Wetlands INTERNATIONAL

IUCN SSC Species Survival Commission

Newsletter

Number 43 December 2017

Newsletter 43

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December 2017

This Newsletter seeks to be a contact organ to inform the members of the Woodcock and Snipe Specialist Group (WSSG), a research unit of Wetlands International (WI) and of IUCN, the International Union for Conservation of Nature. The subjects of WSSG are species of the genera *Scolopax*, *Gallinago* and *Lymnocryptes* that in several respects differ remarkably from all other wader species. For this reason a separate research unit was established.

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Editorial

2017 was a very special year for the Woodcock and Snipe researchers: we had two scientific meetings dedicated to our species, the **8th Woodcock & Snipe Workshop** (on Pico Island, Azores, Portugal; 9 - 11 May) and the **11th American Woodcock Symposium** (Michigan, USA; 24 - 27 October). The present issue of the Woodcock & Snipe Specialist Group Newsletter began with overviews of these two important meetings.

The behaviour of our birds does not end surprising us and this issue follows with references to the observation of Woodcock roding in Finland in December. From Denmark we have the 2016-2017 update of the results of the Woodcock hunting season monitoring, which highlights the declining trend on the proportion of juveniles among birds bagged during the past three hunting seasons. This does not seem to have happened in Estonia (Vormsi), France or Portugal (see also this issue). In the last two countries mean abundance during the 2016-2017 hunting season was at high level. Concerned with the last breeding season, our colleagues from the Moscow group report here an important decline on the percentage of juveniles among birds ringed during 2017 autumn migration in Russia. This is a major concern. We will see the results from the present hunting season in Western Europe. From Russia it is good to know that new Woodcock ringers were trained. The Woodcock breeding population in France seem to be stable on distribution and abundance along the last five years.

The monitoring of the Common Snipe during the breeding season continues in Russia, where the 2017 breeding season seemed to present some heterogeneity in breeding success due to drying of many habitats in middle and southern latitudes, flooding and summer cold in the high latitudes of the European Russia. In France the Common Snipe and Jack Snipe continued to be monitored during migration and wintering periods and 2006-2017 hunting season seemed good, with a higher percentage of juveniles, compared to the previous season.

Also in this issue our French colleagues highlight the use of tracking devices to follow Woodcock and Common Snipe captured in France. The *Office national de la chasse et de la faune sauvage* (ONCFS) has, for Woodcock, a partnership with the *Club National des Bécassiers* (CNB; see the final part of the "French Woodcock Report") and, for Common Snipe, a partnership with the *Club International des Chasseurs de Bécassines* (CICB).

Finally, in the name of all WSSG-members I would like to thank Yves Ferrand for all the years he worked for our Specialist Group. As he announced in the WSSG Newsletter 41, after 15 years as Coordinator/Chair, he decided to step down. He still worked one year more (2017) for WSSG, as Deputy Chair, and organised with me the 8th Woodcock & Snipe Workshop. Yves will continue to be a reference for all of us, not only as an exceptional scientist dedicated to Woodcock and Snipes, but also for his personal kindness and willingness to discuss and help. It is a great honour for me to succeed to Yves. Of course it is also a great challenge and I hope to correspond adequately.

A happy 2018 for all. Much success with your work.

David Gonçalves
Chair

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8th Woodcock & Snipe Workshop - Pico Island (Azores, Portugal)

DAVID GONÇALVES
WSSG Chair

The 8th Woodcock and Snipe Workshop was held in the village of Madalena, Pico island, Azores, Portugal, from 9 to 11 May 2017. It was organised by the Centro de Investigação em Biodiversidade e Recursos Genéticos (CIBIO-InBIO, Portugal) and the Office national de la chasse et de la faune sauvage (ONCFS, France). The financial support came from ONCFS (France), Direção Regional da Ciência e Tecnologia (DRCT, Azores, Portugal), Fundação para a Ciência e a Tecnologia (FCT, Portugal), Direção Regional dos Recursos Florestais (DRRF, Azores, Portugal). The Municipality of Madalena made available some of its facilities, including a modern auditorium.

We had 33 participants (Figure 1), from 10 countries: Belarus (1), Denmark (1), Estonia (1), France (4), Hungary (1), Ireland (1), Italy (2), Portugal (12), Russia (5) and the United Kingdom (4). The majority were members of the WSSG. In total, 26 communications (19 oral and 7 posters) were presented. The "Programme and abstracts" book can be downloaded here: https://www.wetlands.org/our-network/specialist-groups/woodcock-and-snipe-specialist-group/. Currently, we are working on the proceedings.

It was a great pleasure to be able to hold this scientific event in the Azores, where there are sedentary populations of Eurasian Woodcock and Common Snipe, and share with participants some of the natural beauty of the archipelago.

Figure 1 - Participants in the 8th WSSG Workshop in Madalena, Pico island (Azores, Portugal), in May 2017 (photo: T.M. Rodrigues).

Figure 2 - Opening session, with the presence of (right photo): the Regional Secretary of Agriculture and Forestry, João Ponte (in the center), and the mayor of Vila da Madalena, João António Soares (in the left). Photos: left - T.M. Rodrigues; right - G. Schally.

Figure 3 - Participants discussing the presentations (left photo) and a view of the auditorium during the presentation of Thomas Kjaer Christensen (Aarhus University, Denmark) (right photo). Photos: T.M. Rodrigues.

