

International Waterfowl Research Bureau

WOODCOCK AND SNIPE RESEACH GROUP

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EDITORIAL

In this Newsletter number ten of the Woodcock and Snipe Research Group we aim to inform about recent publications, preliminary results of research and other activities of the group.

Meetings

At the 30th Executive Board Meeting of the International Waterfowl Research Bureau (IWRB) on May 6 and 7 at Groningen (Netherlands) a report was given on the group's activities as well as an outline of future research.

During the 21st General Assembly of the Conseil International de la Chasse (C.I.C.) from May 11 to 16 at Innsbruck (Austria) the C.I.C.-Migratory Bird Commission met to plan studies on population dynamics of migrating game birds. The proposed woodcock research project, which was outlined during the Second Woodcock and Snipe Workshop, 1982, and reported in WSRG-Newsletter No. 9, p. 15 - 17, raised considerable interest at this meeting. We gratefully acknowledge the offer of C.I.C. to take over most of the costs of this project. Details were planned on August 22 in Paris and so this important research can finally be continued in 1985 as a joint UK-French-German project. Study areas in all three countries will provide samples spanning the range of woodcock breeding habitats.

We appreciate the invitation of the Office National de la Chasse, Paris, to host the Third Woodcock and Snipe Workshop in France in autumn 1986. Details will be announced in the next Newsletter. Following the first workshop held

in Denmark (1979) and the second in the UK (1982), researchers will surely benefit by visiting a country which lies in the main wintering area of woodcock and snipe and where several research projects are in progress.

Publications

Proceedings of the Second Woodcock and Snipe Workshop are still available and can be ordered directly from Verlag Dieter Hoffmann, 65 Mainz 41 (FRG) at a price of £5.00 (DM 19.80). We hope to cover the rest of the printing costs by the sale of these copies. Abstracts of the papers presented have been published in Newsletter No. 9.

Other publication concerning woodcock and snipes are reviewed in the Bibliography of this issue.

Acknowledgements

We are very grateful to all contributors to this Newsletter, for National Notes and reviews of publications as well.

We also want express our thanks to Dieter Hoffmann Verlag, Mainz, who again printed this Newsletter free of charge.

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OBITUARY - Brian Stronach

It is with great sadness that we have to record the death of Brian Stronach in April 1984. Brian was a tireless and enthusiastic coordinator of the Woodcock and Snipe Research Group from its inception in January 1975 until April 1979. In addition to strengthening links between Woodcock and Snipe research workers in different countries and organizing the First Woodcock and Snipe Workshop in 1979 he was also active in research, contributing major papers on the reproductive state of woodcock in early spring and on the biometrics of snipe and woodcock. In recent years he worked hard to overcome the difficulties imposed by increasing ill health and retired from his post with the Irish Forest & Wildlife Service in 1983. We offer our most sincere condolences to his wife and family - he will be sorely missed by all of us.

NATIONAL NOTES

AUSTRALIA

Latham's Snipe (*Gallinago hardwickii*) in Southern Australia and in Tasmania.

The Latham's Snipe, very closely related to *Gallinago gallinago* by plumage and behaviour breeds in Japan, mainly on Hokkaido during June and July and spends the northern winter in Southern Australia and Tasmania, thus covering a distance of 9.600 km during migration. Evidence of dwindling numbers arriving in the winter quarters since the 1930ies gave reason for an extensive monitoring of this species. It was conducted under J.A. Naarding, who published the results in three consecutive reports for the National Parks and Wildlife Service of Tasmania and the Australian National Parks and Wildlife Service (ISSN No. 0314-4577).

The reasons for the decline of the Latham's Snipe could not clearly be detected during this three years survey. Although marshes have been reduced considerably since 1900 several areas of habitat which are considered suitable remain. Why these are poorly frequented, cannot be clarified. The author suggests investigations in the Japanese breeding grounds, since the breeding success there is largely unknown. Further, attention should be paid to possible stop-over areas during migration in the Pacific region, especially Papua New Guinea. Energetic considerations, based on weights (fat deposits) of collected birds suggest the necessity of resting and feeding areas in this region where the birds must gain weight to continue their flight to the breeding grounds.

Hunting is supposed to have a negative impact under those conditions. This is however based on population estimates by transect counts within major wintering areas, which

underestimate the population because of the birds secretive behaviour. The comparison of this population estimate of 20.000 snipes with the hunting bag of 5.600 birds is therefor not very meaningful.

Banding programs in Japan as well as in the wintering areas suggested by the author, will probably provide more insight into this question. In comparison to other studies on Common Snipe (i.e. Beintema and Müskens, Proc. 2nd European Woodcock and Snipe Workshop), which revealed a kill rate of 10% based on ring recoveries, this figure on Latham's Snipe seems very high. The banding programs however will only provide some amount of recoveries and thus become a useful tool in monitoring this species, if hunting is not completely abolished.

H.K.

AUSTRIA

Philipp Meran

On the phenology of Woodcock Migration in Eastern Austria 1983.

Spring Migration: Due to the very mild last winter month the soil was dry, and migrating woodcock were observed roding mainly over moist parts of the forests. They arrived about one week later than the average of previous years, the first one was seen on 10 March near Strem, and they disappeared earlier. After 8 April some could be observed only in nothern parts of Lower Austria (Waldviertel). This year's migration peaked first on 23 March and last time on 5 April. After 25 March there was no rain and from April 8 to 14 temperature was unusually high.

The following table lists the woodcock shot during morning and evening flight, spring 1983.

date	location	Sex	time (h)	weight (gr.)	bill length (mm)
10.3.	Strem, 22-er Schlag	♂	18.20	295	6.9
14.3.	Siegenderf, Mariaschl.	♂	18.38	271	6.3
15.3.	Siegenderf, Mariaschl.	♂	5.46	280	7.8
16.3.	Siegenderf, Stand 3.	♂	5.30	305	6.5
17.3.	Siegenderf, Mariaschl.	♂	5.25	285	7.3
20.3.	Siegenderf, Schuschein	♀	5.20	300	6.9
23.3.	Lockenhaus	♂	18.30	315	7.0
23.3.	Lockenhaus	♂	18.55	295	6.8
24.3.	Siegenderf, Mariaschl.	♂	5.11	345	7.5
26.3.	Lockenhaus	♂	18.40	288	6.4
28.3.	Strem, Altwald	♂	19.45	330	6.8
28.3.	Strem, Altwald	♀	19.55	298	7.1
2.4.	Strem, Altwald	♂	19.30	325	7.2
2.4.	Strem, Bodensitz	♀	19.38	295	6.1
4.4.	Strem, 22-er Schl.	♂	19.55	320	6.5
5.4.	Strem, Altwald	♂	19.53	328	6.2

Fall Migration: The extremely dry summer and fall has obviously impacted the migration patterns. First Woodcock arrived two weeks earlier, around mid-September, but didn't stay long. Migration began mid-October and peaked around 26 and 27 October as recognized by the numbers of woodcock flushed during drive hunts in Steiermark and seen during morning and evening flights. Woodcock were concentrated in wet spot as ditches, river valleys (Mur, Raab) and other moist areas, and hardly any were seen on dryer areas. A 12 days cold spell with temperatures down to -12°C beginning around mid-November obviously accelerated migration. The last woodcock was seen on 17 November.

The following table lists the woodcock shot during evening flight, fall 1983.

date	location	sex	time (h)	weight (gr.)	bill length (mm)
13.10.	Kremser, Stachel	♀	17.44	330	6.9
16.10.	Strem, Hüttenschlag	♂	17.28	300	6.7
16.10.	Strem, Hüttenschlag	♂	17.29	320	6.8
17.10.	Rosenkogel, Kalthuber	♀	17.22	365	7.1
28.10.	Stainz, Lehmsitz	♂	17.14	355	6.7
29.10.	Stadl/Raab	♂	17.12	308	7.1
1.11.	Rosenkogel, Kalthuber	♂	17.28	390	7.5
5.11.	Gasselsdorf	♂	17.00	295	7.7
6.11.	Neurath, Obstgarten	♀	16.57	330	7.2
13.11.	Kirchberg/Raab	♀	16.54	320	7.7

Philipp Meran

Abnormally coloured Woodcock

On 27 March 1984 an abnormally coloured woodcock was shot near Güssing (Burgenland, Eastern Austria). The bird flew low, straight and quiet in the evening. Dissection proved a female of the previous year, weight 295 gr., bill length 65 mm. The bird was relatively small, but in good condition. Most parts of belly, breast, neck, flanks and undertail including light tips of tail feathers are bright rusty yellow. The question remains open, if external impacts have caused this unnatural colour. Feather structures do not exhibit any abnormalities. The bird was mounted for the Hunting Museum in Graz, Steiermark.

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BELGIUM

Jan Hepburn

A European Perspective on Woodcock *Scolopax rusticola*
Shooting in Flanders*

Summary

1. Woodcock is an important quarry species throughout its European range: the level of hunting mortality is estimated at around 15 - 25% of the European population.
2. Woodcock hunting in Belgium is directed mainly towards passage migrant and wintering birds which predominate during the shooting season. Migrants and visitors originate principally from Scandinavia, and are subject to hunting pressure in other parts of their range (notably France and the British Isles).
3. Belgium in general - and Flanders in particular - contributes a relatively small proportion of the total hunting kill on European woodcock.
4. The woodcock populations hunted in Belgium show no signs of detrimental effects from recent harvest levels. The breeding populations in Scandinavia, western Baltic states and North Sea countries (including Belgium) are stable or have increased in recent years.
5. Any change in regulations designed to reduce hunting mortality in Belgium would not be expected to affect woodcock populations (cf. Sweden where prohibition of spring shooting reduced the level of kill but had no noticeable effect either on the abundance of woodcock elsewhere in the range, or on the local breeding population).

* This study was undertaken during the author's employment at the International Affairs Section of the British Association for Shooting & Conservation, Marford Mill, Rossett, U.K.

6. There appears to be no justification, on biological grounds, for the prohibition of woodcock shooting in Flanders.

1. PREAMBLE

- 1.1 Woodcock *S.rusticola* hunting was not permitted in the Flanders region of Belgium during the period 1979/80 to 1982/83. Prior to 1979 an open shooting season for woodcock had been declared for all 3 regions (Bruxelles, Flanders, Wallonie), although spring shooting (in February and the second half of March) was prohibited in 1970.
- 1.2 In 1983/84 an open shooting season for woodcock in Flanders was declared, extending from 15 November to 31 December 1983. Prior to 1979 the open season in all regions extended from 15 October to 31 January. Prior to 1970 the open season extended from early September to the end of February, as well as the second half of March (Lampio 1974). Thus the trend has been, as in much of Europe, towards a reduction in the length of the open season.
- 1.3 In view of the criticisms levelled at the Flemish authorities and questions directed to the Commission of the European Community, the author of this report was invited by FACE-HQ in Brussels to present an appraisal of the likely effect of re-instating woodcock shooting in Flanders on the European woodcock population.
- 1.4 This brief report examines information available on the current hunting and population status throughout the European section of the woodcock's range, with special reference to Belgium. These data are used in an attempt to ascertain the main factors which influence population size and distribution, and the relative importance of woodcock hunting in Flanders.

