in 80% alcohol.

A check list of the helminth species recorded from the woodcock species Philohela minor and Scolopax rusticola.

Philohela minor. Helminth paramites

Trematoda

Longicollia cannaanensis Purseglove & Hall 1970	Pursglove & Hall 1970:490
Nematostrigea sp. (% serpens (Nitzch))	Rankin 1946:759
Pseudopatemon aldousi McIntosh 1940	McIntosh 1940, Dubois & Rausch 1950, 1968,

Cestoda

Anomotaenis stentorca (Fről. 1802)	Fuhrmann 1908, 1909, 1932:89,240.
A. variabilis (Rud. 1802)	Rankin 1946:760

Nematoda

Cardiofilaria inornata Anderson 1956	Anderson & Freeman 1969:68
Tetrameres sp.	Locke, Stickle & Geis 1965;156
Tropidocerca sp.	Foster 1914:45

Philohela minor: References

Anderson, R. C. & Freemann, R. S. (1969). Trans. Am. Microsc. Soc. 88:68-79
Dubois, G. (1968). Mem. Soc. Neuchatel Sci, Nat. 10:1-260
_____ & Rausch, R. (1950). Amer. Mid. Nat. XLIII, 1:1-31
Foster, W. D. (1914). J. Parasit. 1:45-47
Fuhrmann, O. (1908). Zbl. Bakt. 46:622-631. (1909). Rev. Suisse Zool. 16:27-73.
(1932). Mem. Univ. Neuchatel VIII:1-383.

Locke, L. N., Stickle, N. H. & Geis, S. A. (1965). J. Wildlife Managm. 29:156-161
McIntosh, A. (1940). Proc. Helm. Soc. Wash. VIII, 1:14-16.
Purseglove, S. R. & Hall, J. E. (1970). J. Parasit. 56:490-492
Rankin, J. S. (1946). Amer, Mid. Nat. XXXV, 3:753-768.

Scolopax rusticola: Helminth parasites

Trematoda

Echinostoma revolutum (Frölich 1802)	Skrjabin 1916:399. Nicoll 1923:187.
Echinoparyphium mordisilkoi Skrjabin 1915	Kurashvili 1957:49
E. recurvatum (Linst. 1873)	Yamaguti 1939:141
Himasthla militaris (Rud. 1802)	Dollfus 1968:147
Prosthogonimus ovatus (Rud. 1803)	Nicoll 1923:187
Plagiorchis nanus (Rud. 1802)	Braun 1901:567, 1902:47, Dollfus 1968:153.
Leucochloridium macrostomum (Rud. 1803)	Piersanti 1947:105
Scolopacitrema cubrensis Sudarikov & Rykovsky 1958	Sudarikov & Rykovsky 1958:360. Sudarikov 1960:498 Odening 1963:229, Daija 1971:102, Shumilo & Tikhon 1969:285,
Notocotylus attenuatus (Rud. 1809)	Dollfus 1968:127
Brachylaemus fuscatus (Rud. 1819)	Threlfall 1964:732
Harranium brasilianum (Stoss. 1902)	Dollfus 1968:15
Cyclocoelium mutabile (Zeder 1800)	Nicoll 1923:187. Ryzhikov 1974:260.
Allodiplostomum scolopacis Yamaguti 1935	Yamaguti 1935:159,178. Dubois 1938:310, 1970:546.
Neodiplostomum fungiloides Semenow 1927	Semenow 1927:265. Dubois 1938:293, 1970:542
Pseudopatemon manilliformis Tubangi 1932	Odening 1970:298.
Cotylurus cornutus (Rud.1808)	Dubois 1938:124. 1968:204. & Rausch 1950.

Cotylurus erraticus (Rud. 1808)	Dollfus 1968:133. Nicoll 1923:187. Sudarikov 1959:493
C. platycephalus (Creplin 1825)	Bychovskaja-Pavlovskaja 1974:64.
Pulvinifer macrostomum Jägerskiöld	Odening 1962:229,434. Dubois 1964:60. 1966:47. 1968:135.
P. singularis Yamaguti 1933	Yamaguti 1933:23. Dubois 1938:318. 1964:61. Shumilo & Tikhon 1969:128. Bychovskaja-Pavlovskaja 1974:695.
Cestoda	
Aploparaksis bulgarica Kamburov 1969	Kamburov 1969:188.
A. clerci Yamaguti 1935	Yamaguti 1935:183,233. 1940:208. Davies 1940:201. Sawada & Kugi 1976:194.
A. crassirostris (Krabbe 1869)	Clerc 1903:250. Fuhrmann 1908:82. 1932:144,241. Lopez-Neyra 1944:421. Ryzhikov 1974:260.
A. filum (Gaeze 1782)	Clerc 1903:250. Fuhrmann 1908:82. 1932:144,241. Lopez-Neyra 1944:416. Oshmarin 1963:138.
A. pseudofilum Clerc 1902	Clerc 1902:569. 1903:264. Fuhrmann 1908:82. 1932:144. Lopez-Neyra 1944:416. Ryzhikov 1974:260.
A. penetrans Clerc 1902	Clerc 1902:658. 1903:252. Fuhrmann 1908:83. 1932:144.
Aploparaksis pubescens (Krabbe 1882)	Clerc 1903:25. Fuhrmann 1908:82. 1932:144,241. Baylis 1939:484.
A. parafilum Gasowska 1932	Gasowska 1932:603. Joyeux & Baer 1939:184. Bezubik 1956:82. Spasskaya & Shumilo 1971:4.
A. rusticola Daija 1971	Daija 1971:102.
A. sachalinensis Krotov 1952	Krotov 1953. Khuan-Shen 1962:289. Ryzhikov 1974:260.
A. sanjuanensis Tubangui & Masilungan 1960	Spasskii 1963:207.
A. scolopacis Yamaguti 1935	Yamaguti 1935:183,221. Korniushin 1973:74. 1975:207.
A. sinensis Tseng 1933	Tseng 1933:500.
A. sp. Pemberton 1960	Pemberton 1960. Spasskii 1963:207.
Hymenolepis amphitricha (Rud. 1819)	Fuhrmann 1906:624. 1908:74. 1932:152,241. Skrjabin & Matterossian 1945:230. Ryzhikov 1974:260.

H. annandalei Southwell 1932 — Joyeux & Baer 1940: 383. Deblock 1964:597.

H. interrupta (Rud. 1802) — Fuhrmann 1906:737. 1908:74. 1932:153,241.

H. spaerophora (Rud. 1810) — Fuhrmann 1906:737. 1908:74. 1932:153,241.

Profimbraria multicanalis Baczynska 1914 — Baczynska 1914:209. Fuhrmann 1932:92,321. Wolffhungel 1936:257.

Discranotaenia clavigera (Krabbe 1869) — Lopez-Neyra 1944:256. Mamaev 1959:170.

D. matterossiani Kurashvili 1950 — Kurashvili 1950:633. 1953:341. 1957:156.

Diagonaloporus schikhobalovae Krotov 1951 — Krotov 1951:130.

Paricterotaenia slesvicensis (Krabbe 1882) — Clerc 1903:253. Fuhrmann 1908:55. 1932:110,241. Spasskaya & Shumilo 1971. Daija 1971:1025. Ryzhikov 1974:260.

P. stellifera (Krabbe 1869) — Lonnberg 1889:6. Fuhrmann 1908:55. 1932:110,241. Baczynska 1914:206. Baer 1925:542. Lopez-Neyra 1944:226. Matterossian 1963:268. Oshmarin 1963:525.

P. sp. Krotov 1953 — Krotov 1953:332.

Amoebotaenia longirostellata Sawada & Kugi 1976 — Sawada & Kugi 1976:193

A. lumbrici (Villot 1883) — Joyeux & Baer 1939:172. Vaccardi & Ballarini 1962:199.

A. yamasigi Yamaguti 1956 — Yamaguti 1956:3

Anomotaenia bacilligerae (Krabbe 1869) — Fuhrmann 1908:57. 1932:89,241.

A. citrus (Krabbe 1869) — Clerc 1903:253. Fuhrmann 1908:57. 1932:89. Ryzhikov 1974:260.

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BELGIUM

Count Leon Lippens

Short report on the woodcock season in Belgium (1977-78)

In the Low-Countries we had one of the best seasons ever for woodcock. The very mild and wet winter made it possible for many birds to remain for weeks or for months in our woods. When snow fell inland, from Central Europe to the Ardennes and to the hills of south Belgium, many new woodcock arrived in Flanders and at certain places there was a very high density of birds. The first woodcock arrived rather late in the woods of Flanders, but from the beginning of November they were numerous. The highest number were encountered during the first week of December. In one place, while shooting pheasant on the 3rd December, more than 75 different woodcocks were seen. At the end of February, while shooting rabbits in the wooded dunes along the sea, in the vicinity of the Zwin bird sanctuary, I flushed more than 20 different woodcock in two hours. Many were in pairs. It is a blessing that the shooting season is closed after 31st January. It is exceptional to have woodcock breeding in Flanders and most birds were gone after the first week of March.

Many (more than 1000 pairs) breed in the Belgian Ardennes, where they start early, even in very cold weather. One woodcock with 3 chicks was seen near the Luxembourg frontier on 22 April. March and April had been very cold, with snow and ice. On 15th April there was 5 cm of snow. As woodcock sit for 20-23 days, this brings the laying of the first egg to about 25 March. This shows once again how absurd it was to shoot roding woodcock in March and April. After the very severe winter of 1963 we had several seasons with very few woodcock. Now that spring shooting has been abolished nearly everywhere in Europe, and thanks to several very mild winters, we have a very good woodcock population, even better than 20 years ago.

This winter again several "short-billed" woodcock were shot. But that is another story, a mystery story?

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NORWAY

Arne Krafft

Woodcock Hunting in Norway

Open season for woodcock

In Norway the open season for woodcock is restricted to autumn: September 15th to December 23rd. However, in certain municipalities in South-Norway, in the counties: Aust-Agder, Vest-Agder, Rogaland and Hordaland, the season starts on 1st October.

Hunting yield

Since 1971 annual estimates of the total number of woodcock killed in Norway and of the total number of woodcock hunters have been carried out by the Central Bureau of Statistics, Oslo. The estimates are based upon replies from an annual hunters' questionnaire.

During the years from 1971-1976 the annual average kill was about 7000 woodcock. The lowest kill occurred in 1976 with 5200 birds and the highest in 1972 with 8400 birds (Table 1).

Hunting Season	1971	1972	1973	1974	1975	1976
Numbers of woodcock shot	7000	8400	6500	6400	8100	5200

Table 1. Estimated kill of woodcock in Norway: 1971-76.