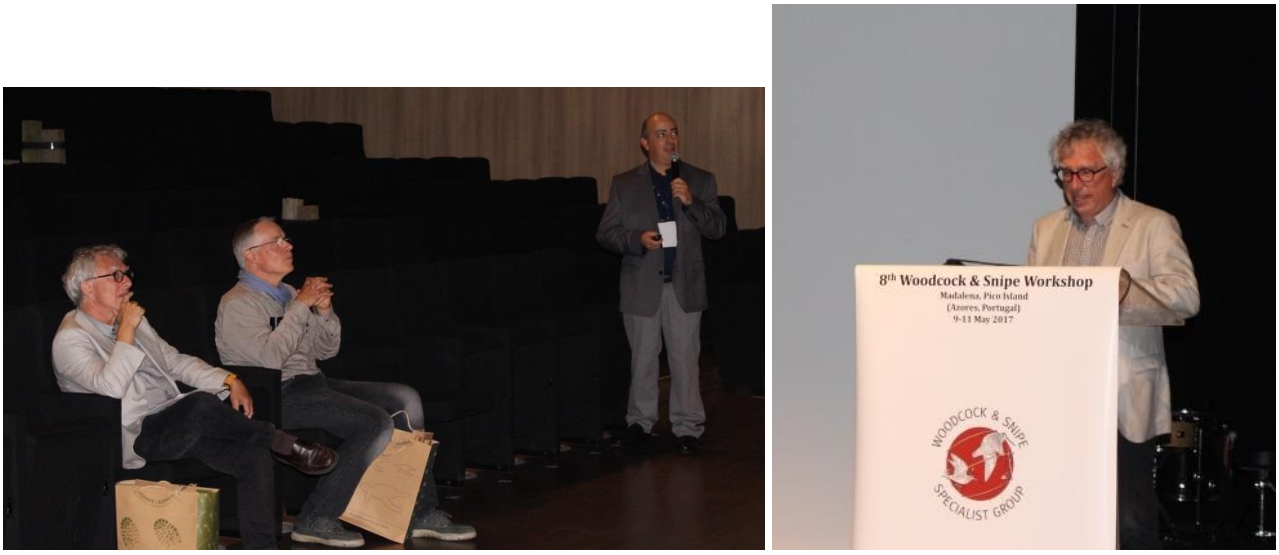

Figure 4 - Left photo: a moment of the tribute to Yves Ferrand and François Gossmann (ONCFS, France), for their work and for the particular relationship that links them to the Azores and to the current chair of the WSSG. Right photo: Yves Ferrand, speaking during the closing session, saying goodbye to the members of the WSSG present. Photos: T.M. Rodrigues.

Figure 6 - Visit to the Landscape of the Pico Island Vineyard Culture (UNESCO World Heritage-listed Criação Velha wine region) - municipality of Madalena. Photos: left - P. Zverev; right - L. Luigujoe.

Figure 7 - Visit to Snipe habitat on Pico island. Photos: left - P. Andrade; right - L. Luigujoe.

Figure 8 - Still during the field trip on Pico island: left - the sun finally appeared and it was possible to observe for some time the magnificent mountain of Pico; right - a group of participants taking position to observe Eurasian Woodcock roding. Photos: lef - L. Luigujoe; right - E. Mongin.

11th American Woodcock Symposium - Michigan (USA)

DAVID GONÇALVES
WSSG Chair

The 11th American Woodcock Symposium took place at the Ralph A. MacMullan Conference Center, in Roscommon, Michigan, USA, from the 24th to the 27th October 2017. It was hosted by the Michigan Department of Natural Resources, Ruffed Grouse Society, American Woodcock Society, US Fish and Wildlife Society, Hal and Jean Glassen Memorial Foundation.

The American Woodcock Symposium is the preeminent North American conference where research findings and management issues related to the conservation of the American Woodcock (*Scolopax minor*) are presented and discussed. The last symposium took place in 2006. The 2017 edition focused on accomplishments during the last decade.

About 90 participants attended the symposium and 35 oral communications were presented. The majority of the participants were from the USA; some were from Canada. Occasionally presentations on research and management of Eurasian Woodcock (*Scolopax rusticola*) are added to the symposium. This was the case for this 11th edition: Andrew Hoodless and Christopher Heward (Game & Wildlife Conservation Trust, UK) joined me with presentations on the Eurasian Woodcock.

The pace of decline in the American Woodcock populations seems to have slowed or stopped. For this result it will have been important the dialog between researchers, hunters, administration, foresters and farmers.

Thanks to the efficiency and kindness of Al Stewart and his team (Michigan Department of Natural Resources) the Symposium was a success. The proceedings are being prepared.

11th American Woodcock Symposium
Roscommon, MI October 24-27, 2017

Figure 1. Left photo: The entrance of the Ralph A. MacMullan Conference Center. Right photo (from left to wright): John Eichinger (President and CEO of the Ruffed Grouse Society and American Woodcock Society), Al Stewart (Michigan Department of Natural Resources), Tom Cooper (U.S. Fish and Wildlife Service) and Andrew P. Weik (Ruffed Grouse Society). Photos: A. Stewart.


Figure 2. Left photo: The room where the oral presentations took place. Right photo: Andrew Hoodlesss (Game & Wildlife Conservation Trust, UK) before his presentation on Eurasian Woodcock, with Clay Buchanan (Michigan Department of Natural Resources; at left) dealing with the logistic. Photos: D. Gonçalves.


Figure 2. Left photo: The dining room of the Conference Cente. Right photo: the same place, where a tribute to David Krementz (University of Arkansas; retiring) took place; from left to right: Alan Stewart, David Krementz, Tom Cooper, Andrew P. Weik, David Andersen (University of Minnesota). Photos: D. Gonçalves.


Figure 2. Left photo: Andrew Hoodless and Al Stewart observing two American Woodcock shot that day. Right photo: The beautiful Michigan autumn colours. Photos: D. Gonçalves.

Roding Eurasian Woodcoks *Scolopax rusticola* in mid-winter in Finland

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The early winter in 2017/18 was very mild with usually plus-degrees until the second third of January. At the Kaarina meteorological station close to Turku, SW-Finland, the mean December 2017 temperature was 1.1°C (the 1981-2010 average being -2.6°C) and the amount of rainfall was 93 mm (the 1981-2010 average being 64 mm). At the Helsinki-Vantaa airport the corresponding values were 0.7°C and 113 mm, both above the long-term averages (data from the Finnish Meteorological Institute).

Near both these sites roding Eurasian Woodcocks *Scolopax rusticola* were recorded in mid-winter by experienced amateur bird-watchers. On the island of Ängsö in the city of Parainen in the SW Finnish Archipelago Sea (bird atlas square 667:20) a roding Woodcock was recorded on 16 December at 16.00 hrs by Raimo Uusitalo (local sunset at 15.22 hrs). This species breeds regularly on that island.

At Vantaanlaakso, the city of Vantaa (668:38), next to the Finnish capital of Helsinki, a roding Woodcock was recorded twice around mid-night, flying along its normal roding route. At one of the occasions three strophes were heard and the flight gave the impression of a normal "territorial" flight (observed by Riikka and Mikko Leppänen).

These observations were totally unexpected as I have not been aware of any similar observations at least in Finland (and David Gonçalves, *pers. comm.,* was unaware of any roding observations in December anywhere). The previous earliest published roding observation in Finland was made at Katariinanlaakso, Turku, on 6 February 1990, and it was considered an early spring migrant (Lehikoinen *et al.* 2003). The Woodcocks are usually absent from Finland in December - February except for possibly a few overwintering on the outermost islands in the Archipelago Sea.