2. DISTRIBUTION AND POPULATION SIZE OF WOODCOCK IN EUROPE

- 2.1 There are no subspecies of *S.rusticola*. The woodcock occurs as a breeding species throughout temperate and boreal zones of the Palearctic region, and in limited parts (Himalayas) of the Oriental region (Cramp & Simmons 1983, Kalchreuter 1983). Breeding birds in the extreme south-west of the range (the Azores, Madeira and the Canaries) are presumed to be sedentary. Birds which breed from this Atlantic coast east to the European provinces of the Soviet Union (and possibly as far east as west Siberia (cf. Kalchreuter 1983: 45)), winter in countries along the Atlantic seaboard and Mediterranean/Black Seas (Cramp & Simmons 1983; Kalchreuter 1983). Cramp & Simmons (1983: 448) presume that birds from west Siberia eastwards winter in southwest or Southern Asia.
- 2.2 Autumn migratory movement from northern and central continental Europe are generally south to west - south - west, with a majority wintering in western and southern European

countries free from persistent frost (Cramp & Simmons 1983; Kalchreuter 1983). Birds which breed in countries where milder climatic conditions prevail during winter (especially the British Isles) tend to be resident (Cramp & Simmons 1983; Kalchreuter 1983), though Alexander (1945-47) did show that even within the British Isles the more northerly populations were more likely to migrate south in winter than the southern populations.

2.3 No estimates of the overall size of the 'European' (or more accurately the 'west Palearctic') woodcock population exist. The species is secretive and generally solitary, and it favours woodland habitats which make censusing difficult. These factors, compounded by the species' complex social and reproductive behaviour patterns, have forced researchers to conclude that it is not possible to obtain any satisfactory quantitative estimates of breeding or wintering population size occupying Europe. A crude analysis (using hunting bag records and survival data based on ring recoveries) suggests an 'autumn flight' European population in the region of tens of millions of birds (Hepburn 1983), but there is no information to help refine this from a rough approximation of the order of magnitude of the population.

2.4 Estimates of breeding populations in several countries do exist (Table 1) but the accuracy of estimates for large geographical areas should be treated with caution as counting techniques are likely to yield results with sufficient precision to detect only a general trend in numbers.

The qualitative information available from some countries during the last century is probably sufficiently accurate to reflect actual changes in relative abundance and the distribution of woodcock as a breeding species (see Table 1).

2.5 Game bag records provide another measure of woodcock abundance, although the numbers of birds shot in a given year will be subject to the vagaries of weather (affecting migration and winter distribution) hunter activity and quarry preferences, etc., as well as reflecting any real changes in woodcock abundance. Fig. 1 illustrates game bag records available from 6 European countries over the last 50 years.

The principal feature of the bag records from all countries is the high degree of variation from year to year, with no consistent pattern between different countries. Bags show considerable fluctuations, often reflecting variation in weather conditions (cf. Clausager 1979; Strandgaard & Asferg 1980; Kalchreuter 1983; Tapper & Hiron 1983). Major changes in the level of kill frequently reflect alterations in shooting practices. For example the bag in Hungary was around 15,000 birds/year in the late 1930s; no data are

CURRENT EUROPEAN WOODCOCK BREEDING POPULATION SIZE AND RECENT TRENDS

Table 1

EC Countries

BELGIUM	2,000-3,000 'pairs'* (1980). Increased from 600 'pairs' in 1970.
DENMARK	1,500-2,000 'pairs' (1978 & 1979). Increased from irregular breeding species (early 20th century); 100-200 'pairs' (1960); over 1,000 'pairs' (1970).
FRG	[no quantitative information] Probably stable (1960s-1970s); increasing in northern provinces, stable or perhaps decreased in south (1970s).
FRANCE	Fairly numerous; 1,000-10,000 'pairs' (mid-1970s). Perhaps increasing.
ITALY	150 'pairs' (?early 1980s). Declining.
LUXEMBURG	Ca 320 'pairs' (early 1970s).
NETHERLANDS	2,000-3,000 'pairs' (1978-79). Marked increase during 20th century; a few 'pairs' (early 1900s); 200-300 'pairs' (mid- 1960s); 1,300-1,600 'pairs' (1976-77). 10,000-50,000 'pairs' (1968-72).
REPUBLIC OF IRELAND) AND UNITED KINGDOM)	Marked increase and extension (late 19th century to mid-1930s); fairly stable (1940s- 1970s) perhaps some range expansion; two-fold increase in Ireland (20th century).

Non-EC Countries

ATLANTIC ISLANDS (Azores/Canaries/Madeira)	[no quantitative information] Probably general decline in 1960s-1970s.
AUSTRIA	[no quantitative information] Conflicting data refer to possible increases, declines, and even stable population.
CZECHOSLOVAKIA	[no quantitative information] Conflicting data refer to possible increases/declines in early 1970s.
FINLAND	50,000-200,000 'pairs' (late 1970s). No certain trends in recent years [earlier estimates based on line transects believed to have severely underestimated population size].
GDR	[no quantitative information] Possible slight overall decline (late 1960s/early 1970s) but local increases noted.
HUNGARY	[no quantitative information] Stable in recent decades (to 1980s).
NORWAY	34,500 'pairs' (1979). Probably more or less stable.
POLAND	ca. 20,000(+) 'pairs' (early/mid-1970s). Declining.
ROMANIA	[no quantitative information] Stable (late 1960s).
SWEDEN	75,000 'pairs' (mid-1970s). No significant changes; perhaps slight increase (1970s-1980s).

* see footnote, p.16

Sources: Lippens & Wille 1972; Sharrock 1976; Ulfstrand & Hogstedt 1976; Yeatman 1976; Lippens 1977; Clausager 1979; Teixeira 1979; Dybbro 1981; Kalas & Byrkjedal 1981; Sterbetz 1982; Cramp & Simmons 1983; Kalchreuter 1983.

available from 1941-1959 but in 1959 drive hunts for woodcock were prohibited (Sterbetz 1982) and as a result the level of kill dropped to around 1.000 birds a year. Equally woodcock bags dropped in W-Germany after the ban of hunting roding birds in spring in 1977.

Another example is Sweden, where bags dropped from around 20-30.000 birds a year to 2.500 - 4.000 when spring hunting was ended in 1960. The level of kill increased to around 15-18.000 birds a year in the mid 1970s, when the woodcock hunting season was opened earlier in the autumn (T.Nilsson, in press). Hence bag records cannot be interpreted without considerable background knowledge of the regulations governing shooting in the countries concerned.

3. WOODCOCK HUNTING IN EUROPE

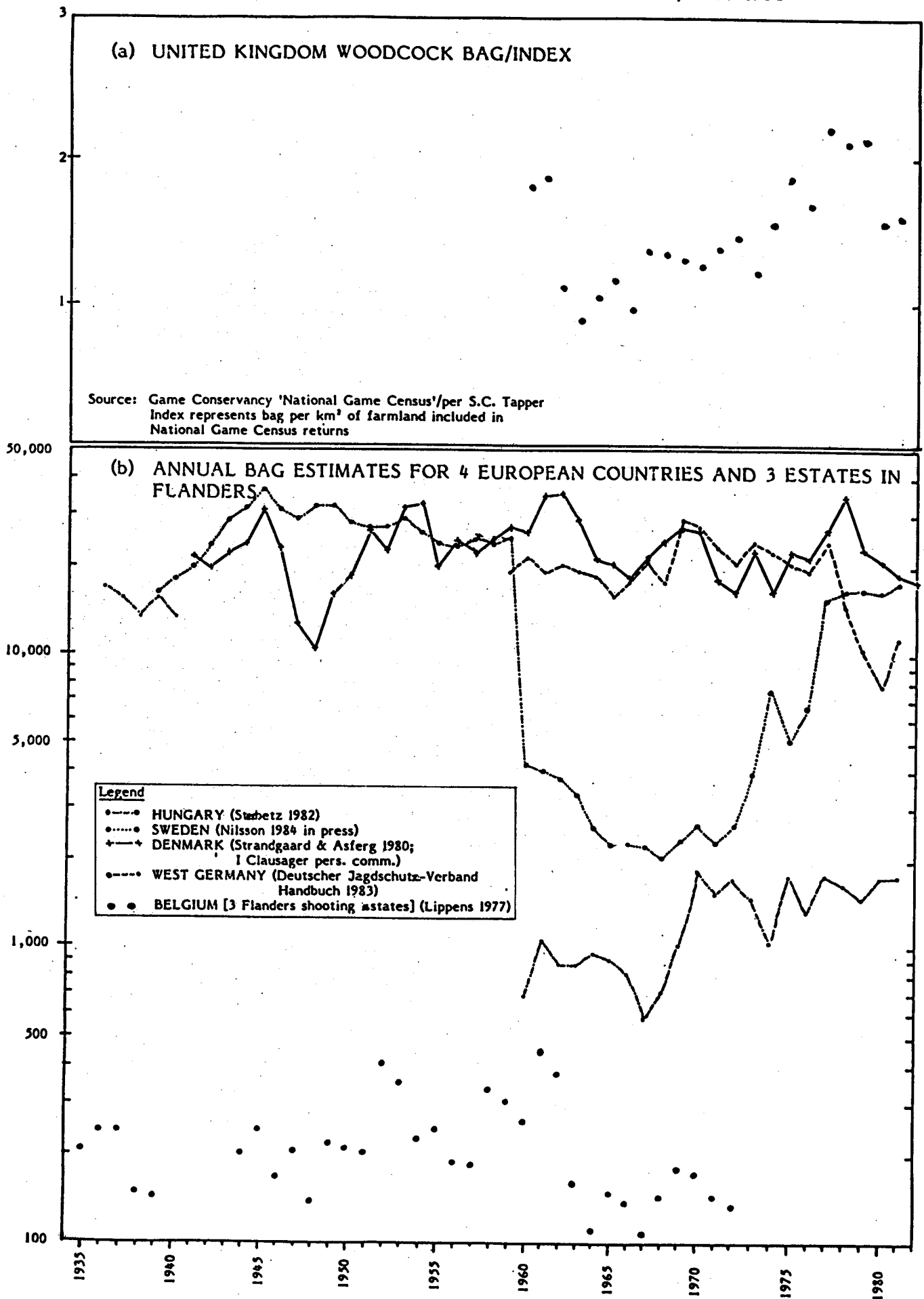
3.1 Woodcock is probably the most ubiquitous of all European quarry species. Lampio (1983) records an open season during 1980/81 in all 25 countries and 6 provinces of the Soviet Union from which data were received; two countries - Iceland and Spitzbergen - recorded 'no open season', but woodcock do not occur regularly in either (cf. Cramp & Simmons 1983).

3.2 The reliability of information on the numbers of woodcock shot each year in European countries is extremely variable. Data collection may be in the form of regular reports from all hunters (notably Denmark), from a sample of hunters either regularly (eg. BASC in the United Kingdom) or irregularly (eg. France), or from a sample of hunting areas (eg. Netherlands; Game Conservancy in the UK). Bag estimates may be made on the basis of informed opinion by hunters associations, or individuals with good knowledge of hunting practices in their country; and if no other data exists, tentative 'guestimates' are frequently encountered.

With such disparate methods for obtaining bag estimates, the resulting data are rarely directly comparable. They do serve a useful function in identifying the most important countries for woodcock shooting in terms of orders of magnitude of the bag. The best estimates currently available for annual bags in recent years (late 1970s to early 1980s) are presented in Fig. 2, which separates EC countries from other European woodcock range states.

3.3 Ring recovery analysis indicates that hunting mortality (including both retrieved kill and associated losses) of European woodcock populations is around 15 - 25% (cf. Kalchreuter 1983: 106 et seq.).