The yield of small game hunting in Norway for the seasons 1971/72 - 1976/77 is estimated at an annual average of 1,300,000 animals. Approximately 7000

of this harvest consisted of woodcock.

Figures for the woodcock kill in 1977 are not yet available.

The best areas in Norway for hunting woodcock are in South-Norway especially along the western and southern coast where large numbers of migrants from several breeding areas in Norway and also from Sweden and Finland concentrate during fall.

Woodcock hunters

In the seasons 1972-1976 it is estimated that the annual number of hunters with woodcock yield averaged about 3000 persons.

Hunting season	Number of hunters with yield	Number of woodcock killed per hunter with yield
1972	3600	2
1973	3200	2
1974	3100	2
1975	2900	3
1976	1800	3

Table 2. Estimated number of hunters with yield of woodcock: 1972-76.

About 48% of the hunters shot one bird, 43% shot 2-4 birds, and only 9% of the hunters shot 5 birds or more.

Wing collection 1977

In order to obtain information on the age (first winter or older) of the woodcock killed during the hunting season 1977, the hunters were encouraged to send one wing from each woodcock they shot. Before and during the hunting season announcements were made in a sporting magazine published by the Hunters Central Organisation. In spite of intensive effort only 20 wing samples were collected. In anticipation of a better response, a new effort will be made during the 1978 hunting season.

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FINLAND

Lennart Saari & Eero Perttunen

The Woodcock and Snipe Group Reports

The woodcock research was continued during 1978 in our study area. The first and only winter observation of a woodcock in the area was made on 27th December, 1977. Migration started in 1978 on March 28th and the first roding flight was observed as late as 27th April. The cold spring presumably delayed the onset of the display flights. These flights were studied in the same way as in 1977. The results correspond well with those from previous years. The number of territories was roughly the same as in 1977. In addition we conducted a detailed study on roding behaviour. Each time a woodcock was seen roding we recorded, in addition to the date and the time of day, the weather conditions (clouds, rain, wind, temperature, air pressure etc.). These observations were also collected in other parts of Finland by a team of assistants who were willing to contribute to this study. In this way we hope to find out something about the timing of woodcock display flights at different latitudes in Finland. It seems that the roding flight depends mostly on the light conditions, eyen if the relationship is not always very clear. A good example on the effects of light conditions was observed on 16th May when at 19.35 hrs the first woodcock was seen displaying under a completely cloudy sky. When the sky cleared at about 20.00 hrs the display flight ceased completely and was resumed about one hour later (at sunset)and continued up to 22.30 hrs. But sometimes the display flight may start in bright sunshine so the relationship is not that straightforward. Darkness does not preyent roding activities eyen in the middle of the night during the summer in Finland. Neyertheless the display activity is concentrated around sunset with comparatively few birds displaying after midnight.

Woodcock continued their roding flight up to 29th July. (The summer of 1978 was not as wet as 1977 and this is the probable explanation for an earlier drop in roding activity compared with 1977.)

One odd observation was made during a display flight. On 26th July two woodcocks were seen roding at 02.12 and 02.14 hrs in a well-known territory but only one of these birds was "singing" and the other followed closely but silently. No fighting sounds were heard and the "song" of the male was the normal "lonely" woodcock male song (not the easily distinguished "fight song") when no other male is present. Even the flight was very normal, no chasing or quick turning in the air. Could it be possible that the female was accompanying the male in the display flight?

In 1978 one nest of a woodcock was found in the first days of May in our study area.

The woodcock seems to be spreading to the north in Finland. In 1978 there were unusually more observations of this species near the Arctic Circle. Courtship flight was reported ca. 10 miles north of it this summer.

In our study area we also studied the choice of habitat of the woodcock. Each time a woodcock or woodcocks were flushed we recorded in addition to the date and the time of day the number of individuals, habitat, height of the trees, height of the under-vegetation, density of the forest and the distance from the observer when flushed. Our team of assistants have been collecting this kind of information in other parts of Finland, too.

Up to 1977, 1268 woodcocks have been ringed in Finland and of these there are 142 recoveries (11.2%). Most of the recoveries are from France, the British Isles and Italy. The oldest individual was recovered 9 years 5 months and 20 days after ringing, but it was ringed as an adult so it is at least 10 years old.

During 1947-1969, 55 woodcocks were marked with a wing-tag. None (16,0%) of these have been recovered. One bird was recovered as far as Tunisia, North Africa.

In 1977 the Game Research Institute collected 113 wing samples which were sent to Dr. Clausager in Denmark for analysis. The young: adult ratio was 2,42: 1 for the whole of Finland. This year we have sent requests for samples to every hunting magazine in Finland. In 1978 the open season starts ten days earlier than in 1977 (now on 1st September) and it extends to 15th October.

Since the Snipe Capella gallinago belongs to the program of this group it should be mentioned that this species has also been observed in our study area since 1966. Territories have been recorded in the years 1975/1978 but the data have not yet been analysed.

Finnish woodcock literature is sparse. The only new report on the woodcock with an English summary is by Olli Järvinen, 1978: Lehtokurpan äänen soidin (Summary: A nightly display flight of the woodcock). - Lintumies 13:22-23.

Our own project have been described by Eero Perttunen (1978): Suomen lehtokurppatutkimuksesta (only in Finnish and Swedish) Metsästäjä (Jägaren) 1/78: p.7.

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FRANCE

Charles Fadat

Influence of the physiognomy of forests on the age-ratio of the woodcocks shot with pointer dogs.

For twelve or thirteen years, four sampling districts have been thoroughly studied in the department of Herault (France) concerning the structure of

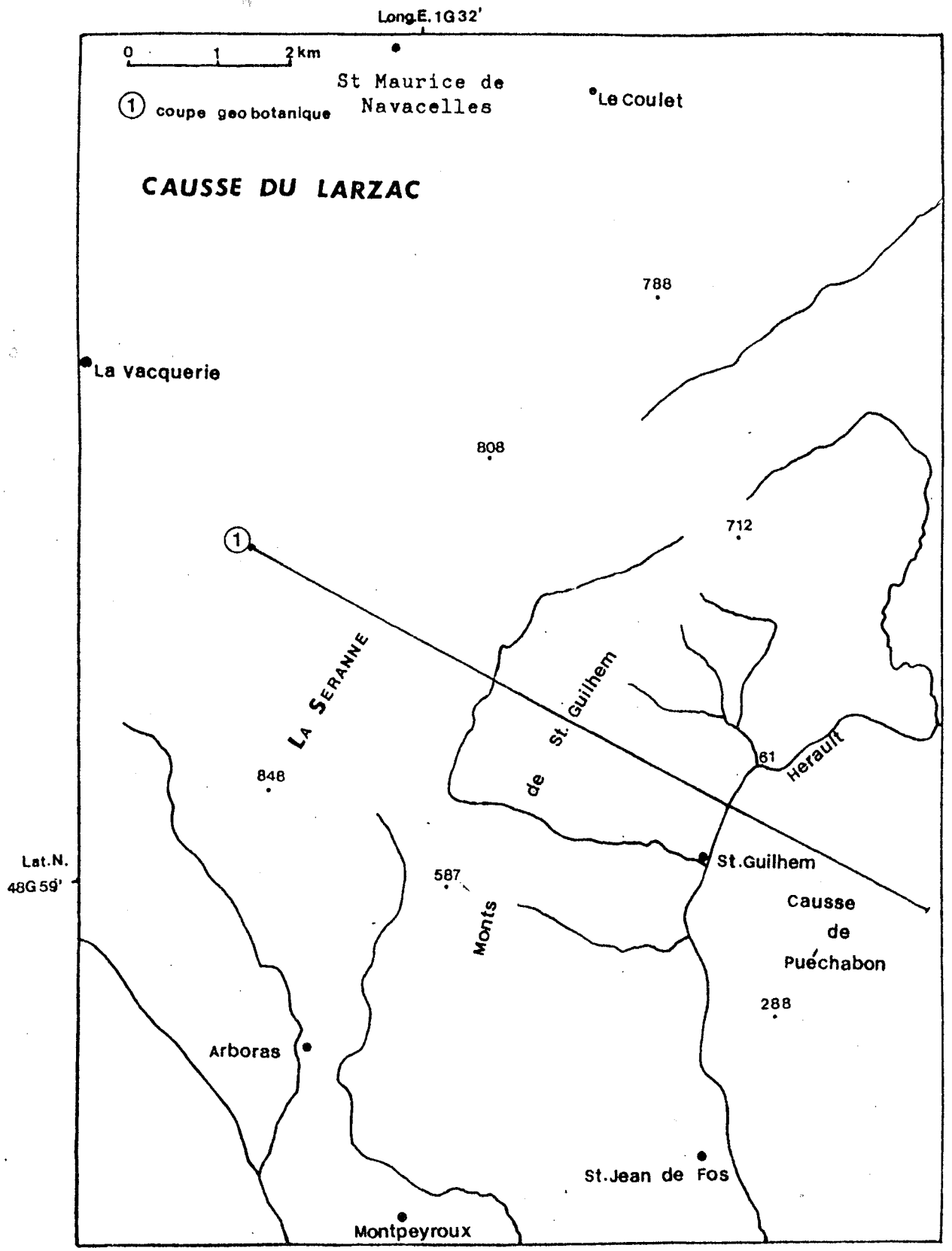

Fig. 1. Summary map of the region where the study districts of St. Guilhem, Puechabon and St. Maurice-de-Navecelles are situated. (Hérault, France).

migrating or wintering woodcock populations, and also the intra-annual and inter-annual variations in numbers which occur in these districts. Their choice was a pure accident at the beginning of the research work in 1964. Since 1976, other districts have been studied throughout France, especially in Brittany (Finistere).

Physiognomy of the forest in the Department of Herault

Three districts are situated in a zone of "garrigue" or dolomitic limestone (St. Guilhem - Puechabon 1 & 2). The fourth district (St. Maurice de Navacelles), higher in altitude, is situated on the "Causse" of Larzac which is covered with a badly damaged pubescent oak plantation (see fig. 1 & 2).

The exploitation of these woodlands ceased approximately 30 years ago. As they are situated under a Mediterranean climate and on limey ground, the growth of trees is very slow and we may assume that the vegetation has changed very little since observations started in 1964. Moreover no forest fire has occurred within the study areas.

Observation conditions

The only two sportsmen, who have shot with a pointer dog on these territories, have always used the same routes, often set by the topography. The birds seen and shot have been registered with their sex determined by dissection, their age and a set of biometrical characters. The frequency of visits has varied little during the shooting season.