In my study area at Aasla in the Archipelago Sea (bird atlas squares 669:21-22) the first roding males annually in 1975-2017 have been recorded between 12 March and 2 May (median 3 April; n=43), and the last ones seen roding have been recorded annually between 16 June and 10 August (median 20 July; n=43). The start of roding has become significantly earlier, but there has been no change in the time when roding is finished (Saari 2003 and *unpubl.*).

These observations made in the winter 2017/18 are very much out of the normal range and it is difficult to decide whether these birds are late autumn migrants (or prospecting to overwinter?) or very early spring migrants. Most probably the weather had something to do with this - at least the temperatures were close to those in late March, when the birds have arrived and started their roding.

References:

Lehikoinen, E., Gustafsson, E., Aalto, T., Alho, P., Laine, J., Klemola, H., Normaja, J., Numminen, T. & Rainio, K. 2003. Varsinais-Suomen linnut. - Turun Lintutieteellinen Yhdistys, Turku, 416 pp. (in Finnish).

Saari, L. 2003. Phenological data of the Woodcock *Scolopax rusticola* in SW Finland. - WI-WSSG Newsletter 29:26-30.

Woodcock hunting in Denmark 2016/17

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This report summarizes the Woodcock hunting season 2016/17 in Denmark. The open season on Woodcock is presently 1 October to 31 January. Historically, the open season has changed several times, with closure of spring hunting in 1973, and opening of hunting 1 to 15 January in 2004 and 16 to 31 January in 2011. Through all years there have been no restrictions on Woodcock hunting with respect to daily bag limits or specific days of hunting, and Woodcock may be hunted from sun up to sun set. At the end of the season hunters have to report their personal bag to the official Bag Record, but may also, on a voluntary basis, contribute to the Danish Wing Survey, by sending in one wing from each bagged Woodcock. Both the Bag Record and the Wing Survey are administered by the Danish Centre for Environment and Energy/University of Aarhus, Denmark.

The bag of Woodcock in Denmark since 1941 is shown in Fig. 1. The bag size show periods of ups and downs, but have increased steadily. In recent years the bag size has shown a stable level of 35,000 to 40,000 birds. In the 2016/17 hunting season a total of 38,789 Woodcock have so far been reported to the Bag Record. This figure is preliminary, as the period of reporting runs until 31 March 2018. However, from experience, only a slight increase, if any, is expected to occur before reporting is closed. With a stable Danish breeding population of c. 2,000 Woodcock, the vast majority of birds bagged in Denmark are staging and wintering migrants originating from breeding areas in northern Scandinavia and European Russia.

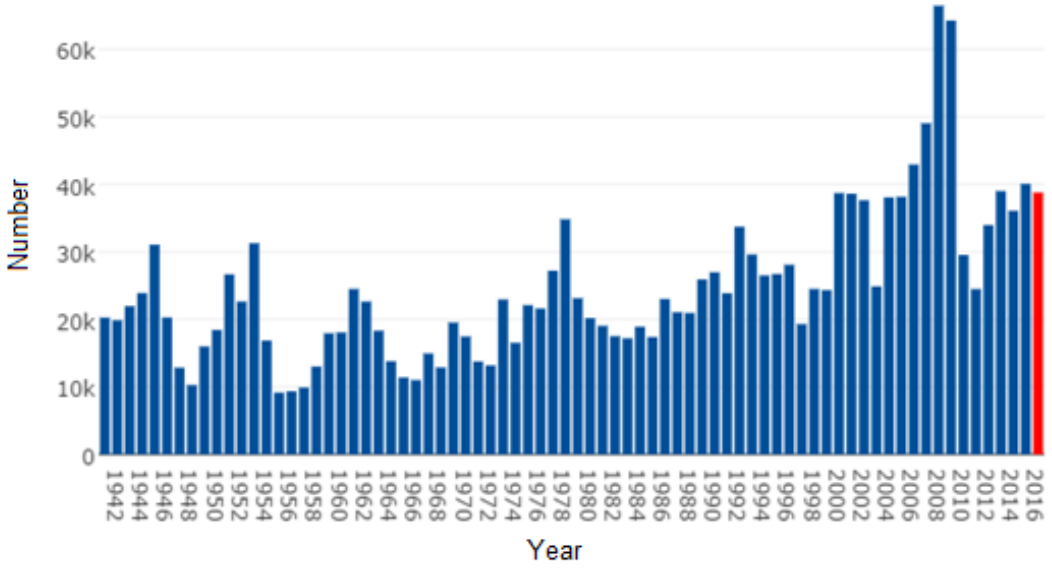

Figure 1. Number of Woodcock bagged by hunters in Denmark during the period 1941 to 2016. The number reported in 2016 is preliminary, as reporting for this season is possible until March 2018.

During the 2016/17 hunting season a total of 990 Woodcock wings were received by the Danish Wing Survey. As all wings are labeled with specific harvest date and exact location, they provide information of the seasonal and geographical distribution of the Woodcock bag. Based on plumage characteristics all wings are determined to the age class (adult or juvenile), and this provides both an age specific temporal distribution and an annual index of reproductive success, expressed as the number of juveniles per adult bird.

The geographical distribution of bagged Woodcock in Denmark 2016/17 follows the usual pattern, with the majority being bagged in the western part of the country. In this area, bordering the North Sea, migrating Woodcocks are frequently found in high numbers making (forced) stops before crossing the water to the wintering areas in Great Britain. In 2016/17 the temporal occurrence of Woodcocks in Denmark nicely followed the long term average (1985-2015), showing a marked peak in the first half of November (Fig. 2).

In 2016/17 juveniles comprised 52.9% of the annual bag. This figure is lower than the long term average of 62.7% (1985-2015), and is following the significant long-term declining trend (-0.349, p=0.029) over this period. During the past three seasons, the juvenile ratio have been at a very low level of about 1.0 juvenile per adult, describing a period of poor reproductive success (Fig. 3).