Fig. 1. WOODCOCK HUNTING BAG RECORDS IN EUROPE, 1935-1982



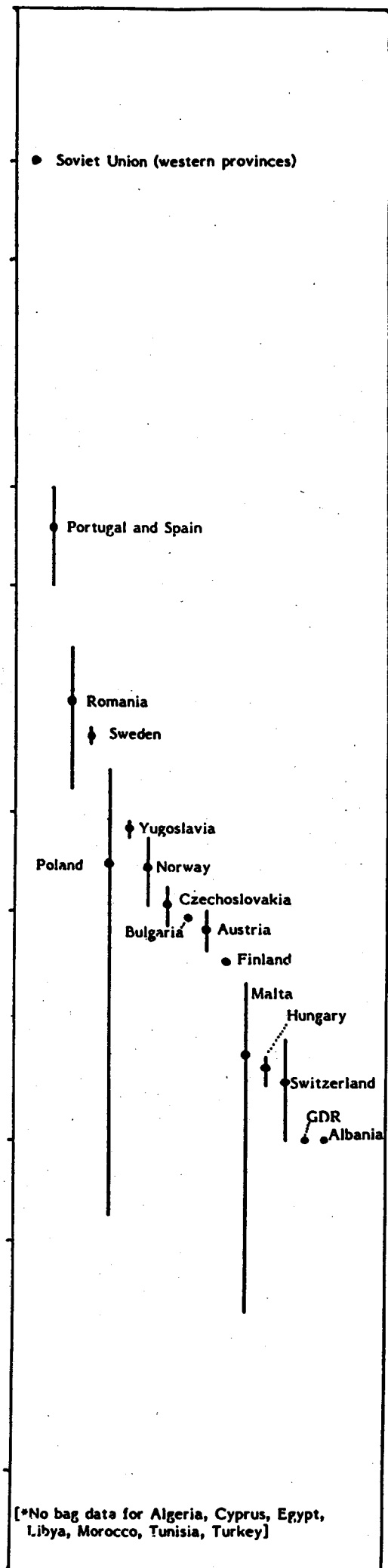
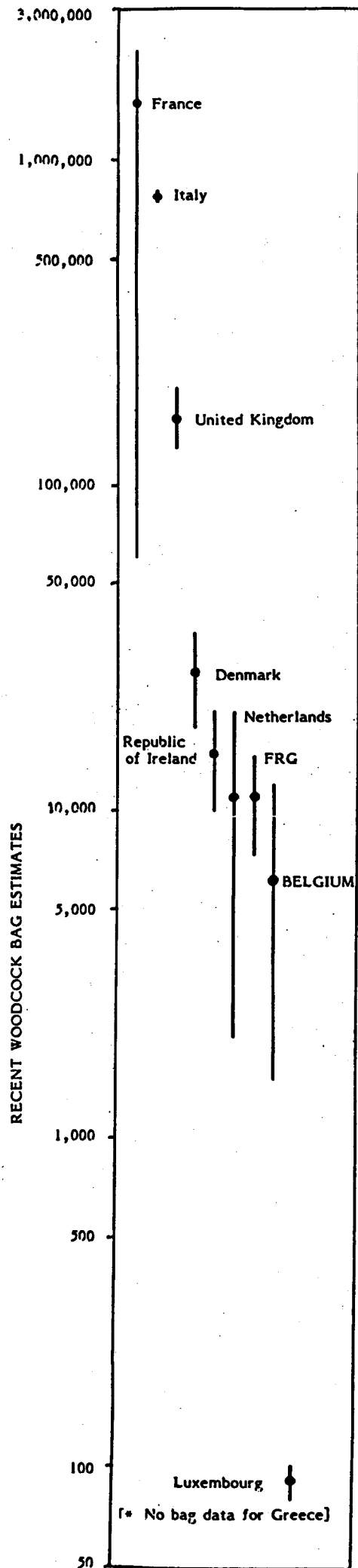


Fig. 2 ESTIMATED BAGS OF EUROPEAN WOODCOCK *Scolopax rusticola*

Legend
 ● Median bag or single census result
 | Range

Data from late 1970's - early 1980s.
 Source: Hepburn (1983) updated with information based on Priklonsky & Sapetina 1978; Sterbetz 1982; Zammit 1982; DJV 1983; Harradine 1983; Nilsson (in press); and personal communications from I. Clausager, A. Ermala, L.Lippens, & P. Melotti.

4. WOODCOCK POPULATIONS IN BELGIUM

- 4.1 The breeding population of woodcock in Belgium was estimated at around 600 'pairs'* during a census in 1970 (Lippens 1977), and had increased to 2,000-3,000 'pairs' in 1980 (Lippens). The increase has been attributed to the recent (1970) cessation of spring shooting in the country (cf. Cramp & Simmons 1983: 445), but there is no direct evidence to support this assertion⁺. The presumed detrimental impact of spring shooting on breeding woodcock has been challenged recently (cf. Berlich & Kalchreuter 1983; Kalchreuter 1983: 112 *et seq.*) and the work of Hirons (1983) has indicated that the loss of a few dominant roding males will very quickly be replaced by sub-dominant birds. However, there is no data available on the effects of spring shooting on the success of breeding populations.
- 4.2 No quantitative assessment of the 'non-breeding' woodcock population in Belgium (ie., birds occurring outside the breeding season, comprising residents and their progeny, passage migrants and winter visitors) is available.

If it is assumed that hunting bag records can indicate relative densities of woodcock during the open shooting season, then data from 3 estates in Flanders show marked fluctuations in numbers from year to year (see Lippens 1977 and Fig. 1). Lippens (1977) attributes variations to a number of factors, principally hunting techniques (including the prohibition of spring shooting), changes in habitat (affecting its suitability to woodcock) and weather patterns.

- 4.3 The limited data available from ring recoveries suggest that passage migrants and winter visitors to Belgium originate from Baltic countries, principally Scandinavia (Clausager 1974; Cramp & Simmons 1983; Kalchreuter 1983). A proportion of the passage birds will be en route to France, which is probably the most important west European wintering area (Kalchreuter 1983), along with S-W England; there may also be an influx and/or passage of birds migrating from Denmark, northern FRG, Netherlands and Luxemburg, although the extent to which these populations migrate is not known.

Autumn migration of Scandinavian woodcock begins in late September/early October; most birds arrive in their west European winter quarters before the end of November (Clausager 1974; Cramp & Simmons 1983). Hence birds in Belgium during late autumn/early winter will comprise a mixture of residents, passage migrants and winter visitors.

* Recent research has indicated male woodcock to be successively polygynous (Hirons 1983) so the use of the term 'pairs' (particularly in older literature) is erroneous and taken to mean nesting females.

+ In the neighbouring Netherlands and other countries along the North Sea (Kalchreuter 1983) woodcock populations increased similarly without any change of hunting regulations (eds.).

5. WOODCOCK SHOOTING IN BELGIUM

- 5.1 The numbers of woodcock shot in Belgium is assumed to vary in relation to the relative abundance of birds, availability of suitable habitat, and regulations governing shooting practices. The annual variation in bags from 3 Flanders estates is discussed in section 4.2 above.
- 5.2 Accurate shooting statistics for the whole of Belgium are not available. In the absence of annual bag data, the estimated levels of hunting kill in recent years (based on 'informed opinion') is presented in Table 2. The general trend during the last 10 years has been for an increasing annual bag (L. Lippens) except when there was no open season in Flanders.

Table 2 RECENT WOODCOCK BAG ESTIMATES IN BELGIUM

Late 1970s (-1979)	10,000-15,000 birds/year
[open season 15/10-31/1 throughout Belgium]	
1979/80-1982/83	1,500-4,000 birds/year
[no open season in Flanders; 15/10-31/1 open season in Wallonie]	
1983/84	
Flanders [open season 15/11-31/12]	ca. 7,000 birds
Wallonie [open season 15/10-31/1]	ca. 4,000 birds

6. LIKELY IMPACT OF WOODCOCK SHOOTING IN FLANDERS ON EUROPEAN POPULATIONS

- 6.1 It is evident that woodcock shooting in Flanders during autumn and winter is directed towards both resident birds and migrants. Passage migrants and winter visitors probably predominate in the country by early November.
- 6.2 Birds hunted in Flanders during the autumn open season are most likely to originate from Scandinavia - principally from southern Sweden - and possibly other Baltic coastal countries. The autumn/winter range of birds from this sector of the breeding populations extends from Denmark and the Benelux countries to the British Isles and France.
- 6.3 The breeding population of woodcock in Belgium is increasing (Section 4.1); the Swedish breeding population is probably more or less stable (Cramp & Simmons 1983; Kalchreuter 1983), perhaps increasing (T. Nilsson). Breeding populations in northern FRG and Denmark are increasing (Dybbro 1981; Cramp & Simmons 1983; Kalchreuter 1983), though the rate of increase could be greater if shooting pressure was decreased - a conclusion however, which remains to be verified.

- 6.4 Woodcock bags in Belgium (and Flanders in particular) are low in comparison with neighbouring countries whose hunting is directed towards birds from the same population as occurs in Flanders (ie., France, Netherlands, Republic of Ireland and United Kingdom; see Fig. 2).
- 6.5 Belgian hunters contribute a relatively small proportion of the total hunting mortality of European woodcock; if 15,000 birds/year is taken as an estimate of the bag then this represents 0.55% of the EC bag and 0.4% of the total European bag (data from Hepburn 1983). The populations towards which their shooting is directed appear not to be influenced by this shooting pressure.
- 6.6 It is apparent that any restrictions (including prohibition) on woodcock shooting in any part of Belgium would have no significant impact on woodcock populations either in that country or elsewhere in Europe.

7. ACKNOWLEDGEMENTS

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BRITAIN and IRELAND

Short-billed Woodcock: More Information needed

Since 1948 woodcock with unusually short bills have been recorded with increasing frequency throughout western Europe. Colin McKelvie briefly outlines the phenomenon and makes a plea for more information and specimens.

In 1984 a woodcock was recovered at Gudbjerg in Denmark with a bill measuring 42 mm, almost half the normal length, and further instances of short-billed birds were reported across Europe in ensuing years and with increasing frequency. By 1979 a Swiss biologist was able to cite 78 reports of short-billed woodcock from all over western Europe.

The British Isles experienced an exceptional influx of short-billed woodcock during the severe winter weather of 1981-82, and almost 100 instances have now been reported in Britain and Ireland for the period October 1981 to January 1984.

Scientists cannot yet account for the post-war proliferation of this short-billed variant, and more data and individual specimens are needed for analysis. Colin McKelvie will be pleased to receive all reports, information and individual specimens at The Game Conservancy.

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Rhys Green and Graham Hirons

Studies of breeding Common Snipe at the Ouse Washes,
Cambridgeshire, England

Survey work on the success and timing of breeding of snipe on lowland wet grassland was described in previous articles (WSRG Newsletters 8: 8-9 and 9: 26-28). In 1984 we investigated the breeding behaviour of snipe in greater detail by colour-marking and radiotagging.