Results

The age-ratio is expressed as the percentage of juvenile birds compared to the total number of birds.

Assuming that a woodcock population migrates, from one year to the next, always along the same route and winters in the same region, as the ringing data suggests, the age-ratio with its variations in time and space gives

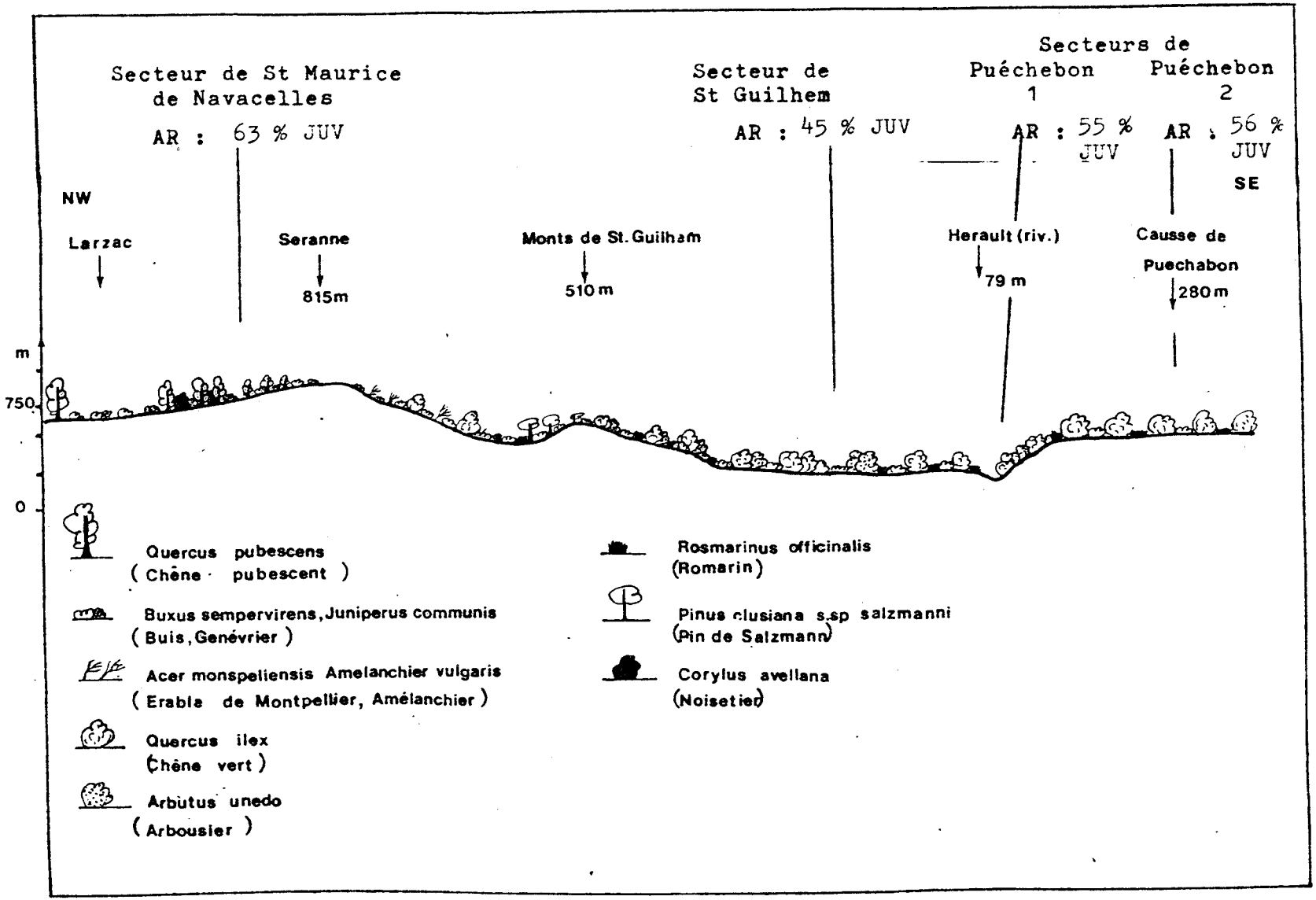

Fig. 2. Summary section showing the position of the principal vegetation types where the study districts are situated with their corresponding age-ratios (AR). The difference in age-ratio between St. Guilhem and the other districts is very significant and corresponds with the differences in vegetation types: adults prefer thick and continuous coverts. It is the contrary for immature woodcock which utilise more open coverts.

information about the production of young birds, the average age of the population, the mortality of the different age-groups and the relative displacements of young birds in comparison to adults.

Inter-annual variations of age-ratio

For the study districts viewed as a whole, Table 1 and Fig. 3 indicate variations in age-ratio for the seasons 1965/66 to 1977/78 inclusive.

Years	Juveniles	Adults	Age-ratio (% JUV)	
1965/66	25	15	62	
1966/67	28	33	46	
1967/68	33	28	54	
1968/69	38	32	54	
1969/70	17	17	50	53.9
1970/71	49	28	64	
1971/72	30	14	68	
1972/73	28	26	52	
1973/74	17	18	49	
1974/75	12	26	32	
1975/76	41	17	71	
1976/77	19	18	51	70.7
1977/78	46	9	84	
Total	383	281	58	

Table 1, Annual variations in the numbers of juvenile and adult woodcock for all the studied districts in the department of Herault (France). Age-ratio, stated by year, is expressed as the percentage of juveniles (the difference in age-ratios between the total of the last three years and the total of the preceding ones is highly significant t = 3,66).

We notice an important relative variation from one year to another, variation which results from the different factors evoked precedently. But in the whole, we notice a very sensible increase during the last 3 years which is highly significant statistically. This increase in % juveniles means a lowering of the average age of the populations which have visited these

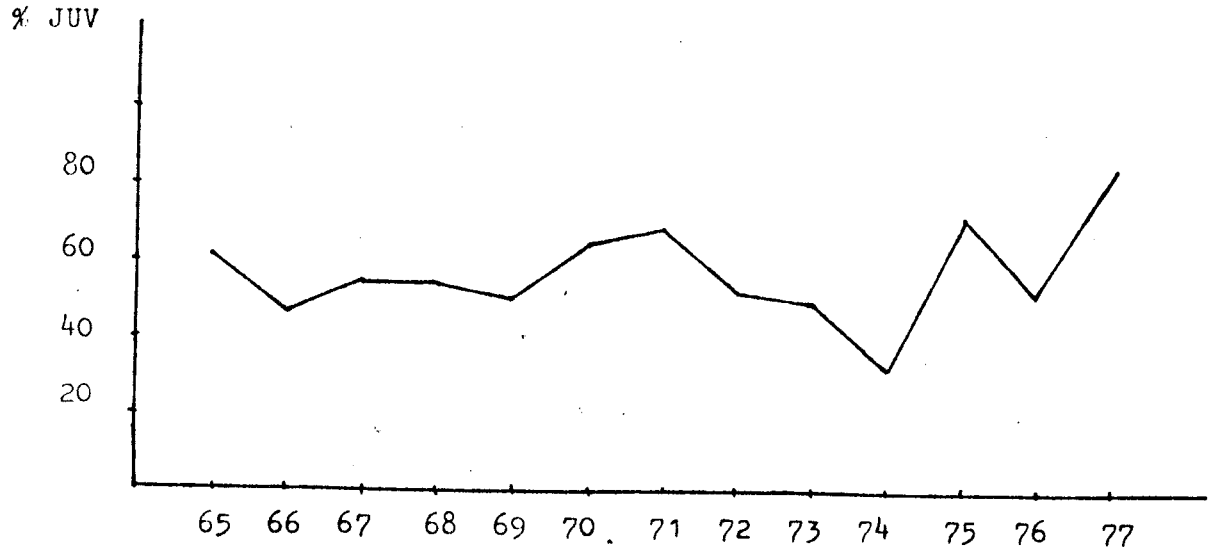

Fig. 3. Inter-annual variations of age ratio (% immatures) in all the study districts of the department of Hérault viewed as a whole.

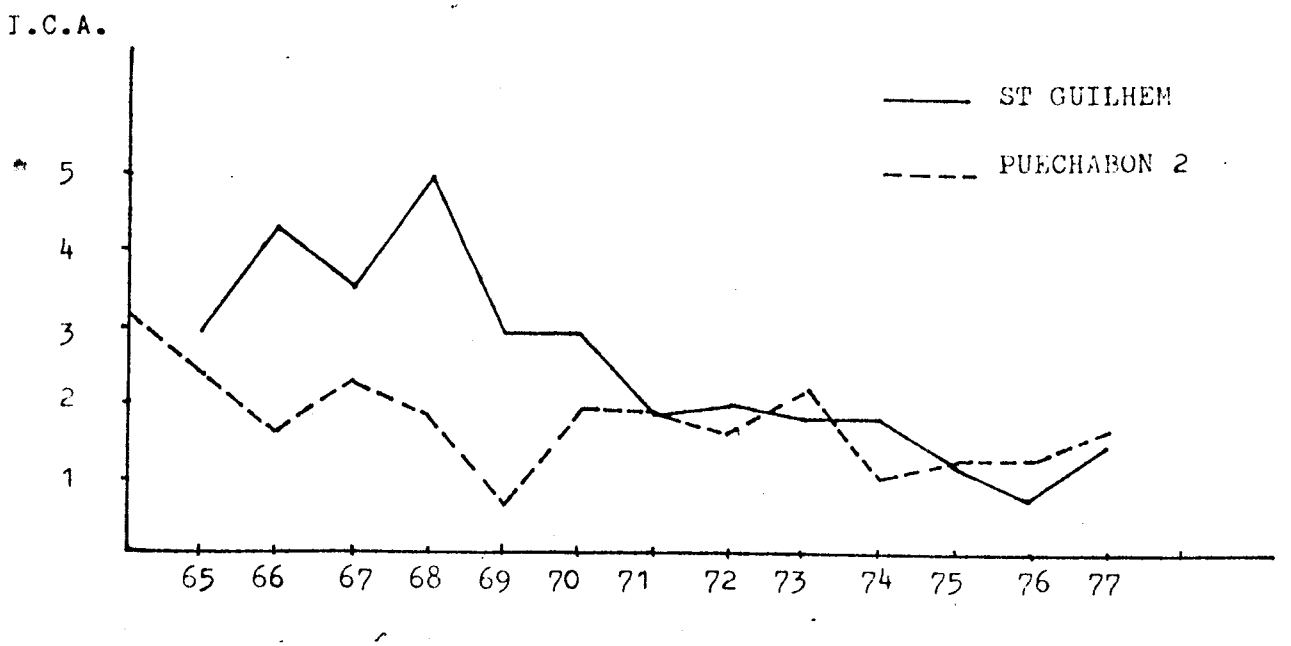

Fig. 4. Inter-annual variations of I.C.A.I. (number of different woodcock seen by districts).

districts (t = 3.66).