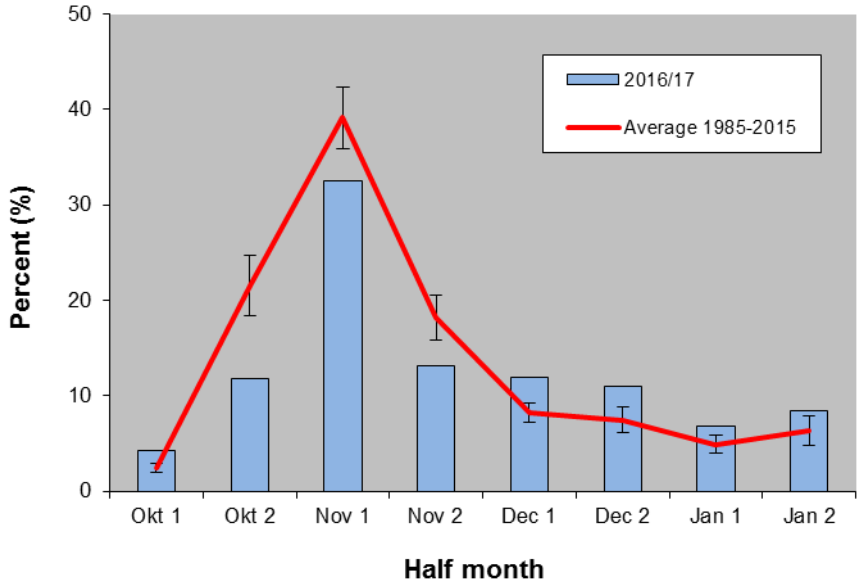

Figure 2. The temporal (half-monthly) distribution of Woodcock bagged in the hunting season 2016/17 in Denmark based on 990 Woodcock wings received by the Danish Wing Survey.

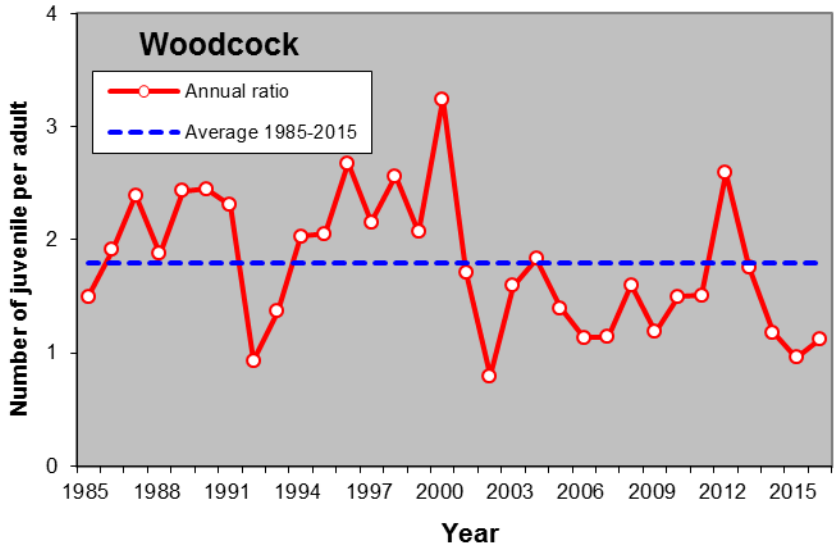

Figure 3. The annual number of juvenile per adult Woodcock in the Danish Wing Survey for the hunting season 1985-2016.

Ringing activities in Vormsi (2010-2017)

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The results of the first two years of ringing (2010-11) on the Estonian island Vormsi "Santuario della Beccaccia ONLUS" (Woodcock's Sanctuary) since 2006, have been published in a brief note on this Newsletter (nº37, p.39). Comprehensive information on the climate, geomorphology, flora and fauna of the island are widely reported in the volume "Le Beccacce di Vormsi" ("The Woodcock of Vormsi" Aa.Vv., Gabbiano Ed., Ancona, I, 2013).

In this new note, the results of the ringing are provided, with age-ratio data and weight, during autumn migrations from 2010 to 2017 (Table 1), the ringing campaign is usually from 10 to the end of the month October every year.

As a pragmatic, the catches were carried out at night in the primitive areas by means of long-sleeved screen and spotlight.

There are 22 recoveries known: Spain 4, UK 2, France 6, Italy 1, Germany 1, Ireland 1, Russia 1, Denmark 1, Estonia 5; two of them are the recoveries of live birds and were made on the island with a lapse of 5-7 days, both birds showing a 15-20% of increment in weight.

The low recovery rate (7%) is emphasized, perhaps due to the movement of a range of displacement with very little hunting pressure.

During the night catches, by different teams, all the birds met are record allowing a IAN (nocturnal index of abundancy) calculation, likewise, during daytime monitoring with pointing dogs on the wooded areas (ICA, index of abundance for a standard search of 3.5 hours / day) (Figure 1).

Table 1. Results of the ringing of Woodcock at the Estonian island Vormsi "Santuario della Beccaccia ONLUS" during autumn migration.

year	subject ringed	JUVENILES					ADULTS			
		number	%	weight (g)			number	weight (g)		
				average	min	max		average	min	max
2010	22	13	59				9			
2011	15	7	47	354	320	380	8	360	320	400
2012	6	5	83	432	400	460	1	410	410	410
2013	69	36	52	388	335	434	33	393	340	470
2014	30	24	80	345	280	440	6	318	280	345
2015	72	52	72	375	310	455	20	388	325	470
2016	56	45	80	346	310	430	11	355	315	380
2017	41	35	83	337	295	310	6	368	325	400
	Tot:310									