We trapped male snipe using automatic, elastic-powered nets fixed to perches which they use to overlook their display areas. Females were trapped at the nest. Birds were colour marked by dyeing the underparts with picric acid, rhodamine or sheep dyes or radiotagged by attaching a 3 gram transmitter to the mantle feathers with cyanoacrylate glue. Marked males remained in a restricted area throughout the breeding season and drummed over an area of 1-5 ha. The boundaries of display areas overlapped and were not defended, but males seemed to avoid each other when drumming. Males differed markedly in the amount of time spent drumming and this was not clearly related to their stage of breeding or to breeding success. Males drummed relatively little when their nests were in the later stages of incubation and when they were feeding chicks however. Marked females were not seen drumming. Male wing-arch displays were only seen during pair formation, egg-laying and the first few days of incubation. Female behaviour during incubation was monitored by radio-tracking and continuous recording of radio signal strength to assess activity. Females differed from each other in their foraging behaviour during incubation - some fed within 50 metres of the nest but others flew to a pool

or ditch up to 350 metres away. Feeding bouts took place only during daylight. By contrast males fed more at night than by day (they do not incubate). Females with chicks showed alternating periods of activity and brooding. There was a long period of brooding at night but there was some activity during the hours of darkness. When a nest failed during incubation the female tended to move some distance before renesting. One movement of 14 km was observed between the first and replacement clutches of a radio-tagged female and only detected by an aerial search for the missing bird. Females whose chicks died renested near their previous nest. The time from failure to renesting was 7-18 days. One female renested after the 16 day old chick died, so it seems probable that snipe can be genuinely double-brooded where suitable conditions for nesting persist into late summer.

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ETHIOPIA

Raniero Massoli-Novelli*

Great Snipe in Ethiopia and Migration in Africa

Abstract: Great Snipe (*Gallinago media*) migrate to Ethiopia highlands during the raining season, from early August till mid-October, in exceptionally large numbers. Its habitat are flooded grasslands which constitute about 6% of the volcanic plateau, between 1.500 and 2.700 m altitude.

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A density of 1.300 ± 300 birds/km² has been found in two areas; a conservative estimate implies a total number of ten million in the whole of Ethiopia in September. The author's counts are in good agreement with 1965-1983 bag statistics for the same areas and with some few data of 1913-1941: G.media populations migrating to Ethiopia seem stable during the seventy years, perhaps they are increasing. Hunting pressure is extremely low and habitat (grasslands) till now is practically the same as during the last century. Conservation of this particular habitat from usual alterations (drainages, expanding agriculture) is highly needed to maintain status of Great Snipe.

Great Snipe (*Gallinago media*) concentrate in extraordinary large numbers in Ethiopia in August-September till mid-October. Up till now no consistent data exist about this migration, except a short note of Woodman (1944). G.media is a very poorly studied bird in Europe also and there are very few ringing recoveries (none in Ethiopia). Its habitat are grassy flooded areas, the birds are shy and lazy, counts are possible only with hunting dogs and local beaters or by rope dragging. In this situation some data come from hunting bag statistics, correlated with field research results.

1. Materials and Methods

Field research was undertaken in two areas about 40 km from Addis Ababa between 1 Sept. 1983 and 31 Aug. 1984. To compare the counts of the field research with the bag statistics, a field research group (R.G.) similar to the hunters groups was used; the R.G. was formed by the author, a guide, 1 hunting dog, 6-8 local beaters. The figures given below are the numbers of G.media observed in flight in 4-5 hours in which the R.G. covered about 25 ha of flooded grasslands, on one or two days a week.

As the author considers that on the average 2/3 of the birds flushed by the beaters are bagged, bag statistics were increased by 33% in order to make them comparable with the field counts. The results obtained thus were compared with the bags from 1965 to 1983, related to the same two areas, kindly provided with much other information by three experienced snipe hunters from Addis Ababa: O. Galimberti, S. Boghossian, G. Pagani.

2. Topography and Climate of Ethiopia.

The dominant feature of the Ethiopian topography is a high central plateau, varying from 1.500 to 3.000 m in altitude. The plateau, mainly formed of basaltic lavas, is covered with brownish soils derived from basalts.

The plateau is dissected by the Ethiopian Rift Valley, with several plains and lakes, and by numerous rivers of tectonic origin, most notably by the Blue Nile. The plateau is characterized by hundreds of mild depressions, filled with residual soils. Agricultural lands are generally on the hills or in plains not flooded; bottoms of these mild depressions and some plains are always flooded during the raining season. They are grasslands and constitute a magnificent, large habitat for G.media. They are commonly used for cattle grazing.

Climate is temperate on the highlands: Addis Ababa, capital city in the center of the plateau (2.400 m alt.) has an average annual temperature of 16°C. Temperature rises sharply toward bordering lowlands. Annual rainfall (Fig. 1) also differs: in northern and central Plateau there is only one rain season and in the South there are two. In Addis Ababa annual rainfall (last 20 years average) is about 1.250 mm, with 75% between July and September. In Awasa-Shashamanna (250 km S of Addis) rainfall is about 1.150 mm, divided in short and long rains. These

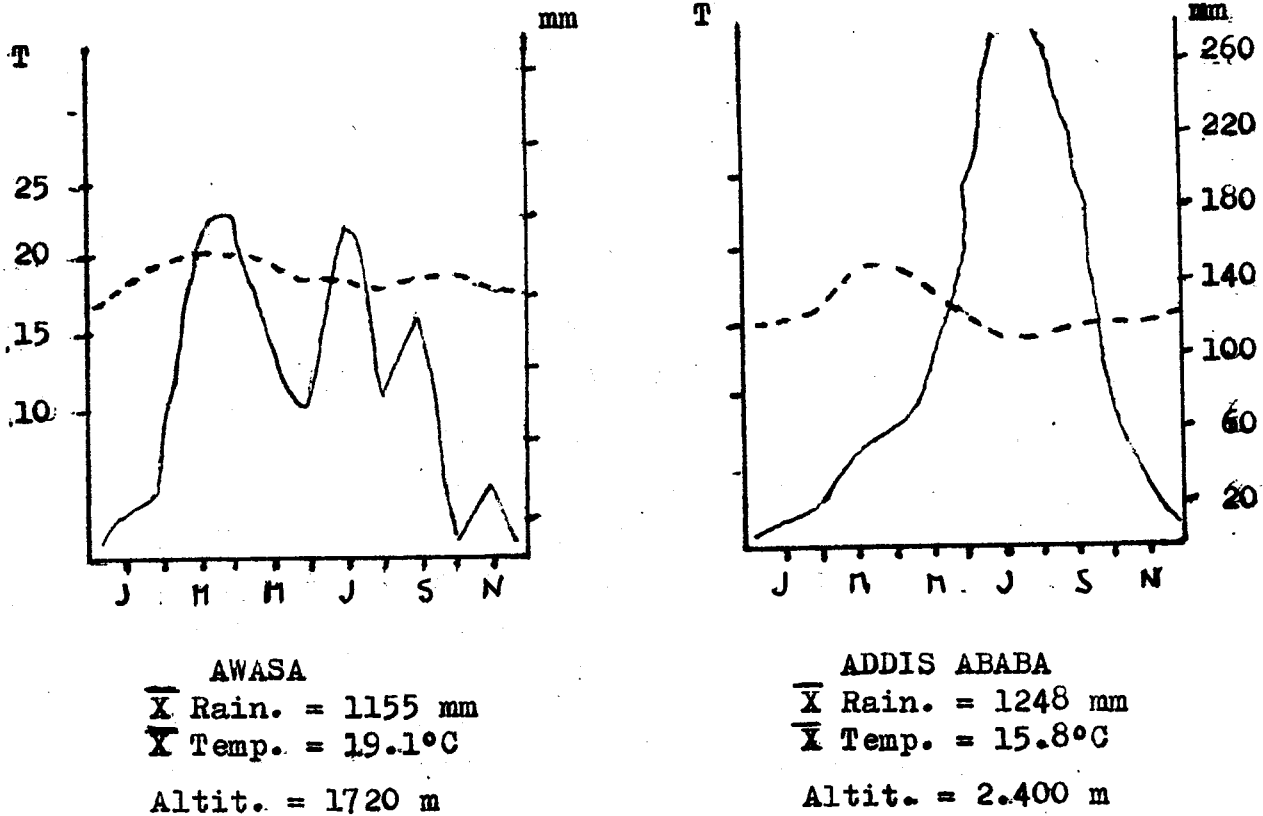


Fig. 1 - Annual rainfall (mm) and temperature (C°) in Awasa (southern Ethiopia) and Addis Ababa (central Ethiopia). Graphs may explain why in central grasslands (right) there is only one intense migration in August-October, just after heavy rains. In the south, towards Kenya (left), there is also a return passage in April, after March rains. In the northern part of the plateau, rainfall and G. media migration are similar to the Addis Ababa situation.

data are fundamental for G.media migration.

During recent years rainfall declined in Ethiopia, which means a danger for the snipe populations, though more in the lowlands toward Eritrea, Tigray, Ogaden than in central highlands. A decline was observed also in the highlands but, till now, July-August rains were enough to produce the right habitat in grasslands. In 1984 rains before mid-July were practically absent; however at the opening of G.media hunting season (August 10), habitat and birds density were similar to the September 1983 situation, in the study areas.

3. Study areas

1. Badi: 30 km W Addis Ababa, 5 km N Gefersa reservoir.

A very large shallow depression among hills used for central cultivation. Area about 3 km², altitude 2.450 m.

2. Barga: 50 km WNW Addis Ababa. A series of 8 depressions in various areas totalling 7 km², between the same type of hills. Altitude 2.550 m.

During raining season and the following month, grass is dense and 20-40 cm high, and water generally 1-5 cm deep, in the zones where G.media prefer to stay.

According to FAO (1975) the vegetation in both areas consist mainly of grasses (Andropogon abyssinicus, A. distachys, Hyaparrhenia hirta) and legumes (Trifolium semipilosum).

Growth will normally commence after first rains in May-June; maturity, flowering and seeding occur during September and October. Flooded (seasonal) grasslands are considered very important for forage production, and numerous cattle graze there, and also during the raining periods.

4. Results

4.1 Migration patterns

In the study areas the first Snipes arrive at the end of July (4 - 8 birds). Numbers increase slightly in first ten days of August (15 - 25). From 10 to 20 August G.media arrive in large numbers (100 - 150). After 20 August numbers again increase slightly (150 - 250). Birds continue to arrive during September: bag statistics record a maximum in September (290 shot on September 21, 1975 with a group similar to the R.G. of our study; two guns, Pagani pers. comm.). From 10 to 20 October 95% of birds leave Ethiopian grasslands areas which are drying out rapidly.

Field counts of 1983-84 and bag statistics of 1965-83 correlate well. This suggests that G.media populations migrating through Ethiopia may not have decreased during the period of 1965 to 1984.

Woodman (1944) writes: "there is no record anywhere else in Africa of such large numbers in one short season and in such density". His best bags in the best year were "8 - 10 brace per gun per hour (1941)"; reported best bags in the past were: "24 August 1913, 258 brace for 3 guns; 26 August 1923, 144 brace for 2 guns". Woodman's numbers are on the whole lower than our 1983/84 counts and also lower than average last twenty years bags. This suggests that, since 1913 G.media populations in Ethiopia may be stable or increasing. This consideration seems completely different from other authors results in Europe and USSR, who generally state a decline (Camp & Simmons 1983). In my opinion this situation in Ethiopia might be a consequence of changing climatic conditions, i.e. a decline of rainfall in all Africa. Probably there have been more suitable areas

outside Ethiopian highlands, and G.media may have shifted from other zones drying out now, to find proper habitats in Central Ethiopia.

In the Ethiopian plateau there is no spring passage, especially in northern and central areas, because in that period grasslands are mostly dry. Only in the South are many G.media reported during the last ten days of April until the first ten days of May (Boghassian, pers.comm.) in the Shashamanna - Awasa region. In fact there is considerable rainfall during that period, as shown in Fig. 1. This area is situated near Kenya, where Backhurst et al. (1973) reported Great Snipe on their return migration in the first days of May.