In particular the age-ratio for 1977/78 is very high; it probably signifies very good productivity on the nesting grounds. But as the greatest theoretical productivity of a female is 6 young woodcocks a year supposing that she has two clutches, which is more and more contested, we see that the age-ratio of 1977/78 is obviously above this value since there were 9-10 juvenile woodcocks for one female. This fact indicates therefore that a different productivity factor is involved.

We know that more adults winter in central France (Massif Central, Alpes, Jura) than juvenile ones and that the cold of winter pushes birds towards the littoral areas when it is too severe. The particularly snowy winter 1977/78 did not bring a notable contingent of adults in order to bring about a fall in age-ratio. Therefore we must admit that the population of adults has not visited the studied districts these last years thus altering the average age of the population.

Space variations of age-ratio

For the whole of the 14 cumulated years, the respective values of the age-ratio of the four districts are as follows: (1)

	St. Guilhem	Puechabon 1	Puechabon 2	St.Maurice de Navacelles
Nr. of Juveniles	54	103	39	114
Nr. of Adults	66	84	31	67
Age-ratio (% Juv.)	45	55	56	63

The difference in age-ratio between St. Guilhem and the all of the three other districts is highly significant ($x^2 = 6.55$ ddl = 1). Moreover, the study of intra-annual variations indicates that differences in age-ratio exist between the two districts during the shooting season, in spite of the small numbers of individuals at St. Guilhem.

		20	1 Nov	10	20	1 Dec	10	20	1 Jan	10	20	1 Feb	10	20	1 Mar	10
St. Guilhem	(Adult	1	-	4	9	3	6	7	8	7	4	1	-	4	3	7
	(Juv.	-	2	3	9	1	3	6	5	5	3	-	-	2	5	6
	(A.R.	66		43	50	25	33	46	38	42	43	0	-	33	62	46
Totals for three other districts	(Adult	8	14	20	19	12	10	15	10	12	6	4	10	5	8	20
	(Juv.	11	35	30	22	25	13	31	14	14	10	4	6	7	7	19
	(A.R.	58	71	60	54	68	56	67	58	54	62	50	37	58	47	49

At St. Guilhem, the age-ratio is nearly always lower than 50%, whereas it is the contrary for the other districts. This face points out that a peculiar factor acts on the structure of the shooting bag.

Discussion

In the 4 districts, the shooting conditions have been the same during the 14 years: same sportsmen, same dogs, same periods, same climatic conditions. The only factor which varies from one district to another, especially between St. Guilhem and Puechabon 1 & 2, is the appearance of the vegetation: the vegetation cover is uninterrupted at St. Guilhem, whereas it is not the same thing at Puechabon where 50% of the ground, or more, is bare. We easily go about between the clumps of ilexes at Puechabon, while we are constantly in the wood at St. Guilhem. Therefore, it appears that the vegetations physiognomy is the reason for the difference in age-ratios. Howeyer, we may wonder if it has an influence on shooting or on the alighting of birds when they are choosing their "biotope" for resting (or for feeding). Several remarks may allow us to choose between these two hypotheses. First, the detailed study of shooting bags and the aging and sexing of each of the shot birds shows that juvenile woodcocks (especially females) are shot more easily than adults: they run less, they are pointed for a longer time, they do not use natural obstacles to protect their flight as well as adults. Proportionately, then, we should think that juyenile woodcocks would be shot in greater numbers in a close area than in an open one. Now, we notice just the contrary. Then, the study

of the variations of I.C.A. ("Indices Cynegetiques d'Abondance" = Shooting Indexes of Abundance which expresses the number of different woodcocks seen on the shooting circuit for each visit) from one year to another, shows that the number of woodcock has decreased more at St. Guilhem than in the rest of the region (Table No. 2, Fig. No. 4).

	ST GUILHEM				PEUCHABON NO. 2			
Year	ICA				ICA			
1964/65					3.1		1.76	
1965/66	2.9		1.70		2.3		1.51	
1966/67	4.3		2.07		1.6		1.26	
1967/68	3.5		1.87		2.2		1.48	
1968/69	5.0		2.23		1.8		1.34	
1969/70	2.9	2.82	1.70	1.68	0.6	1.92	0.77	1.39
1970/71	2.9		1.70		1.9		1.38	
1971/72	1.8		1.34		1.9		1.34	
1972/73	2.0		1.41		1.6		1.26	
1973/74	1.8		1.34		2.1		1.45	
1974/75	1.8		1.34		1.0		1.0	
1975/76	1.2		1.09		1.2		1.1	
1976/77	0.75	1.14	0.86	1.07	1.2	1.31	1.1	1.44
1977/78	1.4		1.18		1.61		1.26	
1964/78	2.29		1.51		1.81		1.34	

Table 2, Inter-annual variations of I.C.A. at St. Guilhem and at Puechabon 2. The difference in I.C.A. between the first 10 years and the last 3 years is highly significant (t = 12.41 for St. Guilhem and t = 10.46 for Puechabon 2). It has been shown that the frequencies of observed woodcocks obeyed the POISSON distribution. The pattern-differences are therefore equal to the square root of the mean.

At St. Guilhem, the decrease of I.C.A. between 1966/67 and 1977/78 is about 6% of the I.C.A. for 1966/67. Effectively there is an excellent correlation between this theoretical decrease and the apparent decrease (Rs = 0.95 n = 12 - no significant difference for a confidence limit of 99%).

At Puechabon, the decrease is less rapid (4% of the I.C.A. for 1964/65) (Rs = 0.60 n = 14 - no significant difference for a confidence limit at 95%).

As the increase in age-ratio already noted (cf./3.1) is accompanied by a general fall in numbers in the studied district, we may deduce that these two simultaneous phenomena represent a drop in numbers of the examined population and not an increase in the productivity of this population.

Adults are then less and less numerous in comparison to juvenile birds. This is corroborated by the fact that we note a greater fall in numbers frequenting St. Guilhem, precisely in the place where the study of age-ratio indicates they prefer to alight.

Conclusion

In the department of Herault (France), the comparative study of age-ratio of the woodcocks shot with pointer dog, in 4 neighbouring "biotopes", which differ only in their vegetations' physiognomy, indicates that there is a significant difference between the surroundings with close vegetation where adults are predominant and more open surroundings where it is the contrary.

This difference is due not to shooting, but to differential behaviour of the adults in comparison to juvenile woodcocks, behaviour that makes them search for closer surroundings.

This was also established in other places, and more especially in Brittany, in the State Forest of Freau (Finistere), where the age-ratio of the shooting bags of the two last years were significantly lower than the age-ratio of shooting bags made in the grove areas of Finistere.

This fundamental difference in behaviour between young birds and adults allows the explanation of two results obtained otherwise:

- ringing data given by the C.R.B.P.O. specify that 74.5% of the juvenile woodcocks which visit France are shot in the first year of life, against 50% for adults. Foreign data corroborate these results.

- the study of the age-ratio of woodcocks shot in France during winter shows that it increases in a significant way from coastal regions to the interior of the country.

As interior areas are more woody and in a more continuous[1] way than coastal regions, we think that this is the reason for the difference in age-ratios.

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(1) Some birds shot outside the usual circuits are not mentioned in these results, whereas they were mentioned in Table No. 1, which may bring about some differences in totals.

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RUMANIA

Dr. M. Maties & Dr. D. Munteanu

Migration of the Woodcock to Rumania

Research carried out in the countries of Western and Central Europe has clarified the general direction of migration of the woodcock from Finland and the Baltic countries. In autumn, as Fig. 1 shows, they move towards the South-West. For other populations detailed information can be found in a recent article by Kalchreuter (1974). In a more detailed paper - in which we summarised all the details about the woodcock's migration to Rumania which this century has brought to light, - we also dealt with the

directions of seasonal movement. The results are presented here.

In Fig. 1 we have illustrated in diagram form the routes followed by one group of the sample of woodcock ringed in Finland and the Western USSR which crossed Rumania (or came close to it) and were later found in Greece, Turkey, Bulgaria and Yugoslavia (Garavini, 1971; Fadat, 1972; Dolbik, 1974; Paevski, 1971). If we analyse these maps we can see that in Rumania the general direction taken in autumn is from the North to the South - suggesting the opposite direction for spring.

This assumption is confirmed if we observe some sample birds spotted during migration, outside their feeding or breeding grounds, e.g. in open fields. The total number of these observations registered in Rumania between 1894-1975, refers to 96 birds migrating in autumn or spring (Figs. 2 and 3).

The details shown in Fig. 3, along with observations concerning the migration of the woodcock, lead us to the conclusion that some birds which pass through Rumania follow a N.E. - S.W. direction (and SW-NS respectively), and certainly come from nesting zones in the USSR. Also, woodcock which migrate across Transylvania (within the Carpathian mountain range) both at the end of autumn and at the beginning of spring, follow routes along the periphery of the mountains in a general North-East - South-West (SW-NE) direction.

On the basis of data gathered to date, we consider it a general rule that the more we move west from the lower basin of the Danube (where the general direction taken by birds from the Baltic and Finland is north to south) the more the autumn movement shifts towards the west.

As we saw, in Rumania outside the Carpathians, movement is from north to south, while in Hungary and in SE Italy migration follows a NNE-SSW direction, in France NE-SW, and in Ireland and England ENE-WSW.