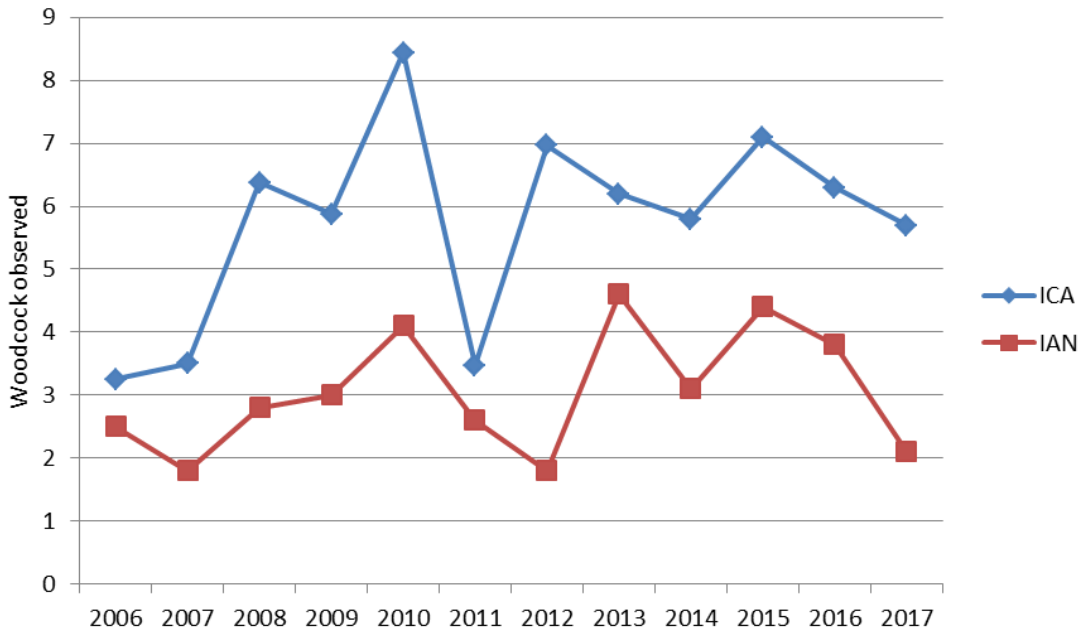

Figure 1. Variation on IAN (nocturnal index of abundancy) and ICA (index of abundance for a standard search of 3.5 hours / day with pointing dogs) values between autumn migratory seasons at the Estonian island Vormsi "Santuario della Beccaccia ONLUS".

Here are some synopses about other research activities that are being carried out and / or are ongoing.

The counting activity of male in "croule" started in June 2006 and 2007 and then continues, after a three-year suspension, uninterruptedly every breeding season from 2011 to 2017, confirming a discrete potential of Vormsi as a nesting area for Woodcock, assuming the presence of at least 50 reproducers, including the enlargement of the 7-unit observation team at critical points: some middle-class students were acculturated by our Estonian ornithologist Jaanus Aua and involved in the study intelligently.

In collaboration with the University of Genoa, the trophic potential of the Island was tested in both October 2006 and June 2007, with the collaboration of Dr. Galli and Biancardi and, for the second time with the economic support of "Conseil International de la Chasse" (CIC Italy). The results are published on the volume dedicated to Vormsi (2013), mentioned above, and still show a rather low trophic capacity during the reproductive period.

The aim of the latest research is to investigate the influence of the microclimate on the behavior of the Woodcock in the migration stop-over by comparing ICA and IAN with temperature, humidity, atmospheric pressure, brightness, rainfall, direction and wind intensity detected by automatic stations designed and built for this purpose, which will record 24h by 24h and for at least 15 days all the parameters to be processed on a special database.

Autumn migration and ringing Woodcock of Moscow group in 2017

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Meteorology conditions

In 2017, spring arrived to Russia early and was cold and long. In the Central Russia (data from the meteo station of Vladimir region below as typical) March was warm and rainy, fell by 176% precipitations than normal. April was cold (average temperature was 4.6 ºC), all phenological dates were pushed later by about 7-10 days. May was cold and rainy. The average temperature in May was 9.6 ºC, that on -3ºC below the norm. The most intensive cold observed from 7 to 15 May, at night the temperature decreased to -2 ºC. May 9-10 in many regions, there was snow. All this adversely affected the hatching birds. The whole of June was also cold and rainy, and in the period of mass hatching of eggs it has been raining almost every day. Perhaps part of the nests flooded. The average temperature in June was 13.7 ºC that was -2.9 ºC below normal. July was also cold and rainy, and only since July 25 came the hot weather with occasional rains. First part of August was extremely hot and dry. All summer in the forest the soil was very wet, the moisture was excessive.

Note that the roding of Woodcock lasted a very long time and ended only by the end of July. Our opinion before ringing season was that this year will be a small proportion of juveniles and among them large proportion of young from late broods. Results of autumn ringing Woodcock confirmed this.

Autumn ringing missions

In autumn 2017, our group with the help of ONCFS, we have carried out expeditions on ringing and the study of the Woodcock autumn migration. The work was carried out in the framework of the project "Woodcock" according the agreement BirdsRussia and ONCFS with the help of Regional Hunting Federation of Auvergne-Rhône-Alpes and Isére. Ringing and night censuses were taken by the method developed by ONCFS with a spotlight and a net in the places of night feeding in open habitats (pastures and hayfields).

In autumn 2017 has been successfully tested lightweight spotlight with built-in batteries and powerful flashlights with replaceable and rechargeable batteries. It is more effective than heavy 6-pound helium batteries. Duration of illumination (2-3 hours) even had a significant gain.

The work was carried out in the Vladimir, Vologda, Ivanovo, Kostroma, Moscow, Tver' regions and the Republic of Mordovia. All were formed 9 teams ringers. If necessary 4 persons successfully caught the Woodcock alone. The ringing was attended by 14 Russian and 3 French specialists of Woodcock from ONCFS. In addition, during the period of work, 6 people passed the training methods of capturing (the students of the Russian Agricultural Academy by Timiryazev and from Kostroma state hunting land).

Results and discussion

The main results of ringing in 2017:
Number of regions: 7
Number of sites: 53
Number of ringers: 17
Number of night trips: 141

Number of contacts: 808
Number of ringed Woodcock: 219
Number of retrapes at this season: 12
Number of indirect retrapes: 1
Capture success: 28.4%
Adults: 78
Juveniles: 137
Juveniles Early Broods: 79
Juveniles Late Broods: 57
Juvenile undetermined: 1
Undetermined age: 4
Proportion of juveniles: 63.7%
Proportion among juveniles: early broods- 58.1%, late broods- 41.9%

A characteristic feature of the autumn migration was the small number of local birds before migration, in almost all areas (except the Vologda). A sharp increase in the number of Woodcock on the night feeding that is associated with the beginning of mass migration occurred in the Vologda region on September 25, in the Kostroma region - 27 September, in the Mordovia Republic and the Ivanovo region - October 4, in the Vladimir and Moscow regions - October 5, in the Tver region - October,6. The main peak of migration lasted in the Vologda region - from 25 September to 10 October, in Kostroma - from 27 September to 6 October, in Mordovia - from 4 to 9 October, in the Ivanovo region - from 4 to 6 October in the Vladimir region from 5 to 14 October, in Moscow region - from 5 to 11 October, in Tver region - from 6 to 13 October.

The criterion of the abundance of Woodcock is the average number of birds observed per hour during night search. In autumn 2017, this figure was equal to 1.62 (see Table 1), which is more than in 2016 (1.36) and only slightly more than in 2015 (1.54). At the same time, these figures vary widely by region. Compared to the 2016 Woodcock discovered less in the Moscow region (1.5 vs 2.13), Vladimir region (a 1.9 vs. 2.4). In Kostroma region Woodcock abundance was relatively high in 2015 (3.63), and in subsequent years are substantially lower, and in 2016 and 2017 were found to average 1.8 birds per hour of searching. In 2017 most Woodcock noted in the Vologda region (2.3).