4.2 Density and total Numbers

The density of G.media in the study areas during September has been calculated. The R.G. covered approximately 25 ha of flooded grasslands during the study, and found an average of 150/250 birds. My experience with great snipe suggest that they found about 66% of the birds really present. Some controls with rope dragging method confirmed this data. So the density in considered areas in September is 1.300 ± 300 birds/km². This exceptional concentration can be explained only by the rarity of flooded grasslands at this time in other parts of Ethiopia and also in other African countries. Fig. 2 shows highlands over 1.500 m altitude; they cover an area of about 550.000 km². An exact evaluation of km² of flooded grasslands is not easy. With the help of topographic maps and aerialphotos and my slides from a local plane in flight between Addis and Gondar and extrapolating data, about 6% of the 550.000 km² are seasonally flooded grasslands, i.e. 33.000 km². About 20% of the grasslands can be no good for G.media, i.e. 26.400 km². Calculated den-

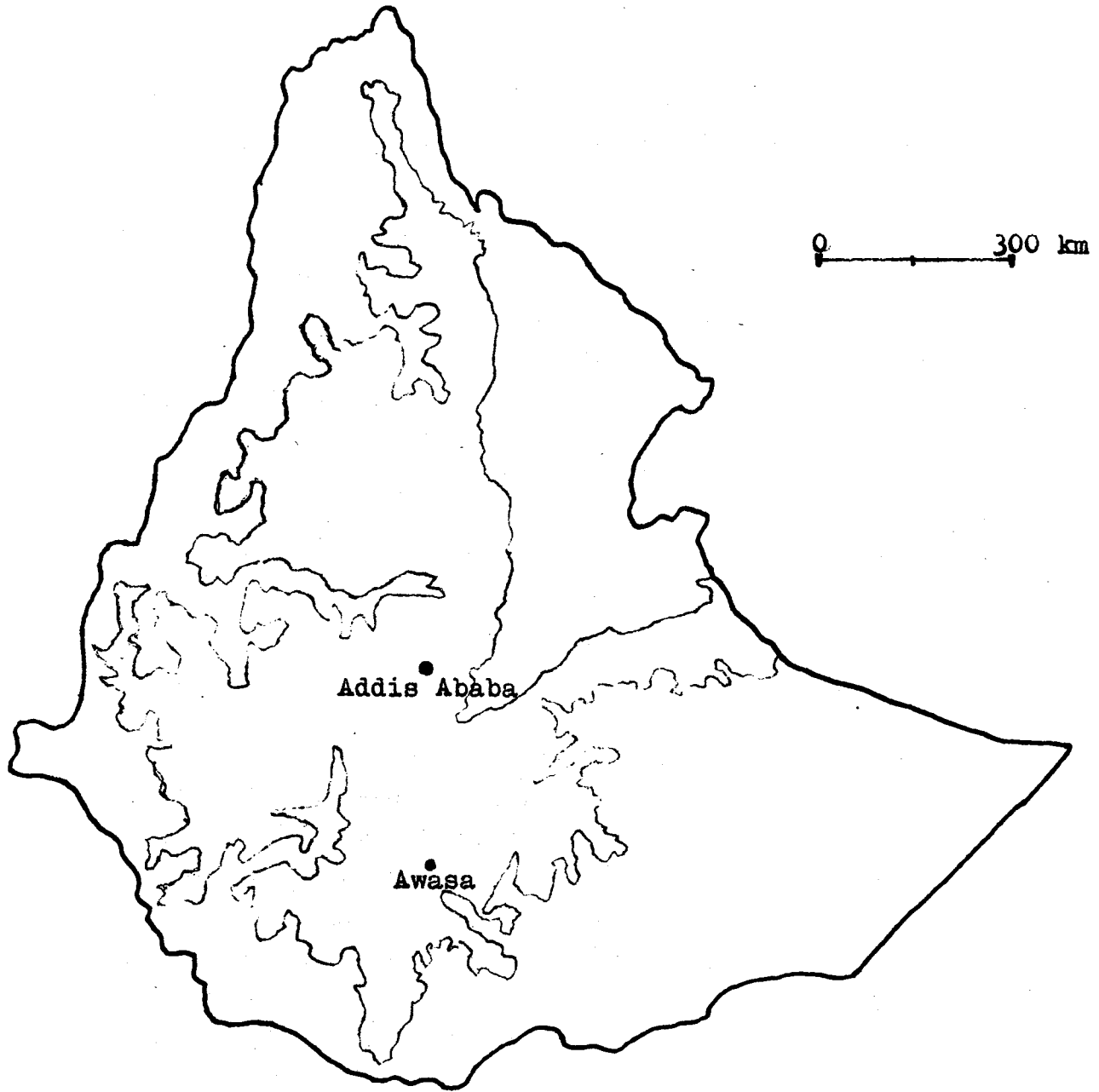


Fig.2 - Ethiopian highlands > 1500 m

sity in Badi-Barga is 1.300 ± 300 birds/km², but these are areas already known for many years to hold a high concentration of G.media. It must be assumed density in other grasslands to be lower. Control observations in Mojo, Debre Zeit, Shashamanna, lead to a conservative estimate of about a third of the actual figure counted, i.e. $400 \pm$ birds/km²; but even this careful estimate suggests the total of Great Snipe in Ethiopia in September to exceed ten million.

4.3 Additional Observations

In the study areas other snipes are rare. G.gallinago and G.nigripennis, though not listed in hunters records are found in their bags. Examination of them indicate 10 Great Snipe are shot for every one of the smaller species. In August 1984 I examined 11 "common snipes" got from hunters and all were G.nigripennis.

From our field counts and from bag statistics there is no record of Jack snipe (Lymnocyptes minima).

G.nigripennis prefers bordering zones or stream banks where grass is not so thick. I observed them mostly in couples.

Great Snipe seem to arrive from breeding areas solitarily or in couples. Wisps reported from Woodman (1944) have been very rarely observed. Couples are 50% of the birds arriving.

Some wisps observed were quite probably groups of couples and some singles flushed together from a small area particularly attractive because of food. Usually birds of couples act individually if they are flushed one by one; if they take off together, normally they continue flying as a pair until they settle again. To flush a couple of G.media together is rare; normally, hearing men and dog arriving, they walk separately and may be flushed 3 - 10

m apart from each other, up to 15 m, if the grass is particularly dense. So it is not easy to judge if two birds are coupled or not.

In the first weeks after arrival birds were light-weighted and nervous: they flushed at a distance of 10 m from the R.G.; in the early morning and during rainfall they rise even at 20 m distance.

At the end of September and during October the weather changes to warm sunshine and the birds exhibit a lazy behaviour which I always observed in Italy during the spring passage: they fly only from your feet or from the nose of the dog. In October 90% of the birds are coupled before leaving Ethiopia for southern and south-west countries. In fact Clancey (1964) reports that in Durban a hunter used to bag "ten or twelve couples before breakfast" during November.

Birds though usually silent utter a short, guttural, alarm note "groan". It is sometimes heard when birds are coupled, but are flushed single; the note seems to be an advice for the partner.

As in all snipes food quantity and quality are most important to attract this species. Both factors depend mainly on characteristics of the soil. In the Ethiopian volcanic (basalts) plateau I observed that flooded grasslands with red mud (rich in iron) were not good for G.media; brown-black soils, richer in humus after complete pedogenetic processes, were preferred. Fortunately grasslands with red soils are rare, at most 15% of total.

An important general element to attract G.media, as all the snipes, is an abundance of cattle in every grassland of the plateau; cattle turn and fertilize the ground, preparing richer food. Overgrazing however is detrimental. Measurements: 60 G.media got from our R.G. on 12 and 19

August 1984 were examined for sex, bill, tarsus and tail.

Sex	N	Bill	Tarsus	Tail
♂	37	55-66	30-38	51-57
♀	23	54-69	34-40	48-56

About half of the 60 birds taken seemed to be in couples in the field; each supposed couple was examined internally and 90% were confirmed to be pairs of male and female.

According to Cramp & Simmons (1983) males arrive earlier than females.

4.4 Hunting Pressure

Hunting pressure always has been very low. Nowadays there are less than ten hunters in all Ethiopia, who practice this type of shooting and they were not more numerous before the Revolution. Moreover a bag limit of 30 birds a day has been imposed in 1980. In 1983 no more than 5.000 Great Snipes were shot in Ethiopia, out of a population roughly estimated at 10 million birds. The same large bags got before the mentioned limit obviously did not alter the situation. Our counts compared with old bag statistics suggest that the status of G.media populations migrating to Ethiopia has not changed during the last seventy years and might even increase.

4.5 Conservation of Habitat

High concentrations of G.media in the seasonal flooded grasslands of the Ethiopian plateau, during a period in which most of the other countries on the flyway are completely dry, stresses the importance of conservation of this habitat to maintain the status of the Great Snipe in Ethiopia.

It was already noted that humid grasslands are very important for cattle grazing; fertility increases by accumulation of good soil eroded from cultivated hillsides. Up till now importance of livestock has maintained this habitat unaltered for centuries.

The future however presents some dangers: a) Expanding agriculture can prevail over livestock husbandry, and might enforce drainage.

b) Small dams for water storage are projected.

c) Up till now pesticides use has been only about 1% of the amount spread in Europe; a probably increasing use in cultivated hillsides may however pollute grasslands through run-off.

d) Overgrazing reduces more palatable vegetation species and the economic importance of humid grasslands is lowered (FAO, pers.comm.); the number of cattle in Ethiopia in 1983 was very high, 6.237.000 (ILCA pers.comm.).

e) Rainfall decline, a general problem in Africa since ten years; up till now rains were enough during July-August in central highlands, while there is some information about March rains declining in the south.

5. Discussion

5.1 Migration in Africa

Up till now, no ringing recovery has been recorded of any species of snipes in Ethiopia.

I can add that a hunter found a Great Snipe with a ring from Norway, about ten years ago, in Badi-area; unfortunately the ring got lost (Boghassian, pers.comm.).

All authors concur in the assumption that the G.media populations migrating through Ethiopia originate from breeding areas in North Europe and USSR.

Main movements of Fenno-Scandian populations may not be directed southwards across Central Europe, as central Mediterranean countries are not involved in any autumn passage (Etchécopar 1967, Massoli-Novelli in prep.). Do they migrate mainly in a south-east direction toward Turkey, the Nile, Ethiopia? In the Anatolian plateau snipe are observed in August-September (local name "su culuk", A. Marinelli pers.comm.) but it is not sure they are G. media.

USSR populations move mostly toward south or south-west, and probably arrive in Ethiopia through the mentioned route. Great Snipe is a rare vagrant to India: Madras, Sri Lanka, Ganges delta (Ali et al. 1980).

Movements from breeding areas begin by early August (Cramps & Simmons 1983); at the same time they arrive in good numbers in Ethiopian flooded grasslands which indicates a very fast fly.

In Africa they arrive at the same time in two zones: In Ethiopia in large quantities (this paper) and in Nigeria, in considerably lesser amounts (Elgood et al. 1966). These might be the only areas where they find proper habitats during a generally dry period.

The Great Snipe is a typical "rain" bird. While other snipes can find habitat also during the dry season along banks of rivers and lakes, G. media prefers flooded grass and so they are dependent on long rains. In fact the only three areas in Africa where rainfall is more than 1.000 mm from July to September are just Ethiopia, Nigeria, and the Guinea-Ivory Coast. In this latter zone, like in the Congo Basin, tropical rain forest prevails over grasslands and there is no consistent G. media migration apart from a few in Sierra Leone (Bannerman 1953).