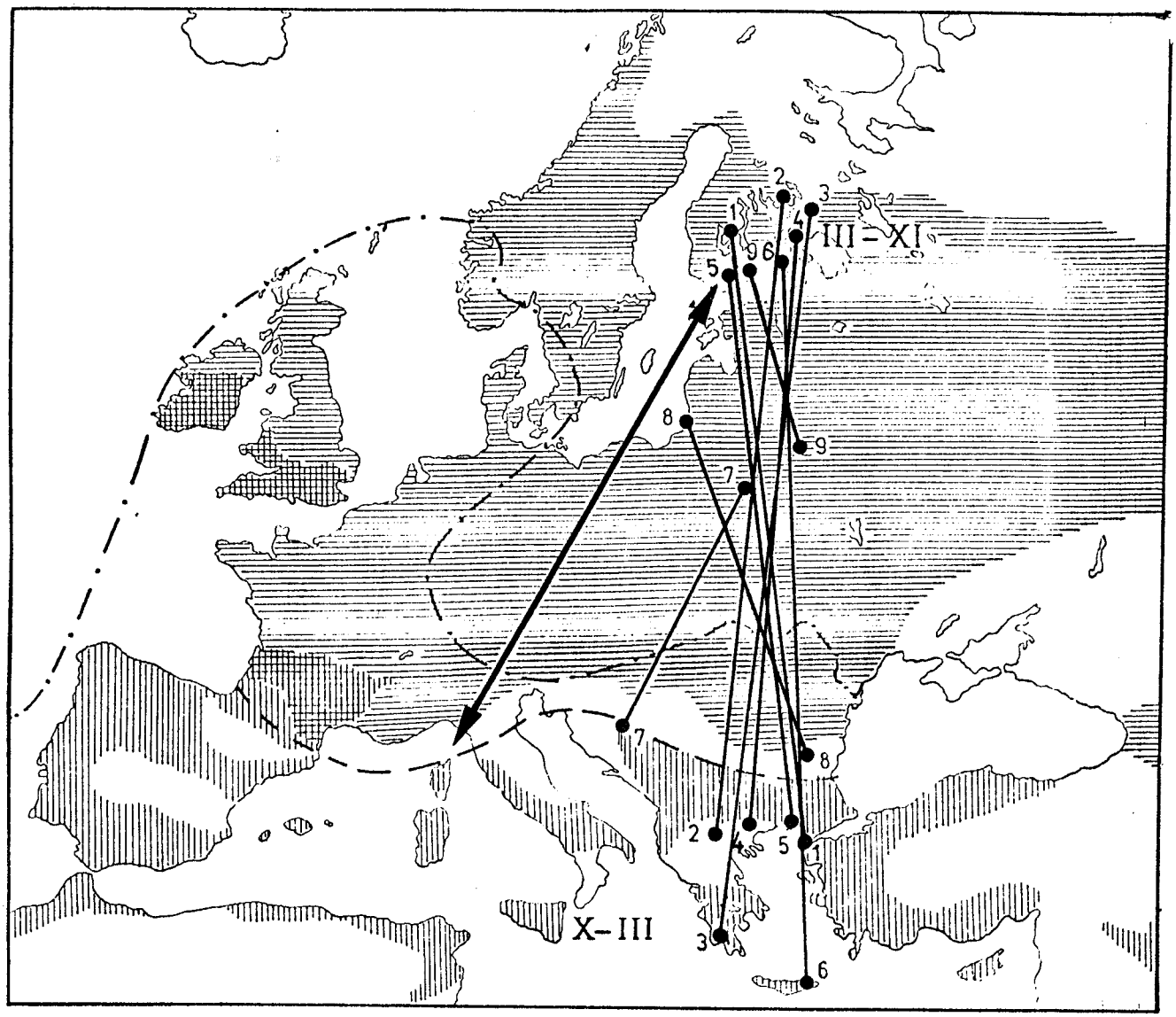

Fig 1. Distribution and annual movement of the woodcock in Europe, (horizontal lines indicate the nesting area according to Voous, 1960: vertical lines indicate the wintering areas, Schenk, 1924 and Garavini, 1957: broken lines are the Southernmost limit of nesting: broken lines with dots are the Northernmost limit of wintering. The large arrow indicates the general direction of migration for the species (and the months of residence), Bruun-Singer-Konig, 1969: arabic numerals indicate ringing locations in the Baltic and the points of recovery south of Rumania.

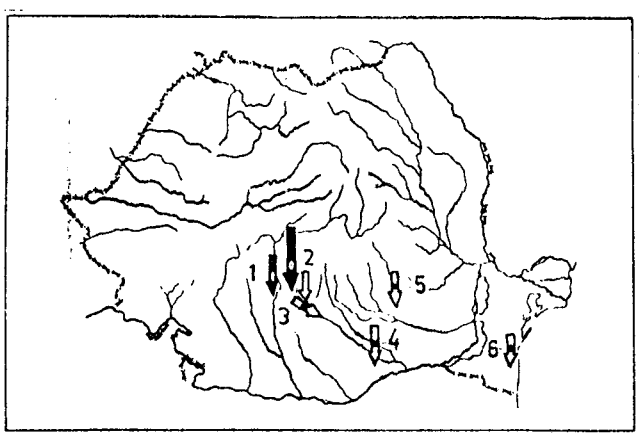

Fig. 2 Woodcock observed during their migration flight in the second half of October (white arrow = day migration, black arrow = nocturnal migration, short arrow = 1-10 birds, long arrow = more than 10).

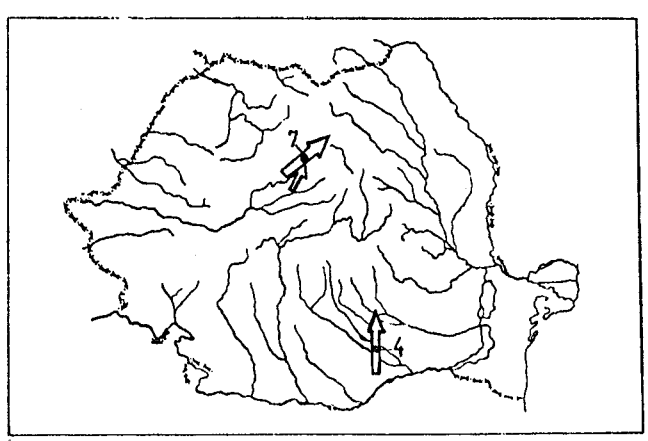

Fig. 3. Sitings of woodcock during their spring migration, made between 19th March and 7th April.

Numbers refer to observation areas (see Appendix 1).

Appendix I

1 - al monastere de Cozia (andito della riva Olt); 2 - lago Capra (montagna de Fagaras; Berger, 1914); 3 - Pitesti; 4 - Bucarest (informazione I. Catuneanu); 5 - Gura Vadului (Prahova; informazione I. Catuneanu); 6 - Valul lui Traian (Constanta; informatore I. Catuneanu); 7 - Reghin, inf. St. Kohl.

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WEST GERMANY

Dr. H. Kalchreuter

Some impressions of the Sixth Woodcock Symposium, Fredericton, New Brunswick, Canada. October 4, 5 and 6, 1977

Though Scolopax minor (Edwards 1974; = Philohela m.) is a different species, it is so similar to many aspects to our S. rusticola, that the results presented during this symposium may give us some hints for the management of our bird, and, furthermore, might lead to closer co-operation with the American Woodcock people.

Nearly a hundred biologists joined this symposium, while only two, Graham Hirons (England) and myself (W-Germany) represented our "Woodcock and Snipe Research Group".

The 33 papers presented were mainly dealing with woodcock habitat assessment (only three of them concerned harvesting). Annual strip census of the singing males indicate a more or less stable population rangewide. But while it is still increasing in the western part, there is a 2% annual decline in the east - analogous to a 2% annual decrease of woodcock habitat, as aerial photography indicated.

Reynolds, one of the leading earthworm specialists in the world analysed the woodcock's food requirements. Up to 80% consists of earthworms - not surprising when looking at the birds long beak. During the field trip on 5 October, Reynolds found about ten times as many earthworms in his formalin-treated samples of good woodcock habitat than in the lesser frequented areas. There is some evidence that earthworm occurrence is one of the factors limiting woodcock's range.

Much attention was paid to coyer in the breeding, feeding, resting and wintering habitats. Especially during the day stands of alder are most frequented, providing good coyer against ayian predators, and keeping ground yegetation low to enable woodcock to escape mammalian predators. Further, nitrification of the soil by alders supports earthworms, hence woodcocks.

Suitable singing grounds obviously are of great importance. Their size is more or less correlated with the height of surrounding tree stands: the higher they are, the larger an open area is required. Dense forests are adverse to the reproductive behaviour of the woodcock!

The fact, that not all males occupy a singing ground supports the assumption, the latter might be a limiting factor for the population. Bourgeois and Couture found an average of two to three non-singing and therefore hard to detect males per singing male. In 15 of 18 cases, when they collected or caught the "dominant" male, it was replaced by a

"subdominant" one the next evening (similar observations on S. rusticola, 2.5 subdominant males per one dominant, Marcström had presented at the previous Woodcock Symposium in 1974). Very interesting were their findings of a considerable variation of the sex ratio in the breeding population from year to year, ranging from 0.3 to 2.0 breeding females per singing male. In another area Goudy (pers. comm.) found the highest number of breeding females in the year with the least number of males present.

Recognizing the great importance of proper habitat for the welfare of the woodcock population, Owens 10 year plan, providing 7 million dollars for investigation of habitat requirements and 5 million dollars for acquisition and proper management of land is pursued. A considerable part of this amount might be acquired from stamps from the increasing number of woodcock hunters.

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ITALY

Dr. S. Spano and Dr. A. Chelini

Woodcock Wing Collection: 1977/78

The 1977/78 season was particularly favourable for hunting woodcock. Altogether 1250 wings were sent in for examination and of these 1229 were classified as follows: 340 adults and 889 immatures. The overall ratio was 1 adult:2.60 immatures. See Table 1. Over a hundred hunters contributed to the survey with half belonging to Woodcock Gun Clubs. About 40 members of the Woodcock Clubs contributed 800 wings or 44.6% of the total wings collected.

Region: ITALY Year: 1977/78

Hunters: 109 (+ others)

Wings sent in: 1244 (1229 + 15 not classifiable)

Adults: 340 Immatures: 889 Ratio: 1 adult:2.6 immatures.

Week	I				II				III			
Age / Months	Ad	Juv	Tot	÷	Ad	Juv	Tot	÷	Ad	Juv	Tot	÷
October	-	3	3	-	1	19	20	19	3	24	27	8
November	27	86	113	3,2	26	77	103	3	27	84	111	3,1
December	29	52	81	1,8	17	67	84	3,9	18	40	58	2,2
January	10	23	33	2,3	10	15	25	1,5	7	10	17	1,4
February	-	7	7	-	2	7	9	3,5	1	4	5	4
March	8	7	15	0,9	3	6	9	2	1	3	4	3
TOTALS	74	178	252	2,4	59	191	250	3,2	57	165	222	2,9

Week	IV				V				TOTALS			
Age / Months	Ad	Juv	Tot	÷	Ad	Juv	Tot	÷	Ad	Juv	Tot	÷
October	24	36	60	1,5	5	9	14	1,8	33	91	124	2,7
November	28	67	95	2,4	7	12	19	1,7	115	326	441	2,8
December	12	22	34	1,8	4	11	15	2,7	80	192	272	2,4
January	1	13	14	13	-	1	1	-	28	62	90	2,2
February	12	22	34	1,8					15	40	55	2,7
March	-	1	1	-					12	17	29	1,4
TOTALS	77	161	238	2	16	33	49	2	283	728	1011	2,6
					Without dates				57	161	218	2,8
					TOTALS				340	889	1229	2,6

N.B. In addition 93 wings were obtained from Yugoslavia of which 31 were adults and 62 immatures (ratio 1:2.0). In total 1337 wings were examined.