The proportion of juveniles in the catching was the lowest in the last 18 years (63.7%, Fig.1), while among the young the percentage of birds from later broods (41.8 %) higher than in all previous years, except for the dry 2002 (53,0%).

These results are very close to the results of St Petersburg's group of Vadim Vysotsky. 68 Woodcock were ringed in autumn 2017, among them 26 adults, 35 juveniles from early broods and 7 juveniles from late broods, so proportion of juveniles in North-West Russia was 61%.

So, total among 287 Woodcockw ringed in Russia there were 62.3% juveniles. This is the worst result of breeding success during last 18 years.

Table.1. Night censuses and ringing results in Russia by Moscow Woodcock group in autumn 2017

Region	Period of searching with projector (min)	Total number of contacts	Average contacts/hour (IAN)	Number of ringed Woodcock	Number of retraped Woodcock
Moscow	5100	129	1.5	31	0
Kostroma	5160	153	1.8	72	4
Vladimir	3090	100	1.9	25	0
Tver’	5220	99	1.1	27	0
Ivanovo	2340	48	1.2	13	0
Mordovia	3950	88	1.3	8	1
Vologda	4985	191	2.3	43	7
Total	29845	808	1.6	219	12

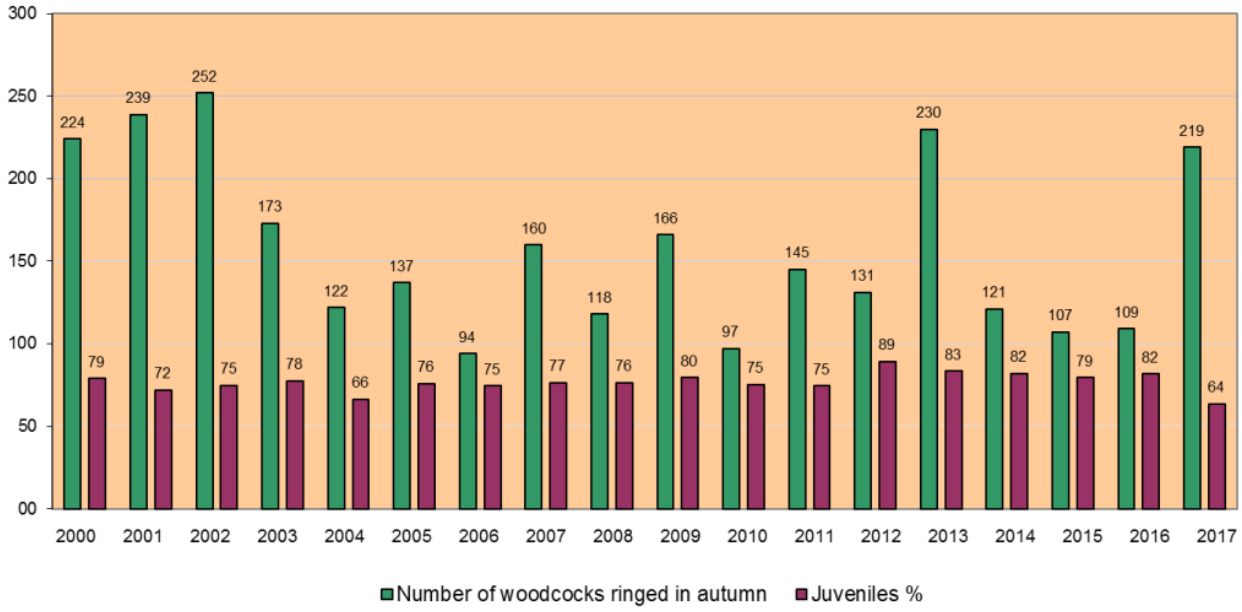

Figure 1. Variation among autumnal seasons in the number of Woodcock ringed and percentage of juveniles, from 2000 to 2017.

In autumn 2017 our group was made to collect information on hunting bags of Woodcock hunters. Through the media we asked the hunters to photograph the wings (upper and underparts) bagged in the autumn hunting Woodcock. We were able to collected photos from 78 Woodcock suitable for analyses. Of these, 37 were adults (47.4 %) and 41 juveniles (52.6 %). Among juveniles, 23 (56.1 %) were from late broods. Thus, the Woodcock breeding success in 2017 in Central Russia was very low.

Acknowledgments

We express our gratitude to ONCFS for financial and technical support of this work, Regional Hunting Federations of Auvergne-Rhône-Alpes and Isére for financial and equipment helps.
We thank a lot to the ringers Yuri Romanov, Marina Kozlova, Alexandr Kormilitsin, Elena Severtsova, Andrey Blokhin, Mikhail Bonch-Osmolovsky, Galina Shmeleva, Alexandr Esergepov, Sergei Spiridonov and Vladimir Yershov.

2017 European Russia Common Snipe report

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In 2017, the cooperation between the Russian Society for Conservation and Studies of Birds and the *Office national de la chasse et de la faune sauvage* (ONCFS) concerning the monitoring of Common Snipe (*Gallinago gallinago*) populations in European Russia was continued. In April-July 2017, the census of "drumming" males of Snipe was made at the same control sites and with the same protocol as in 2012 (Blokhin 2012). They were conducted on the territory of 12 Provinces/Republics of the Russian Federation. Totally, in 2017, 136 plots were visited corresponding to a total area of 98.24 km^2.

Weather conditions of the 2017 season

North region
South tundra and forest-tundra. The spring was cold and late. A rapid snowmelt caused very high and prolonged floods in the rivers in early June. The summer in tundra was dry and hot, so many ponds and bogs, like in 2016, have dried up. But by contrast, the summer was rainy and cold in tundra.
North taiga. Spring was late, very cold and protracted. The snow came unusually late (in June). Flooding in the rivers was very high. The water level in the marshes outside the floodplain was higher than last year.
Middle taiga. The spring was 2-3 weeks late, as a result of the prolonged cold weather. April was cold and rainy. May was cool and dry, like in 2016, so the fields were drained, but bogs remained well hydrated. But since the end of May the rains came and the soil was again saturated with water.