So the exceptionally large number of Great Snipe migrating in August-September in Ethiopia may easily be explained

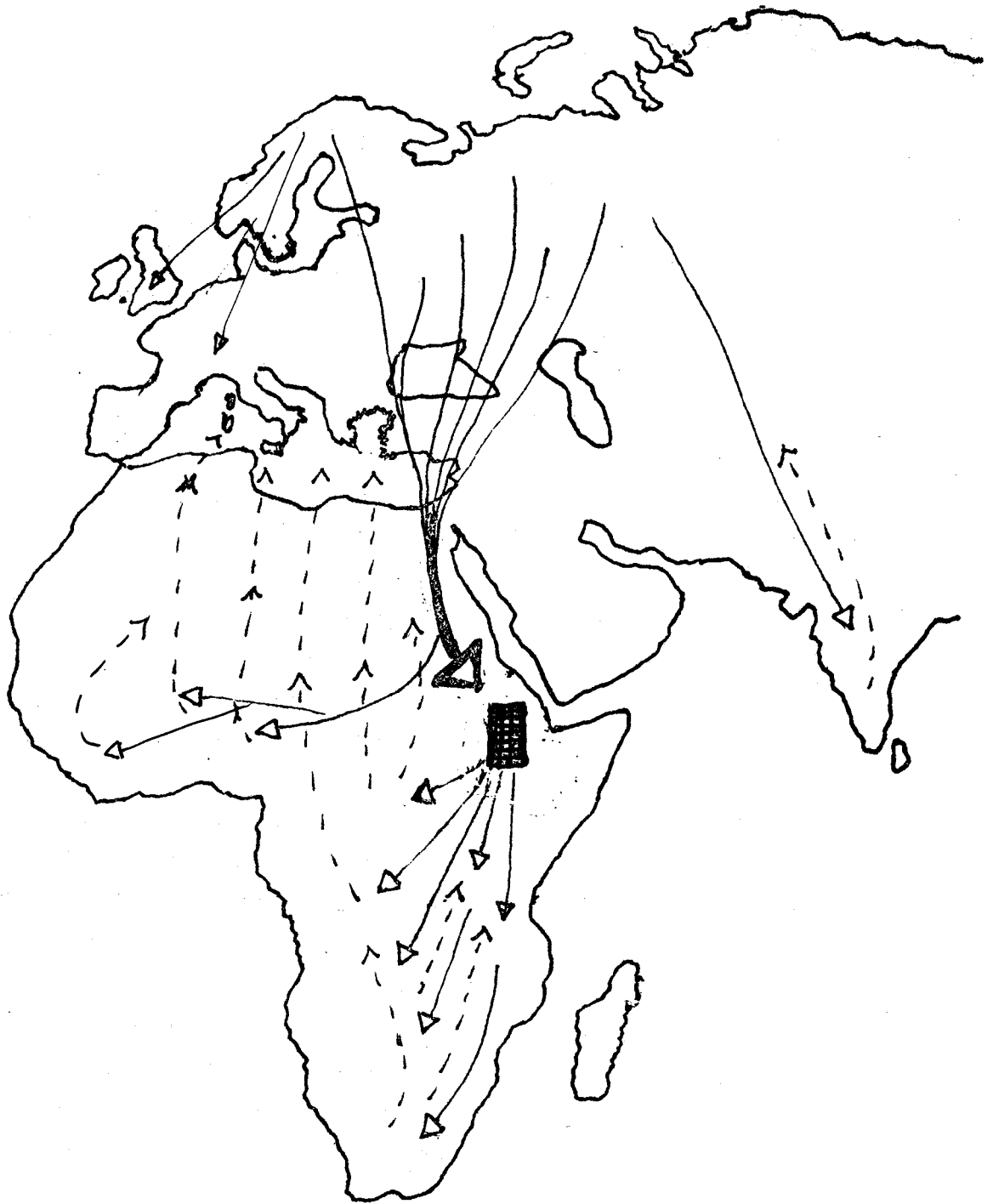





Fig. 3 - Supposed migration routes of G.media

-  August - November migration
-  April - May
-  Ethiopian plateau

by the distribution of rainfall in Africa in the same period (July-September), and by considering the fact that grasslands are rare in Guinea - Ivory Coast countries, scarce in Nigeria and very abundant in the Ethiopian plateau. We refer to areas with grass not higher than 40 cm, not too dense, not completely flooded, with abundant moving cattle, an important factor when creating proper habitats for G.media.

When Ethiopian flooded grasslands begin to dry out in October, G.media expands south and south-west, following the rains.

In Kenya they arrive in mid-October till mid-November (Backhurst et al. 1973, Taylor in prep.); in Zambia "regular from October to April", especially in the south (Benson et al. 1971); in Congo Republic and in Zaire two birds recovered from Ryazan, USSR, in December and January (Pachenko 1971); in South Africa many wintering birds are found from October to April (Clancey 1964). In northern Namibia a Great Snipe ringed 8.816 km away in Finland in the previous year was found in July. This provides the only known record of G.media summering in Africa (Cramp & Simmons 1983).

In wintering areas normally scarce, G.media numbers appear to fluctuate from one season to another; subject to rainfall and habitat changes, birds move easily away from too flooded or too dry zones. Very occasionally it may be regarded as locally numerous (Benson 1971, Taylor in prep.).

In Mali, from 5.000 to 10.000 concentrate in November "sur le prairie du delta" (Lamarche 1980). In West Africa the bird has always been very scarce, not "in decline"; in fact Morel & Roux (1966) state: "... 22 Octobre 1958 première mention de l'espèce au Sénégal".

An interesting observation comes from Chad (Salvan 1968): "great snipe are not rare in rice-fields near Doba after 15 August, till end of September". We have G.media south

of Sahara more or less in the same period of first arrivals in Ethiopia and Nigeria. It is hard to believe that G.media, so linked to areas with rainfall, pass directly over the Sahara during the dry season on their way to Nigeria and Mali. It seems at least as likely that it flies up the Nile valley together with the Ethiopian population and crosses over to Nigeria through Chad. Salvan's record support this; such flyroute could also explain the general scarcity in West Africa.

On the contrary spring migration seems to occur on a broad front. Birds are dispersed in many countries where they remain till April, i.e. South Africa, Zambia, Nigeria. In Kenya a good return passage is in April-May (Backhurst et al. 1973, Taylor in prep.); Backhurst reports recent numbers below those implied by pre-1940 authors; this might rather be caused by some habitat modification than by a decline in population, which seems to be stable and abundant when migrating through Ethiopia. Spring passage may occur only in the south of Ethiopia, near the border to Kenya, because the central plateau is mostly dry during this period; in Awasa region, in the south, a good number of G.media was reported in April-May, as usual just after March rains. (Boghossian, pers. comm.).

Movement on a broad-front at this period is also demonstrated by good numbers in central Mediterranean countries. Six rings recovered in Italy are from March-April (Massoli-Novelli in prep.). For North Africa, Etchécopar (1967) states: "fairly regular from Morocco to Egypt on return migration but appears rare in autumn".

6. Acknowledgements

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FRANCE

Vincent Bouckaert

The behavior leading to mating in *Scolopax rusticola*.

I have studied the behaviour of woodcock in the forest of Compiègne, in northern France for the past eight years. This has enabled me to understand the behaviour involved in pair formation and to make some suggestions as to the mating system in this species.

Initial contact between the sexes

Male woodcock 'rode' to attract the attention of receptive females: it is their searching (appetitive) behaviour. A female receives the following information from the male: the croaking calls which 'twissick', which is a development of the highpitched contact call of the chick.

A receptive female, established on her reproductive home range, recognising the male's willingness to mate will fly towards him uttering a soft 'psieopp'. This key stimulus elicits from the male a final 'twissick', about three times louder than the call which is incorporated into the display song. The male then drops towards the female and begins the 'male-female carousel' ie. a sexual 'swirl' in which the partners cross their bills in an aerial 'fight', with the tail feathers spread wide indicating aggression. Afterwards the female utters a first 'psiepp', breaks off from the 'dance' and flies swiftly away. In response to this stimulus, the male initiates a

sequence of antiphonal calls which gradually increase in tempo and loudness. The birds' mutual aggression soon lessens and the birds alight, with the male uttering a powerful 'orr' only used in a sexual context. This marks the end of the first phase of courtship, but on its own it never leads to mating.

The start of pair formation

On alighting the female adopts a passive, squatting posture. After 2-3 minutes of immobility the male draws in his head and takes on a hunched appearance. This instinctive movement inhibits aggression between the bird and is an essential prerequisite of any sexual approach by the male. The male then begins displacement feeding, jerkily pecking at the ground but not consuming anything. The purpose of this is both to solicit and to inhibit any aggression by the female. These jerky movements are characteristic of many well-camouflaged, terrestrial birds. After these movements aimed at reducing aggression, the female moves forward towards the male and 'the ice is broken'. The final indication that there is no longer aggression between them is when the birds face each other bill against bill, with their heads pulled back into the shoulders. Eventually, the female utters a first 'psiopp' to which the male responds and then begins a duet which becomes louder into flying off, pursued closely by the male. By now it is difficult to distinguish between the calls of the two birds; the duet is so perfect that it seems to be one continuous 'song'. After this 'nuptial dance', the two birds land in an area where they will be well-camouflaged (In fact it is noticeable that females do not call down the male until the end of the roding period when it is almost dark and woodcock on the ground are almost impossible to see).

The innate releasing mechanism leading to copulation

I have few observations of this part of the courtship display, but the birds' movements again tend to be jerky. Each birds initial posture is hunched with the head withdrawn into the shoulders. The male then lowers his head, and usually the female does likewise, fanning open her tail which demonstrates her willingness to mate. The male then turns round and raises his closed tail at the female before facing her again. The female responds by pointing her bill upwards to reveal her white throat. the females final posture before copulation is to squat with her bill lying flush with the ground with the tail lowered and spread. The male then mounts, keeping balance by gripping the female's nape feathers either with the bill tip or its open base.

Conclusions

Analysis of the woodcock's courtship display provides some clues to the type of mating system found in S.rusticola, and the significance of some of the striking plumage patterns usually kept hidden by this cryptically-coloured bird. Antiphonal duetting during pair formation is characteristic of sexually monomorphic species and is thought to have evolved to aid sexual recognition. Its presence in woodcock demonstrates that a true pair bond is formed and S.rusticola therefore should not be classified as promiscuous. If, as seems likely, males copulate with several females during one breeding season, then they should be classified as successively monogamous rather than polygynous.

My observations suggest that after pairing males are not receptive to any other female on their home range for the next 3-4 weeks. However, they will chase other males flying over it, the two birds calling in a similar fashion to the antiphonal singing of ♂ and ♀ during pairing. This

I suggest, is a displacement behaviour which serves both as a safety valve for aggression, and as a territorial defence.

Finally, in any study of breeding behaviour in the woodcock, I think it is important to consider separately birds which are wholly resident and those which winter elsewhere but are faithful to one breeding area. Also, one should distinguish between adults and immatures (ie. birds 2 years old or younger). The behaviour of the latter seems not to be completely developed and they are more easily 'turned on' than adults.

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ITALY

Silvio Spano'

Age Distribution of Wintering Woodcock in Italy*

Wing collection studies on Woodcock throughout Italy (Spano & Chelini 1983) have revealed relatively high ratios of adults in a particular area of Sardinia in several years. This led to more detailed considerations and to comparisons with relevant findings in other areas.

Study area and methods

The study was conducted in the highlands (600 a.S.L.) of

*A poster on this subject was shown on the "First conference on Birds wintering in the mediterranean region" February 1984, Aulla (MS), Italy.