TABLE 1. Summary and weekly breakdown of wing collection.

The greatest number of woodcock were shot in November with Sardinia yielding the highest total (158). Low seasonal ratios were recorded in Liguria (1:1.7), Emilia (1:1.5), Tuscany (1:1.6) and Abruzzi (1:1.7); on the other hand much higher ratios were recorded in Puglia (1:7.5) See Table 2. The highest monthly ratio was for November (1:2.8) after which the ratios tend to decrease. See Table 1. In addition 93 wings were received from Yugoslavia. See Table 1. Overall more females (54.47%) than males were shot during the season.

REGION	TOTALS			WINGS WITHOUT DATES			GRAND TOTALS			TOTAL NO. OF CLASSIFIABLE WINGS
	Ad	Juv	♀	Ad	Juv	♀	Ad	Juv	♀	
PIEMONTE	13	42	3,2	2	16	8	15	58	3,9	73
LIGURIA	21	24	1,1	2	15	7,5	23	39	1,7	62
LOMBARDIA	13	61	4,7	12	30	2,5	25	91	3,6	116
EMILIA	15	21	1,3	9	15	1,7	24	36	1,5	60
TRENTINO	-	6	-				-	6	-	6
TOSCANA	26	38	1,5	19	35	1,8	45	73	1,6	118
UMBRIA	14	29	2,1				14	29	2,1	43
MARCHE	28	56	2				28	56	2	84
ABUZZI	6	10	1,7				6	10	1,7	16
MOLISE				-	3	-	-	3	-	3
LATIUM	23	76	3,3	7	29	4,1	30	105	3,5	135
CAMPANIA	20	60	3				20	60	3	80
PUGLIA	8	60	7,5				8	60	7,5	68
LUCANIA	7	26	3,7	4	10	2,5	11	36	3,3	47
CALABRIA	11	24	2,1				11	24	2,1	35
SICILIA	32	83	2,6	2	8	4	34	91	2,7	125
SARDEGNA	47	111	2,3				47	111	2,3	158

TABLE 2. Regional breakdown of wing collection

1977

No. of Contrb.	REGION	OCTOBER			NOVEMBER			DECEMBER		
		Ad	Juv	÷	Ad	Juv	÷	Ad	Juv	÷
11	PIEMONTE	3	13	4,3	10	29	2,9			
8	LIGURIA	7	2	0,3	9	13	1,4	3	5	1,7
16	LOMBARDIA	5	31	6,2	7	25	3,5	1	5	5
11	EMILIA	4	3	0,5	6	14	2,3	-	1	-
1	TRENTINO		6	-						
15	TOSCANA	4	8	2	11	19	1,7	11	10	0,9
1	UMBRIA				5	18	3,6	9	11	1,2
3	MARCHE	2	5	2,5	9	24	2,7	1	3	3
4	ABRUZZI	1	-	-	1	6	6	4	4	1
1	MOLISE									
10	LATIUM	6	11	1,8	8	39	4,9	8	22	2,7
4	CAMPANIA	-	6	-	10	28	2,8	7	16	2,3
4	PUGLIA	1	2	2	2	34	17	2	19	9,5
4	LUCANIA	-	3	-	3	7	2,3	2	12	6
4	CALABRIA	-	1	-	11	22	2			
6	SICILIA				10	30	3	16	37	2,3
6	SARDEGNA				13	18	1,4	16	47	2,9

1978

No. of Contr.	REGION	JANUARY			FEBRUARY			MARCH		
		Ad	Juv	÷	Ad	Juv	÷	Ad	Juv	÷
11	PIEMONTE									
8	LIGURIA	2	-	0	-	4	-			
16	LOMBARDIA									
11	EMILIA							5	3	0,3
1	TRENTINO									
15	TOSCANA								1	-
1	UMBRIA									
3	MARCHE	1	-	0	9	15	1,7	6	9	1,5
4	ABRUZZI									
1	MOLISE									
10	LATIUM	1	4	4						
4	CAMPANIA	1	3	3	1	3	3	1	4	4
4	PUGLIA	3	5	1,7						
4	LUCANIA	1	2	2	1	2	2			
4	CALABRIA	-	1	-						
6	SICILIA	6	11	1,8	-	5	-			
6	SARDEGNA	14	35	2,5	4	11	2,8			

TABLE 3. Summary of monthly wing collection by regions

In January 1978 new hunting regulations were enforced in Italy. In relation to the woodcock they are as follows:-

(a) the shooting season opens on the 3rd Sunday in September and closes at the end of February.

(b) flight shooting of woodcock is not forbidden as is hunting after sunset.

(c) the sale of woodcock, including cooked woodcock, has now been banned.

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IRELAND

J. Wilson

A preliminary analysis of the mapped roding flights of unmarked Woodcock

Tester and Watson (1973) interpret their observations of the roding flight of the woodcock as defining the boundaries of the individual male's breeding ranges. These home ranges or possible territories are derived from the mapped outer flight paths and interactions (male x male pursuit flights) recorded over a tract of land, consisting predominantly of coniferous plantations with occasional birch and other hardwood woodlands and open fields and pastures, near Banchory, Kincardingshire, Scotland.

In Co. Wicklow in Ireland during the 1978 breeding season the flight paths and related activities of unmarked roding woodcock were mapped over a 10 ha area approximately 400 m long x 250 m wide (which incidentally coincides with the average home range of territory size (9.05 has) determined by Tester and Watson). The observation area is a recently planted (1968) clearing in a mixed deciduous/coniferous woodland (approximate area 750 ha). It is situated on a gently sloping valley side with the observation point

providing views over a much wider area. Flight paths were only mapped within the defined area because approaching dusk and song activity in this locality hindered accurate recording and mapping.

Fig. 1 shows (a) the location of the observation area within the woodlands and (b), (c) and (d) the mapped flight paths and interactions of roding woodcock on three evenings during the period April to June, 1978. Table 1 summarises the details recorded on each of the evenings.

	Date	Duration	Roding Flights Recorded	Roding Flights Mapped	Interactions Recorded	Interactions Mapped
1.	26.4.78.	43 m	44	31	8	5
2.	22.5.78.	40 m	36	30	6	5
3.	29.6.78.	59 m	60	35	7	3

Table 1. Details of roding activity on three evenings in April, May and June.

The intensity of roding activity recorded at this site is consistently high by comparison with other sites in Ireland (pers. obs. 1976-78) and elsewhere (Hirons 1977, Nemetschek 1977). As a result, on most evenings, approximately seventy per cent of all roding flights and related activity were mapped.

The maps show different patterns of flight activity over the area for the three evenings. In the maps certain of the flight paths are common in both direction and route but equally there are many which are not. The interactions vary tremendously, i.e. whether they originate outside or inside the area, the path taken and the breakaway points. The predictability of flight paths and interaction points referred to by Tester and Watson was not a consistent feature of these observations. This may have resulted on their part from too little time spent at their observation points (min. of 3 visits). In Co. Wicklow certain routes could only be predicted for short periods of time, e.g. in mid-April for a period of a fortnight a flight looped characteristically over the observation point but was not repeated again.

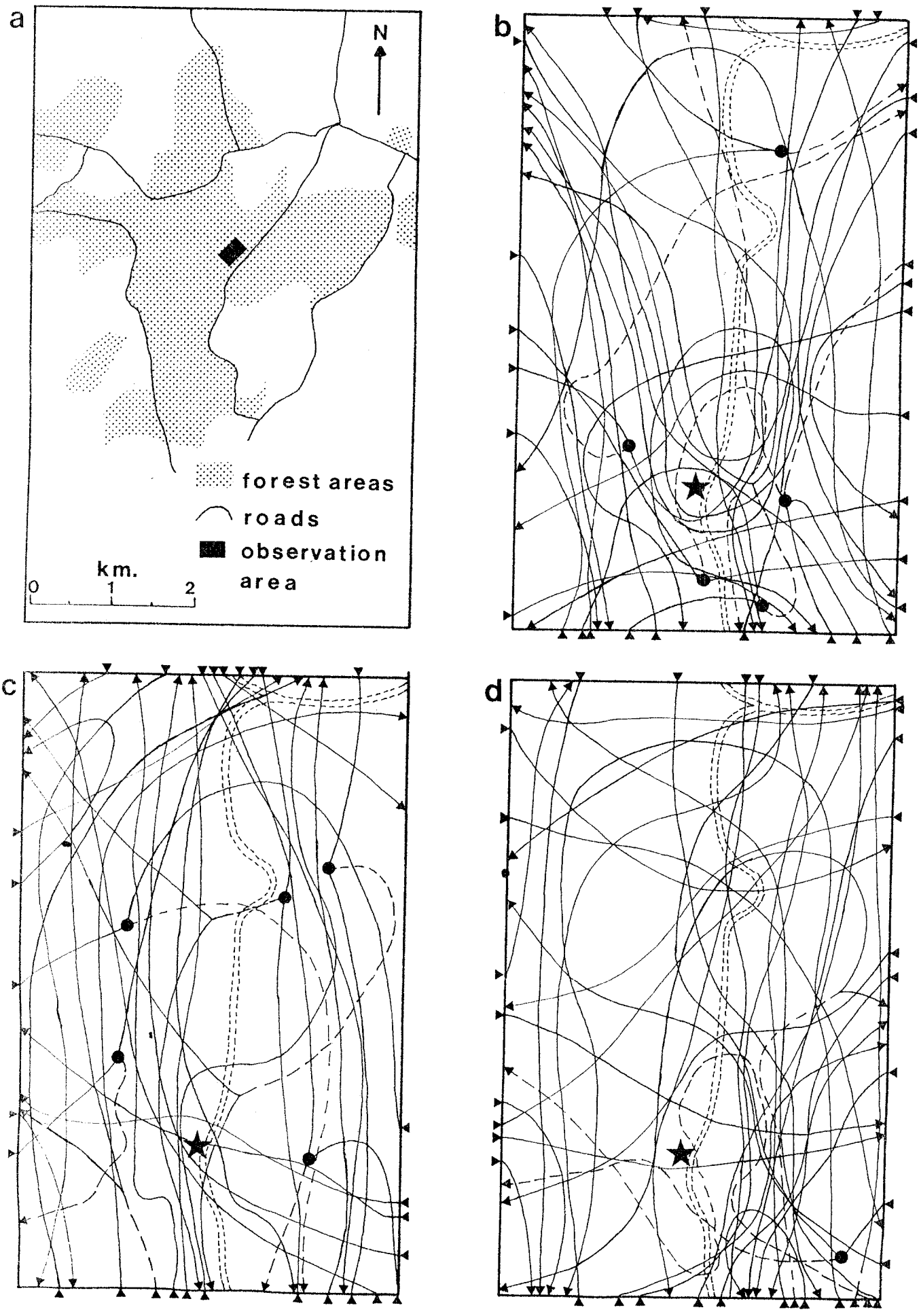

Fig. 1 shows (a) the location of the observation area within the surrounding woodlands and (b), (c) and (d) the mapped flight paths of roding woodcock within the defined area with points of entry and exit ▶ ◀, interaction ●, pursuit flights --- and the observation point ★.