North-West region
South taiga. It was late and cold spring. The water level in the rivers and swamps was higher, compared to the last year. In early May, the floodplains were still filled with water. The summer was cold and rainy.

Central region
South taiga. Late spring. In the early II decade of April the snow has completely melted, the lakes thawed. This was the peak of the flood. In May the floodplain concentrated a lot of water, first because of the river flood, and in the III decade of May because of rains. In early June it became sharply colder.
Mixed coniferous-broadleaved forest. The spring was early, prolonged and cold. The snow has melted early. Flooding was not everywhere, but in some places on the rivers the flood level was high. Precipitation was frequent during all spring and early summer, which maintained high moisture in Snipe's habitats.
Broadleaved forest. The spring was early, long and cold. Unlike the last year, all of the surveyed habitats, especially floodplains, were very wet or flooded, due to a lot of precipitation in spring.

Volgo-Vyatsky region
Mixed coniferous-broadleaved forest. Spring was long and cold. In May it was freezing, snowing, raining a lot. There were no floods on rivers, and floodplains were dry. In some mire places the water was low.

Volga region
Broad-leaved forests. Spring was early and prolonged. Due to the large amount of rainfall in April and May, all habitats of Snipe were heavily humidified or flooded. Summer was also rainy.

Central Black Earth region
Broadleaved forest and forest-steppe. The spring came early. In April and May it was mostly warm and little rain. The flood was early, on the level of mean annual.

Results

South tundra

In the basin of Pechora in the north-east of Bolshezemelskaya tundra (Komi Republic) at watersheds Snipe inhabits flat-hilly bogs with willow bushes (7.8 ± 0.8 pairs/km^2) and open fens at flood-lands (3.3).

Forest-tundra

In the basin of Pechora in the south-east of Bolshezemelskaya tundra (Komi Republic) at watershed big-hilly bogs, Snipe was more abundant (8.2 ± 3.3 pairs/km^2), than at valleys and river flood-lands (4.4 pairs/km^2).

Despite a completely different pattern of spring 2017, compared to the spring of 2016, the number of Snipe at the flat-hilly bogs in southern tundra and floodplains in southern tundra and forest-tundra was the same as in the last year. At the same time, at big-hilly bogs of forest tundra (r. Pechora and Usa basins) the number of Snipe was the highest for all years of observations. Perhaps for the last season, better conditions for Snipe at big-hilly bogs was associated with abnormally high level of flooding and flooding of floodplain habitats and redistribution of birds in the watershed. A similar pattern was observed in 2015 (Figure 1).

North taiga

In the basin of Severnaya Dvina (Arkhangelsk province) Snipes were very few at floodplains at damp meadows and meadows in combination with fens, 0.4 ± 0.1 pairs/km^2, damp clearings, 0.4 ± 0.3 pairs/km^2 and fens, 1.4 ± 0.6 pairs/km^2. There were more Snipes at high bogs, 4.1 ± 2.0 and mesotrophic mires, 5.2 ± 0.4 pairs/km^2. Very high numbers of Snipe were revealed in the floodplain of r. Kuloy, where it reached, 9.4 ± 3.0 pairs/km^2 at damp meadows in combination with fens and, especially, mesotrophic mire, 14.6 ± 3.3 pairs/km^2.

In 2017, the number of Snipe (Severnaya Dvina basin, r. Pokshenga) was maximal at mesotrophic mire, for all years of observations. But in fens, clearings and floodplains it reached very low values, probably due to unfavourable hydrological conditions and cold spring (Figure 2).

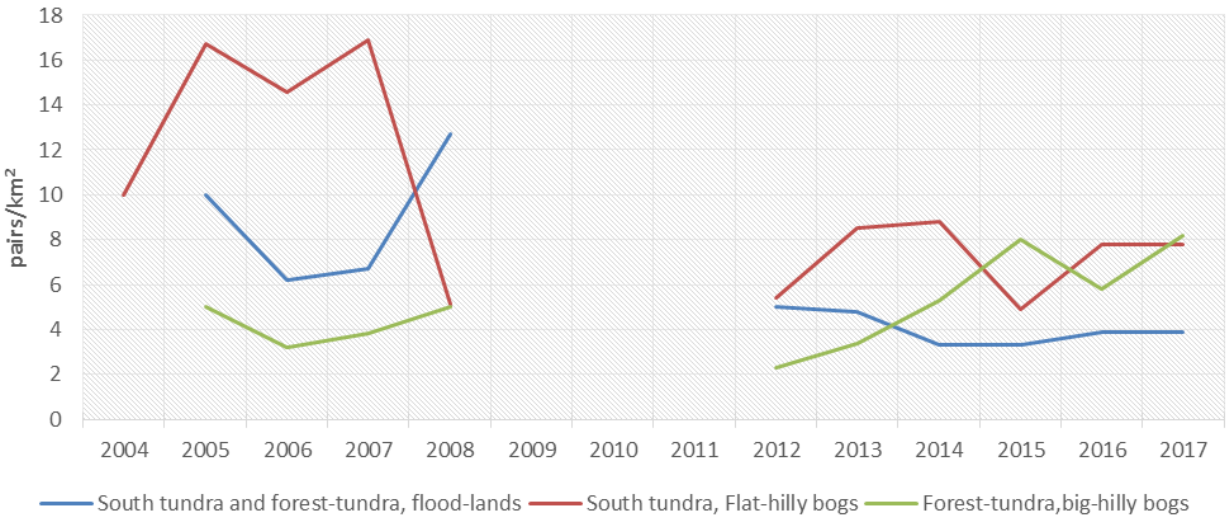

Figure 1. Common Snipe breeding density in swampy habitats of south tundra and forest-tundra (Pechora basin).