NE-Sardinia. Prevailing vegetation consists of cork-oaks (*Quercus suber*), the ground covered by *Cystus* spp. and some mediterranean bush patches (mainly *Arbutus unedo* and *Cystus* spp.). Climatic conditions have only roughly been recorded, but provide at least some idea about humidity and temperature in the years studied. Woodcock taken in the study area at the end of December/beginning of January during 11 years between 1963/64 and 1980/81 were evaluated. These data were compared with those of other regions, known to be typical wintering areas, mainly of southern and central Italy. However, of these wings, submitted by several collaborators from 1976/77 to 1982/83 only those taken in January have been considered for this study, to concentrate on wintering woodcock and avoid birds just migrating. Nevertheless, the latter data may only be taken as indicative, since the collecting site could not be respected precisely.

Results and Discussion

Even though the number of data presented by Tab. 1 and Fig. 1 is limited they seem to indicate some correlation of age ratios of woodcock wintering in the study area with the prevailing climatic conditions. During dry and/or cold winter weather the ratio of adults is considerably higher than in wet years with moderate temperature, when juveniles praedominate.

Tab. 2, on the other hand, exhibits a generally higher juvenile/adult-ratio during January in the other parts of Italy examined. Furtheron, there is no much difference between the ration of the data of January and those of the whole season (October to February). At times the ratio of juveniles even increased in January, perhaps due to further arrivals of young birds. This provides some evidence that young woodcock preferably winter in southern parts of Italy, especially during unclement periods.

WINTERS	AD	JUV	JUV/AD	% JUV
1963/64	8	1	0.12	11
1964/65	5	14	2.8	73.6
1965/66	3	21	7	87.5
1967/68	4	5	1.25	55.5
1968/69	3	6	2	66.6
1970/71	9	3	0.33	25
1971/72	4	-	0	0
1975/76	1	9	9	90
1977/78	-	4	4	100
1978/79	6	1	0.16	14.2
1980/81	8	-	0	0

Table 1: Age ratios (juvenes/adults) in wintering woodcocks taken in NE Sardinia.

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
LIGURIA	3 (3.1)	0 (1.7)		2 (1.6)	00 (1.7)	00 (5)	
TOSCANA	00 (1.5)						
MARCHE		0 (2)	00(2.5)				
UMBRIA	1 (3.8)						
LAZIO	00 (3.5)	4 (3.5)					
ABRUZZO			3 (3.2)	11 (5.1)			
CAMPANIA	00 (5)	3 (3)	3 (3)	2.3 (1.6)			00 (3.5)
PUGLIA	2.6 (5.6)	1.7(7.5)	1.2 (2)		00 (3.4)		1 (3.6)
LUCANIA	1.2 (1.4)	2 (3.3)	00 (5.5)	3 (14)			4 (13)
CALABRIA	6 (4.6)	00(2.1)	3 (4.7)	6 (2.8)			00 (21.5)
SICILIA		1.8 (2.7)	2.8 (4.9)	00(9.9)	00 (2.5)		
SARDEGNA	00(2.2)	2.5(2.3)	3 (1.1)	3.1(2.7)	0.1(0.1)	1.5(1.8)	3.2 (3)

Table 2: Age ratios (juveniles/adults) of wintering woodcocks collected in January in some Italian wintering regions (00 = only juveniles, 0 = only adults in the sample). The age ratio for the whole period of presence (October to February) is given in brackets.

Adult birds, however, are obviously present at special, well delimited areas, more or less independent of winter harshness. This might be due to their better acquaintance with the relevant areas, i.e. in the Sardinian highlands, and to their ability to exploit the relevant food supply. But this also might indicate a certain fidelity to the wintering area once chosen, or even a tendency to become sedentary there (similarly, Benvenuti & Yoale, 1980, had noticed such a behaviour in other silvicole birds in Italy).

The latter assumptions are supported by the findings of the detailed studies of Wilson (1983) in Ireland. 73 recoveries of his 420 ringed woodcock revealed a rather high fidelity of wintering birds to a given site, both during the same winter and in subsequent winters. The higher ratio of adults than of juveniles in the wings collected during December and January in Ireland support the idea that the fidelity to wintering sites is higher in adult birds. While young woodcock are obviously more mobile according to weather conditions.

Fadat & Landry (1983) explained their findings of spatio-temporal distributions of woodcock wintering in France by variations in temperature and differences of resistance to cold in young and adult woodcock (juveniles, less thermically insulated, are rare in the inland during winter, whereas they are numerous there in late fall and early spring). Harradines (1983) findings in England obviously are in line with the French data, since Woodcock taken in the north of the country revealed 50% or more adults.

Fadat (1981, pers.comm., q.v. Spano' 1982) thinks that climatic conditions affect the age-ratio as follows:

- strong rainfall = woodcocks dispersed, average density, age ratio about 1.

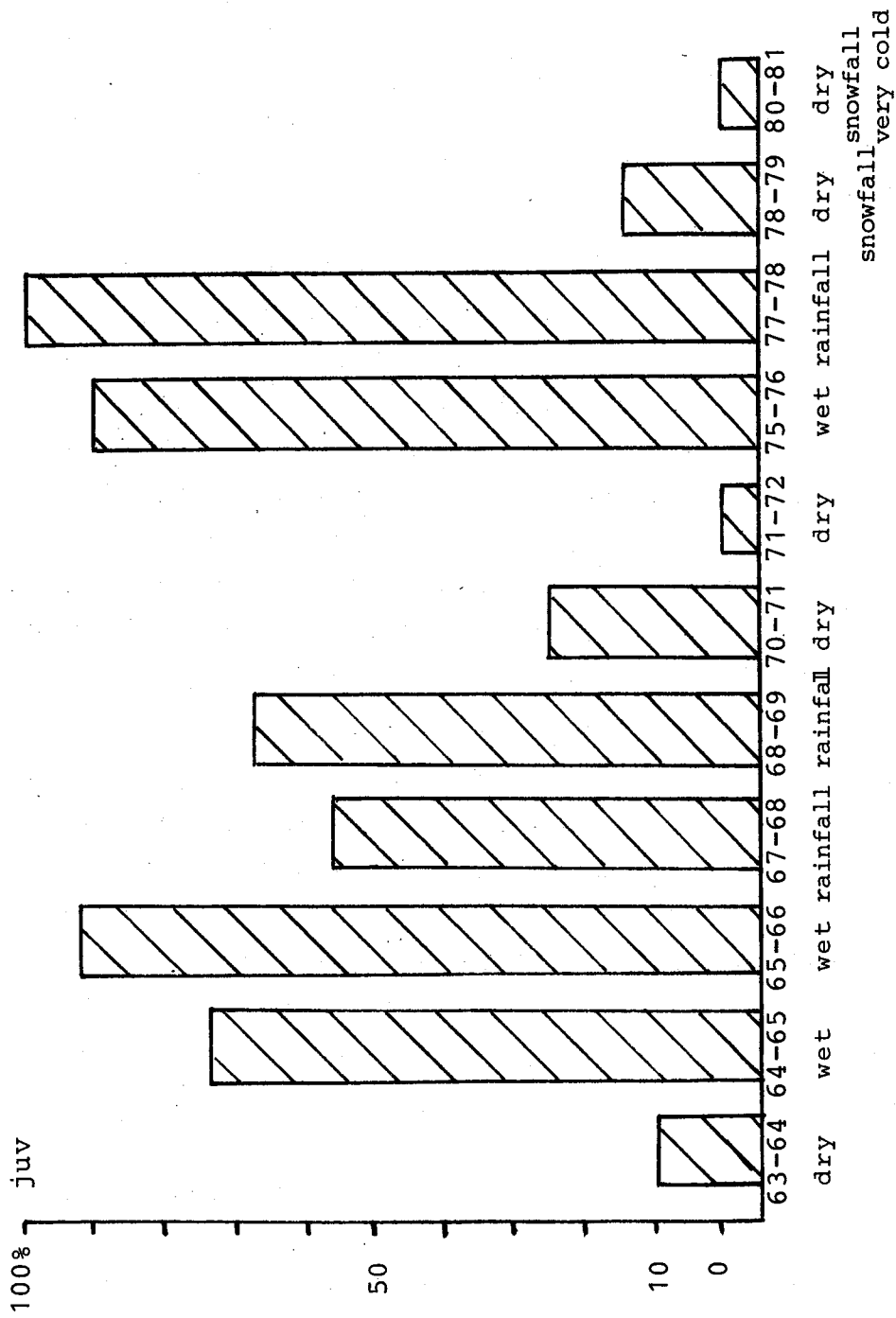


Figure 1: Percentage of juveniles in the bag of woodcock taken in winter in NE-Sardinia. Climatic conditions, which might have influenced the age composition of wintering woodcock are briefly indicated.

- moderate to low rainfall = high concentrations in wet areas, alternated with low density areas; age ratio > 1.
- very low rainfall = woodcocks rare; those present in less dry areas have a very low age ratio (0.2 - 0.6).
- low temperature (continuous frost in shadow) = concentration in better protected sites; almost all individuals are adults.

This indicates that adult woodcock hold the best niches and that, under adverse conditions, they are the only individuals present (with a few juvenes of recent descent) whereas juvenes fly into less prohibitive regions.

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- Wilson, J. (1983): Wintering site fidelity of Woodcock in Ireland. *Second European Woodcock and Snipe Workshop, Fordingbridge*: 18 - 27.

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NORTH AFRICA

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Some notes on the Woodcock season 1983/84 in Morocco.

Like in the three previous years rainfall was below the average during this winter, and less woodcock have been observed and shot than in other years. The first woodcock was seen near Larache on 13 November, others in the areas around Moulay Bousseham and Ben Slimane on 20 November and in the Mamora forest on 24 November 1983. An influx of some Woodcock have been observed near Ain Kheil - Ben Slimane in the beginning of November.

From end of November until beginning of March drive hunts were conducted mainly for wild boars, by which woodcock were flushed regularly, but in small numbers: Of 17 birds shot 11 were adults and 6 juveniles; their weight ranged from 250 to 325 grams.

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Beintema, A.J. (1983): Wader species breeding on agricultural grasslands. In H.Boyd (ed.): First western hemisphere waterfowl and waterbird symposium, IWRB, 1983, p. 105-106. Abstract only.

Intensification of agriculture by dropping of the watertable and fertilization has deteriorated the habitat of several wader species in The Netherlands. Early mowing and trampling by cattle reduced reproductive success to a critical level in some species. Among them might be *Gallinago gallinago*, though parameters of this species are not yet well known.

H.K.

Boyrie, J.P.M. (1958): *La Becassine et sa chasse*. Paris. 110 p. (in French).

A brief natural history of the snipes and the hunting methods practiced in France.

H.K.

Fadat, C. (1984): *Activité de la section becasse au cours de la saison 1982-83*. (Report of the woodcock section for the season 1982-83). Bulletin Mensuel Office National de la Chasse 76: 10 - 14.

The study carried out for the previous six years in the Forest of Compiègne (Oise) was transferred to Rambouillet (Yvelines) in the spring of 1983 to see whether the results obtained in Compiègne were generally applicable. The first season was mainly devoted to proving nesting (4 nests found) and to determining the areas over which birds were roding. For this reason little time could be devoted to radio-tracking or ringing (6 adults and 3 young ringed). However, recording the calls of males was continued at Compiègne and a comparative study of nest predation was begun in the two forests.