Tester and Watson estimated from their observations that the average home-range or territory of a woodcock on their area was 9.05 ha (range 6.02 ha to 12.75 ha). In these circumstances it should have been possible by the careful selection of observation points to observe the complete flight of certain individual woodcock. In my study area single woodcock were never seen to regularly describe circular or semi-circular flight paths in the study area or elsewhere (pers. obs.). In fact the average flight path is rather straight or gently curved as shown in Fig. 1, (b) (c) and (d) and individual woodcock were rarely seen over the study area for more than 20 seconds at a time. Additional observations, made outside the study area but within the same woodland block, showed that individuals can fly for more than 1 km in approximate straight lines or gently sweeping curves.

Other observations, which are directly relevant to this report but which are not apparent from the figures, are as follows:

1. As many as four independently roding woodcock have been seen together over the study area.
2. Up to three woodcock have been observed to pass along the same route in quick succession, that is, at five to ten second intervals.
3. Only once, in a series of 35 observations, where roding woodcock have alighted close to the observation point, has a reaction to the presence of other roding or interacting woodcock overhead taken place.
4. Self-marked birds, e.g. with distinct snipe-like peent or early moult pattern on the wing, have occurred irregularly during the course of an evening or from evening to evening suggesting that at least some birds move fairly randomly through the area.

In these circumstances it has not been possible to select "outer" or "inner" flight paths and hence delineate possible home ranges or territories. It is suggested that these observations and many others made in Ireland (in prep.), even though they are of unmarked birds, do not support the idea of

discreet home ranges or territories, rather that roding behaviour is a much more complex phenomenon. The evidence for this is now becoming available from the preliminary analysis of sonographs of tape-recorded calls and the monitoring of radio-equipped males in England by Dr. Hirons (1977, 1978 in press, pers. comm.). His research shows for example (1) at Wytham Wood that up to six or seven woodcock regularly overflew the woodland with considerable overlap in their ranges which varied from 28 to 73 ha.

(2) that some radio-equipped males rode over specific areas while others can be monitored over four separate woodlands up to 2 miles apart on the same evening.

It is hoped that this short report together with Dr. Hiron's contributions in this Newsletter will stimulate and provide the necessary encouragement for a new approach to the breeding aspects of woodcock biology. Particularly in those countries which encompass the species' main breeding range and where the breeding habitat is relatively continuous by comparison with the fragmented nature of the woodlands in Britain and Ireland.

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B. Stronach

Snipe Measurements

Since people first became interested in snipe, mostly the shooting man, there have been controversies about where snipe came from, what colours the geographical races were and finally how could one tell their age and sex without dissection.

	Wing	Wt.	B.	CTF	LOTF	WOTF
1	131.4	107.0	65.75	60.96	55.28	12.71
2	130.9	113.2	67.34	59.08	50.45	12.57
3	130.2	106.9	65.30	59.33	50.44	11.76
4	129.5	112.5	66.86	57.34	46.58	11.80

TABLE 1. Summary of snipe measurement data.

1 = Adult ♂ B = Bill length

2 = Adult ♀ CTF = Length of central tail feather

3 = Imm. ♂ LOTF = Length of outer tail feather

4 = Imm. ♀ WOTF = Width of outer tail feather

For a period of 5 years I carefully weighed and measured 700 snipe, the object of this exercise was to try and separate the sexes by morphometrics. The figures in Table 1 are a summary of my measurements. (Tucks method was used for ageing). A final analysis of this data will be published eventually.

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GREAT BRITAIN

J. Swift

Woodcock wing survey: 1977/78

The woodcock is a game bird fascinating to sportsmen and ornithologists alike for its behaviour, migrations and the challenging sport it provides. It is less understood than many other game species but sportsmen now in several countries are helping to reveal more of its life and habits by contributing to the Woodcock Wing Survey.

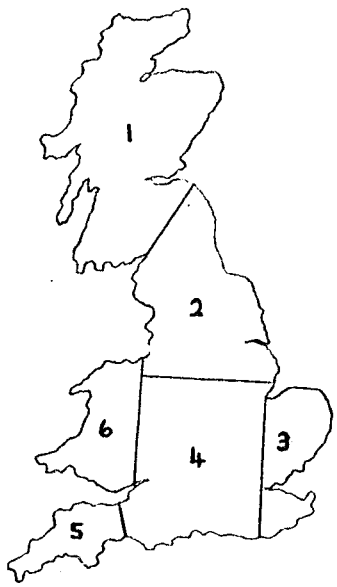
This survey, organised by the Woodcock and Snipe Research Group of the International Waterfowl Research Bureau, is aimed at learning more about the number of young recruited into the adult population and the subsequent distribution of first winter birds throughout the woodcock's range. Such information is needed for the sound management of the bird for sporting and conservation purposes.

Sportsmen in Britain for three seasons have sent one wing from many of the birds shot to WAGBI headquarters. Here, the condition and marking of the primary feathers and coverts permit the first winter birds to be distinguished from the adults. The proportions of these immature:adult birds are then tabulated by region so comparisons are possible from year to year. During the 1977/78 season nearly 100 sportsmen sent in 1279 wings: these revealed marked differences in the regional proportions of immature:adult woodcock (Table 1).

When faced with such differences it is best to analyse the figures statistically to determine objectively whether the departures of the regional immature proportions from the overall proportion can be explained simply by sampling variations or whether they reflect true departures which have some biological or other cause. Such analysis (the Chi-squared test) indicates that in Scotland significantly fewer, and in the West of England, significantly more, immature woodcock were taked than expected by chan

TABLE 1.

Proportions of immature:adult woodcock shot in different regions of Britain during 1977/78.



Region	Proportion of Immature: 1 adult	Number of Wings	Number of Beats
1 Scotland	0.6	146	18
England			
2 North	1.0	134	18
3 East	1.3	403	24
4 Midlands/ Cent. South	1.4	111	23
5 West	1.9	299	6
6 Wales	1.3	186	19
BRITAIN	1.3	1279	108

These results are put into better perspective by comparing them with the results for the previous two seasons, (Table 2).

	SCOTLAND	ENGLAND				WALES	BRITAIN
		North	East	Midlands/ Central South	West		
Season							
1975/76	-	0.8	0.8	1.0	2.7	1.0	1.1
1976/77	1.1	0.7	0.7	0.9	1.4	0.6	0.9
1977/78	0.6	1.0	1.3	1.4	1.9	1.3	1.3

Table 2. Proportions of immature:1 adult woodcock shot in different regions of Britain over three seasons.

For each season statistical analysis shows that the regional differences are real and not due to chance but the only consistent result is for England-West where, for three seasons, significantly more immature woodcock have been taken than expected.

Finally, the results can be analysed for any change in the overall proportions of immature:adult woodcock taken through each season: only for 1976/77 is there evidence of a decline in the proportion of immature birds shot as the season progressed (Table 3).

Season	November	December	January
1975/76	1.1	1.1	0.9
1976/77	1.2	1.1	0.7
1977/78	1.2	1.2	1.3

Table 3. Proportions of immature:1 adult woodcock shot each month during three seasons.

The possible reasons for all the above variations in results are many: breeding success will vary according to area, year and country depending on, for example, food supply, weather conditions and predators; subsequent migrations may differ in timing and route, according to age; differing proportions of resident and migrant birds may be present in the areas shot; different types of shooting (flighting, driven, over dogs) may select certain parts of a population; severity of winter conditions will vary. It is not surprising, therefore, that little pattern has emerged from even three seasons' wings.

Wing collections are developing in other countries and the British results must be seen as part of the international study. Consistently high proportions of immature:adult birds are found in the Danish, Italian and Iranian bags (usually more than 2:1), whereas in Ireland, the proportions are consistently low: in 1975, for example, 0.6:1. Among the WAGBI collection for 1977/78 were 35 wings from 4 beats in Northern Ireland, showing a similar proportion of 0.5:1. The British results, about 1.1:1, lie inbetween.

The results to date, therefore, suggest a declining proportion of immature: adult birds from the east to the west of the woodcock's range. There is, however, the somewhat anomalous result from the south west of Britain, where, for some reason, young woodcock are disproportionately more abundant than

elsewhere in Britain or they are taken more readily by the guns. (A remarkable figure of 4.6:1 was returned by Guernsey: the sample size was small and further study would be desirable).

The woodcock survey currently is raising more questions than it can answer. The need for larger, more extensive wing collections over possibly several more seasons is clear. Then by combining all the results with those of, for example, the Game Conservancy's current studies of woodcock ecology and the ringing programme, much more of this game bird will be known, to the benefit of both sportsman and naturalist.

The wing survey is producing intriguing and important results, but its future depends on all sportsmen who pursue the woodcock. If one wing from every bird shot this season were clearly marked with the date and place of shooting and sent to WAGBI headquarters we would gain a fuller coverage of the country and a surer interpretation of the results. This can only be for the good of woodcock management for sporting and conservation.

John Swift, W.A.G.B.I., Marford Mill, Rossett, Wrexham, Clywd, Wales.

Historical Notes

1. An extract from a letter to "The Field", 1889, by G. H. Pentland and entitled "Breeding haunts of the woodcock in Co. Limerick", West of Ireland.

Sir, I send you some notes on the habits of woodcocks in their breeding season which your readers may find interesting. They were made at Glenstal, Limerick, the residence of Sir Croker Barrington, Bart., who has kindly allowed me to publish them.

Glenstal lies on the S.W. slope of the Slieve Phelim hills. The coverts consist of woods of great extent, and the undergrowth is cheifly rhododendron, laurels, bracken, heather, and wood rush. They are well preserved, and very quiet and secluded, the soil is light and warm, peaty in many places; there

are plenty of bogs and marshy meadows near, and the hills are covered with heather.

I got the following information from O'Neil, the head keeper, a very intelligent man, who has been here for twenty-eight years; from Flahavan, an old woodranger who has spent his life in the woods; from Sir Croker himself and his sons, and from my own observations; and I have taken great pains to insure its accuracy. Previous to 1870 woodcocks were numerous here in winter, but were never seen in summer. In 1870 the first nest was found, and was looked upon as a great curiosity. The next year three or four were found; and from that time they kept on gradually increasing till about 1886, when the increase became very marked.

In 1888 Flahavan knew of twenty-six nests near his own house, and O'Neil found between thirty and forty. In 1889 there were as many or more; and as no search was ever made for them, and the breeding ground is of great extent, I think there must have been fully 100 pairs of breeding birds. In June and July 1889, I often counted twenty to thirty cocks flying about the woods and glades, chasing each other and playing, and continually uttering their curious croak and cry. They are very fond of the gardens, and one evening I saw seven or eight alight in a strawberry bed. When chasing each other they fly at a marvellous pace, and call vociferously. They begin to fly about an hour before dark, and skim about in great circles, and backwards and forwards as if amusing themselves, and not at all as if going to feed. O'Neil tells me they are only seen in pairs about March, and that they separate when the eggs are laid. They hatch out in April, and sometimes have two broods. He once found a woodcock sitting on four eggs, with four young ones as large as herself squatting round. On Sept. 1, 1888, he found a bird sitting, and she hatched out all right, for I saw the nest and bits of the eggs myself. I have seen nests and eggs in July myself, but I do not think second broods occur very often. The eggs are nearly always four (O'Neil has only found five once, and there one was broken); three is

very unusual, and addled eggs are rare. He brought me one addled one and the remains of three good ones on July 12, 1889.

2. The current open seasons for Snipe and Woodcock in Ireland are the 1st Sept. to 31st Jan. and 1st Nov. to 31st Jan. respectively. This is the first year that Woodcock shooting has been put back until 1st November yet as the following extract from "The Field" shows arguments were being put forward as early as 1906 for a November opening date for both species.

As matters are, the west of Ireland obtains its supply of woodcocks from three sources, namely the birds that breed in its few suitable woods, those that breed in northern and eastern Ireland, those that breed on the Continent. All these birds leave their breeding quarters in early autumn, just when the leaves first drop from the trees in Ireland. On any date in October a grouse shooter in Kerry finds that he can add one or perhaps two woodcocks to his bag. These are always larger and lighter coloured birds, and are all home-bred. They are evidence of the preliminary autumn distribution from the well-kept woods of Ireland. The woodcocks that breed in this country are comparatively few in number; they and their broods are, therefore, not prematurely shot, as are the homebred snipe. For little grouse shooting is done in October, since the meagre supply of birds fails by that time, and the chance of bagging one woodcock is not sufficient inducement to face hard work on a mountain. There is not, then, the same necessity for urging the propriety of postponing woodcock shooting as there is for pleading for the home-bred snipe, which are found easily in the rushes at the roadside. The home-bred woodcock mostly survives October to welcome and decoy its foreign relative so far as it is disposed to do, being a bird not nearly so sociable as the snipe.

The shooter on a Kerry mountain in November may bag ten couple of cock without excessive toil in a sheltered hollow, whither the foreigners have been decoyed, perhaps, by a home-bred bird. If he defers his shooting to a later date, it

is probable that only with infinite labour he will see six birds in a day, so scattered and well concealed are they, and if he is a stranger in the country he will have little chance for making a correct estimate of the real mignitude of the supply of woodcocks, unless stress of weather compels the birds to seek the shelter of some little wood. Thence, when snow is thick upon the mountains and the coombes are frost-bound, a couple of beaters will hustle a hundred in a forenoon. But hard weather of this kind is now rarely experienced in the west of Ireland. The general woodcock shooting, therefore, entails there such excessive labour in mountain climbing, and the bags that can be made by even the ablest climbers are so very small, that the neglected state of the woods, or their total disappearance would be responsible for the cock being useless as a means of attracting the most desirable sportsman to the country if the sport it offered was not blended with another or others. Here we have a strong argument in favour of post-poning the opening of the snipe-shooting season until Nov. 1 based on the principle that from the business point of view of the proprietor of a shooting, as well as from that of a sportsman, a short season with the maximum abundance of birds is desirable. In Kerry one cannot shoot woodcocks without traversing snipe ground, if for no other reason, because the snipe is there becoming more and more a mountain bird, influenced by warmer winters and by the effects of land legislation, as shown in the drainage of its former haunts upon the flat. There also landowners admit that they let their shootings irrespective of the grouse that are upon them, so that the few grouse reared in course of nature bring no money whatever into the country. The supply of snipe cannot be at its greatest, until November, neither can that of woodcocks, and both woodcocks and snipe dwell in company with the grouse, for the shooting of which November is a legal month. An ideally managed Kerry shooting, then, under present circumstances, which prohibit expenditure on such ventures as grouse culture, must be one where neither woodcock nor grouse nor snipe is molested before November, and its full commercial value is thereby obtained for each bird as a contributory to a mixed bag. "In Kerry I could always

get from twenty to twenty-five couple of snipe whenever I wanted to make a mixed bag." wrote Colonel Peyton in 1882. "My average was about seventeen couple, with a few woodcocks, a hare or two, a dozen golden plover (a lucky shot), a few teal, an old mallard, and frequently a wild goose." This is a mixed bag, the prospect of making which has lost none of its former attraction. With proper management it might be made still, and to its details three or four brace of grouse might be added.

Notes

Other U.K. News

Dr. and Mrs. A. D. Vizoso have continued their exploration of likely breeding areas for woodcock in the mountainous parts of the northern half of Spain, and were able to collect some new records this spring. Two short papers on the Woodcock in Spain are due to appear in the next issue (September) of Ardeola. Spanish hunters and ornithologists are now collaborating with our new Spanish member, Dr. F. Purroy, who is also in touch with our Portuguese member, Mr. L. F. Matos.

Mr. G. des Forges is making a collection of photographs and notes on the nest sites found in his area of woodland in Sussex. He has found such wide variation in the types of site chosen that he now believes that woodcocks may nest anywhere - except at the base of a large tree!

Appeal

If anyone knows of a coloured illustration of either of the two Celebes woodcock, will he please inform Monica Shorten de Vizoso, 12 Hayward Road, Oxford, England, of the reference?

Bibliography

The following papers and book have been read since the last Newsletter:

Bradbury, K. (1977). Identification of earthworms in mammalian scata. J. Zool. 183 (4) 553-554. Describes and illustrates persistent remains of earthworm gizzard which can be used to count the number of worms eaten and to indicate their size but not species. Instructs how to make a reference collection.

Fjeldsa, J. (1977). Guide to the young of European precocial birds. Scarv. Nature Publcn. Tisvildeleje, 285 pp. Illustrated colour & line. Woodcock: 144, 146, fig. 21, pl. 26. In English. Newly hatched chicks average 120 mm length, 14-20 g weight, flighting at 1½-2. weeks.

Hirons, G. J. M. (1977). The roding behaviour of the European Woodcock. Proc. Sixth Woodcock Workshop Symp., Fredericton, New Brunswick (in press). Describes roding over 5.2 km^2 of British woodland during which calls were tape-recorded and analysed by sonograph. Individual birds could be identified and overlapping ranges of from 28-73 ha roughly calculated. No exclusive territories found.

Hirons, G. J. M. (1978). The Game Conservancy woodcock project. Game Conservancy Annual Review 1977(9): 93-97. Illustrated. Reviews progress of roding studies using vocal identification of calling males and gives preliminary findings on winter diet in 3 counties of England after examination of 90 stomachs.

Janich, K. (1977). Zur Frage der Territorialitat das Mannchens der Waldschnepfe Scolopax rusticola. Verh. otn. Ges. Bayern 23: 79-82. In German, English summary. Three series of observations 1971-75 suggest territorial behaviour of male woodcock. Size of territory 1/5 km^2, speed of flight 32 km/h. Roding believed primarily delimitation of territory. Shooting in spring may directly influence reproduction.

Martinell, J. & Chantrel, G. (1977). Contribution a l'etude de la croule et de la nidification de la becasse (Scolopax rusticola) en foret domaniale de Compiegne (Oise). Office National de la Chasse, Section Becasse. 72+13 pp. Plates, figures and line drawings. In French. Includes very interesting illustrated account of courtship on the ground and describes latest survey results of breeding distribution in France. Mallards used to decoy roding woodcock into nets proved most successful catching method.

Stromar, Ljubica (1977). Bird-banding in 1973 1. Results of bird-banding carried out by the Institute of Ornithology, Yugoslav Academy of Sciences & Arts, Zagreb. 23rd Report.

Stromas, Ljubica (1977). (contd.)	2. Foreign recoveries in Yugoslavia, 19th Report. Woodcock: 302. English summary. Twenty-five Scolopax rusticola ringed 1910-1973 but none in latter year; no foreign recoveries during same period.
Sutter, E. (1977).	Umfang der Jugendmauser sowie Altersund Geschlechtemerkmale bei der Waldschnepfe Orn. Beob. 74 or 75 (The author sent this reference but the paper has not been found. A summary is given in:
Glutz v. Blotzheim, N., Bauer, K. M. & Bezzel, E. (1977).	Handbuch der Vögel Mitteleuropas 7: 122-174. In German. This is a thorough and up-to-date summary of recent knowledge of woodcock with an extensive bibliography. There are Tables, maps, line drawings and Figures.
Yeatman, L. (1977).	Comparisons de la distribution de quelques especes d'apres les atlas des Iles britanniques et de France. L'Oiseau et R.F.O. 5 (47) 4: 359-380 (woodcock: 364-365). In French. Positive breeding records for woodcock occurred in only 20% of grid squares in France compared with 66% in British Isles. Reason considered to be due to higher temperatures in France producing harder drier soil and possibly also to continuing shooting during the breeding season in spite of attempts to stop this.

LIST OF WSRG MEMBERS

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List of Members, October 1978.

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Editors Note

It would greatly help the preparation of the next Newsletter if the following points were noted by those who will be contributing to the next issue:-

(a) all contributions to be submitted by the 31st July, 1979.

(b) all contributions to be typed in double-spacing on A4-size paper.

(c) all large tables to be placed on separate sheets (A4-size).

(d) all diagrams, graphs and figures to be placed on tracing paper or alternatively as clear copies from originals on A4-size paper.