20 woodcock were ringed on migration, but as before this aspect of the study relied mainly on information supplied by hunters. In 1982-83, 366 hunters participated in the inquiry, killing 5036 woodcock during 10988 outings. The I.C.A. (Indice Cynégétique d'Abondance-proportional in the number of woodcock shot per shooting day by the average hunter) calculated from this data was 25% lower than the season before, due mainly to a decrease in the numbers present in the south and southwest of France. It is suggested that the relatively mild winter (compared to 1981-82) and a decrease in the number of late-bred immatures (ie. those probably of Scandinavian origin) were mainly responsible for the decline in the I.C.A. from the previous season.

G.H.

Fraguglione, D. (1983): *La Becasse des Bois*. Editions de l'Orée, Bordeaux. 399 p. (in French).

This magnificent book is based on an extensive search of literature. The Bibliography lists some 2.800 titles concerning woodcock in the widest sense. The author's passion to hunt woodcock with pointing dogs has obviously made him an enthusiast for this game bird and initiated him to write this monography after many years of searching literature and data collection. Short-billed woodcock have raised his particular interest, which therefor comprises a special chapter in the description of natural history. Hunting, and the role woodcock played in art and other human activities are throroughly treated in the final chapters.

H.K.

Gutzwiller, K.J., K.R. Kinsley, G.L. Storm, W.M. Tzilkowski & J.S. Wakeley (1983): Relative Value of Vegetation Structure and Species Composition for Identifying American Woodcock Breeding Habitat. *J. Wildl. Mgmt.*

47 (2): 535 -540.

This study on woodcock breeding and singing ground habitat in Pennsylvania confirmed earlier findings, that sites used especially by displaying male woodcock were more similar in habitat structure than in plant species composition. The latter obviously varies widely throughout the breeding range, while vegetation structures are very similar. These findings are useful to identify areas occupied by displaying males even by aerial photographs, evaluating tree density, basal area, edge height and opening size.

H.K.

Heiser, F.(1982): Beobachtungen an einer übersommernden Doppelschnepfe (*Gallinago media*. /Observations on a summering Great Snipe). Orn.Mitt. 34: 99 - 100 (in German).

A Great Snipe spent the summer on a wetland in Southern Germany.

H.K.

Hemery, G. et.al.(1978): Étude préliminaire des populations de bécasses bois (*S.rusticola*) migratrices et hivernantes en France. (A preliminary study of woodcock populations migrating and wintering in France). Bulletin Mensuel Office National de la Chasse. No. Sp. Scien.Tech. Nov. 1978: 5 - 37.

A preliminary analysis of 260 foreign-ringed recoveries of woodcock in France. A small proportion of birds from Norway and Great Britain winter in Finistère; 5 - 20% of Swedish and Finish woodcock winter in France. The southeast of the country is an important wintering area for birds from central Europe.

In the 1974-75 hunting season an estimated 1.5 million woodcock were killed in France. It is suggested that a woodcock has a three to eight times greater chance of being shot here, than in the rest of Europe. The estimated number of woodcock shot in the different regions was positively correlated with the number of ringing recoveries reported there.

G.H.

Heyne, K.-H. & J. Leuck (1983): Ringfund einer Zwergschneepfe (*Lymnocyptes minimus*) aus dem Senegal (Ringed Jack Snipe recovered from Senegal). *Vogelwarte* 32: 151. (in German).

Although the Jack Snipe winters regularly in tropical West Africa ringed birds (7) had so far only been reported from wetlands along the coast of North Africa. Now the first bird was reported from Senegal (30.1.83, shot). It had been ringed 13.11.82 in W-Germany.

H.K.

Horton, G.I. & Causey, M.K. (1981): Dispersal of American Woodcock in Central Alabama after Brood Breakup. *J. Wildl. Mgmt.* 45(4): 1058 - 1061.

Dispersal activity by (10) radio-tagged woodcock chicks was initiated during the 3rd week following brood breakup, and continued through the 8th week. Relatively low mortality (1 out of 10, killed by predator) in that stage of live. The study provided evidence for a considerable exodus of woodcock from the breeding sites, but there are only slight hints for a preferred northward direction (as in some other avian species). Dispersal movement usually occurred during the dawn crepuscular flights. It

was obviously not related to any consistent weather patterns, with the exception of wind direction. As spring migration dispersal flights of woodcock were associated with winds from the west or southwest.

H.K.

Horton, G.I. & Causey, M.K. (1984): Brood abandonment by radio-tagged American Woodcock hens. *J. Wildl. Manage.* 48: 606-607.

Three hens radio-tagged after being captured with chicks less than two days old subsequently abandoned their broods. The authors suggest that hens with broods less than four days old should not be radio-tagged and handling of brooding hens should be avoided if precipitation appears imminent.

G.H.

Ingram, R.P. & G.W. Wood (1983): Characteristics of Woodcock Harvest Data in Coastal South Carolina. *Wildl. Soc. Bull.* 11(4): 356-359.

Considerable concern over the continuous decline (average annual rate 2.8%) of the Eastern Region population of the American woodcock (*Scolopax minor*) led to studies of this species in its winter quarters in South Carolina. High flushing rates during hunts indicated a considerable woodcock density of some coastal areas in comparison with those inland. Bag analysis revealed a high percentage of females (71%). Gonad development of woodcock taken between 1 January and 14 February was examined. Of those taken in last period (31 January to 14 February) 14 of 18 males, but only 2 of 38 females indicated sexual maturity by the size of their gonads. Thus the authors conclude, a hunting season ending by 31 January to be unlikely to overlap with the breeding season.

H.K.

Johnsgard, P.A. (1981): *The Plovers, Sandpipers, and Snipes of the World*. University of Nebraska Press, USA.

This book provides among others a complete survey of all the species of the tribe Gallinagini (16 species) and Scolopacini (4 species). Breeding and wintering range, description, habitat and foods, social behaviour, reproductive biology, status and populations dynamics of all species are described thoroughly, based on an extensive search of literature. Breeding distribution of most species is exhibited by maps and external characteristics by impressive drawings. This book fills out a gap in our knowledge of the worldwide distribution of woodcock and snipe species. Readers interested in further studies of one or the other species receive helpful hints concerning detailed literature.

H.K.

Kalchreuter, H. (ed.), (1983): *Proceedings of the Second European Woodcock and Snipe Workshop (Fordingbridge, March/April 1982)*. 164 pp. black-and-white photographs and numerous text figures. Verlag Dieter Hoffman, 65 Mainz 41, Federal Republic of Germany. Price 5.00 (DM 19,80).

With the exception of the final two chapters, one on changes in the migration pattern of the Common Snipe *Gallinago gallinago* (showing that their main moulting and winter quarters have shifted from the Netherlands to Britain), the other on hunting bags of Snipe in Denmark, all this collection of papers refer to Eurasian Woodcock *Scolopax rusticola*. The contributions from the Game Conservancy at Fordingbridge, particularly from Graham Hiron, provide a sound core of information of interest to all wader specialists. Other contributions come from several

European workers. Topics covered include diet, breeding biology and behaviour, production estimates, population dynamics, migration and fidelity to wintering sites. The "game" aspects of the species are covered in several papers on hunting and "harvesting" Woodcock at different times of year and in different parts of Europe. The result is an excellent compilation of the present state of knowledge of Woodcock biology, with many points highlighted that could repay study in other wader species.

P.R.Evans

(from: Wader Study Group Bulletin 1984/41)

Madge, S.C.(1983): Woodcock catching flying insects from the ground. Brit. Birds 76: 312.

Observations made soon after dusk in August of *Scolopax rusticola* repeatedly jumping from the ground with partially opened wings to snap at small flying insects. Several caught in this manner.

G.H.

Nicolas, M.(1954): La Becasse á la Croule. Oddoz, Paris. 91 p. (in French).

Own observations and a search of some (exclusively French) literature on roding activities of woodcock including considerations about hunting.

H.K.

Perco, F.(1984): Estimates of Wader Numbers during Mid-winter in Northern Adriatic Coastal Wetlands. Wader Study Group Bull. 40: 49 - 50.

Wader censuses carried out in Northern Italy from 1979-84 revealed some 6.500 *Gallinago gallinago*.

H.K.

Randla, T.(1983): On the spring hunt on the Woodcock.
(Estonian, English summary). Loodusevaatlusi 1980:
I. 75 - 78.

A study on the hunting bag of waders in Estonia in 1980. During fall 9 woodcock, 36 snipes (*Gallinago gallinago*) and 71 other waders were shot. During the spring season on roding woodcock (12 April-4 May) in the districts Pernau and Valga 312 birds were shot, of which 192 were immatures and 120 adults, according to an analysis of the wings collected.

H.K.

Roboski, J.C. & Causey, M.K.(1981): Incidence, Habitat Use, and Chronology of Woodcock Nesting in Alabama. *J.Wildl.Mgmt.* 45(3): 793 - 797.

A study on breeding biology and ecology of the American woodcock in a southern part of its range. The slight increase of the breeding population is considered a consequence of increasing forest habitat after the decline of cotton production. Nests were found most often on flat bottomland sites near water, in contrast to nothern parts of woodcock's range, where nests are usually established on dry upland sites. Detailed analyses of vegetation on nest sites. Nesting season is about one month longer in Alabama than in the north. An average of 2.6 chicks per brood were found on the study areas.

H.K.

Sutton, G.M.(1981): On aerial and ground displays of the World's Snipes. *Wilson Bull.* 93: 457 - 477.

A study concerning 13 *Gallinago* species.

H.K.

Tautin, T., P.H. Geissler, R.E. Munro & R.S. Pospahala (1983): Monitoring the Population Status of American Woodcock. Forty-eight North American Wildlife Con-

ference, pp. 376 - 388.

Describes the latest techniques for analysing the singing-ground surveys used to monitor woodcock populations in North America since 1937. It is concluded that the survey provides a practical, economic means of obtaining information useful for management purposes. For example the 1982 results showed a 20 - 3 percent decrease from 1981 following the severe blizzard in the north-east in early April suggesting that the survey is sensitive to between year population changes. This prompted the Fish and Wildlife Service to propose a regulatory restriction aimed at reducing harvests during the 1982 hunting season. The survey also indicates a steady long-term population decline in the Eastern Region probably due to a loss in quality and quantity of habitat.

G.H.

Walker, W.A. & M.K. Causey (1982): Breeding Activity of American Woodcock in Alabama. *J.Wildl.Mgmt.* 46(4): 1054 - 1057.

143 female American woodcock (*Scolopax minor*) were collected from mid-January to end of February in 1979 and 1980 in Alabama, to examine the stage of breeding maturity. Follicle color was the most accurate indicator of woodcock that had mated. 18% of all females and 28% of the adults collected during February had already bred. 38% of all had yellow yolk and thus had bred or would soon breed, giving an indication of the proportion of Alabama breeding population in the woodcock wintering here. These findings are helpful for setting the closing date of the woodcock hunting season and performing prescribed burns in potential woodcock nesting habitat.

H.K.

Wilson, J.R.(1982): The wintering of shore birds in Iceland. Wader Study Group Bull. 36: 16- 19.

One record of each *Lymnocyptes minimus*, *Gallinago gallinago* and *Scolopax rusticola* have been reported in the winters of 1976 and 1977 respectively near Reykjavik.

H.K.

Zomerdijk, P.(1983): De Houtsnip (*Scolopax rusticola*). De Graspieper 3/3: 107 - 121 und 3/4: 170 - 185 (Dutch, no English summary).

A brief monography of the woodcock mainly based on a search of recent literature, with special reference to the Netherlands. Ring recoveries of woodcock ringed in the Netherlands and found abroad are mapped according to seasons. Description of a method to catch woodcock for ringing in large mist nets, which is especially used during fall migration in the Netherlands.

H.K.