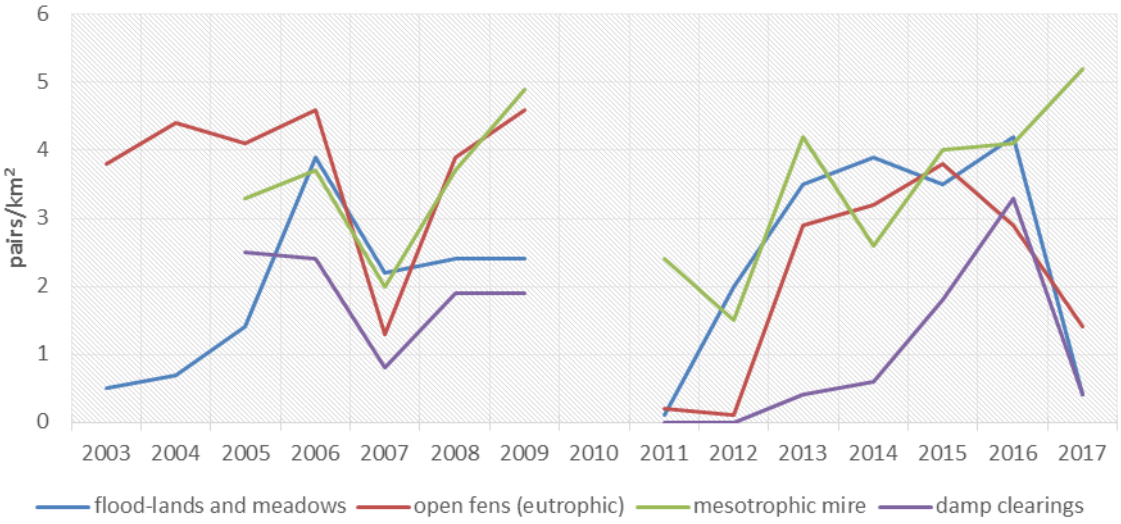

Figure 2. Common Snipe breeding density at swampy habitats of north taiga (Severnaya Dvina basin).

Middle taiga

At the eastern shore of Lake Ladoga (Karelia Republic) at damp abandoned fields Snipes were very rare (0.7 ± 0.5 pairs/km2), less than in the previous years. The highest numbers of Snipe were recorded in lowland at forest fens (7.1 ± 0.3 pairs/km^2) and open mesotrophic mire (8.0 ± 5.7 pairs/km^2), which is higher than in other years. A very high number of Snipe was at damp spots on abandoned fields in the floodplain (10.0 pairs/km^2). The density of Snipe (Lake Ladoga basin) in 2017 was the highest in recent years in mesotrophic mire and forest fens, and the lowest at damp abandoned fields and wet spots (farmlands and places near roads around villages) outside of floodplain (Figure 3). A relatively low number of Snipe at damp abandoned fields was associated with cool and dry May weather, when on the watershed fields dried out. In these circumstances, Snipe, apparently, moved to the swamps, which remained flooded the entire breeding season.

South taiga

At Pskov-Chudskaya lowland (Pskov province), the highest density of Snipe population was registered at mesotrophic mire (5.2 ± 3.4 pairs/km^2). It was substantially lower at raised bogs (1.5 pairs/km^2) and floodplain fens (3.1 pairs/km^2).

In the basin of Zapadnaya Dvina (Smolensk province), most Snipes were at damp hollows near uninhabited villages and at damp spots in farmlands (8.4 ± 0.3 pairs/km^2), observed in areas where mires had been burnt out (6.7 pairs/km^2). In other habitats, the number of Snipe was average at floodplains on grass and tussock meadows (3.2 ± 1.2 pairs/km^2), and at mesotrophic mire (4.6 ± 3.2). In raised bogs snipes was a little (0.5 pairs/km^2).

In the basin of the Upper Volga (Ivanovo province) at a lowland reed-cattail floodplain bog the number of Snipe was the highest annually (62.5 pairs/km^2), but lower than a year ago. Like last year, the density of birds was also very high at a mesotrophic mire out of floodplain (25.0 pairs/km^2). At damp floodplain meadows the density of Snipe made up 29.5 ± 5.0 pairs/km^2, at burnt places - 15.4 ± 3.3 pairs/km2. At peat quarries completely covered with quagmire, the density of Snipe was 13.3 pairs/km^2. At raised bogs with separate undersized pines, territorial males gathered closer to mesotrophic edges of bogs (12.1 ± 5.6 pairs/km^2).

In south taiga at Pskov-Chudskaya lowland the number of Snipe was the lowest for the last 4 years at mesotrophic mires and raised bogs, but higher than in the last year, at floodplain fens (Figure 4A). Obviously, in the absence of rain power, mesotrophic mires and raised bogs have "dried up" stronger than in other years, and this was reflected in the decrease of the number of Snipe. In the basin of Zapadnaya Dvina (r. Yelsha)

the number of breeding Snipe males has increased in 2017, in comparison with the previous year, at mesotrophic mires and damp depressions near uninhabited villages in farmlands. Snipe numbers have decreased in floodplains and mires which once held the fire (Fig. 4B). Probably, the reason for the decline in the number of Snipe in the flood plains was high flood, but the rains could have improved the habitat for the birds on the watershed (mesotrophic mires and wet spots in agricultural landscape).

In the basin of the Upper Volga, the density of Snipe has increased in almost all habitats, in comparison with 2016, and was the highest for the last 6 years of observations at floodplain meadows, raised bogs and oligotrophic scorched bogs (Figure 4B). Probably, this was due to optimum moisture conditions of the habitat of the Snipe, by which the population density of birds has increased.

Coniferous-deciduous forest

In the basin of the Upper Volga (Vladimir, Ryazan provinces and the Moscow Region) the highest density of Snipe was registered at damp meadows alternating with fens at non-flooded areas of the floodplain (23.0 pairs/km^2). At mesotrophic mires, the number of Snipe was high (14.3 pairs/km^2). It was also high at drain depressions in farmlands (10.9 ± 0.6 pairs/km^2) and floodplains where water meadows alternate with sedge fens and temporary reservoirs (11.4 ± 3.0 pairs/km^2). On watersheds, at meadow areas adjoining bogged depressions, less Snipes were found (6.7 pairs/km^2). Even less Snipes nested in bogged floodplain woods (3.4 ± 0.4 pairs/km^2) and in watershed bogged woods (1.8 ± 0.1 pairs/km^2).

In the basin of middle Volga (Mordovia Republic, Penza province) most of all Snipes bred at peateries (8.6 pairs/km^2). Less Snipe were in river valleys at lowland open and forest fens (7.4 ± 1.5 pairs/km^2), raised bogs (5.0 pairs/km^2), mesotrophic mire (3.3 pairs/km^2) and floodplain meadows (2.1 ± 1.5 pairs/km^2).

Thus, in the humid breeding season 2017, in the Upper Volga basin at watersheds and floodplains, the number of Snipe in all habitats was at a high and very high level (Figure 5A). In the Middle Volga basin due to heavy rainfall at mires, at damp meadows out of floodplain and peateries, the number of Snipe has increased (Figure 5B). But, in the absence of spring floods on rivers, less snipes were found at floodplain meadows, than in 2016. There were also less snipes at fens and mesotrophic mire.

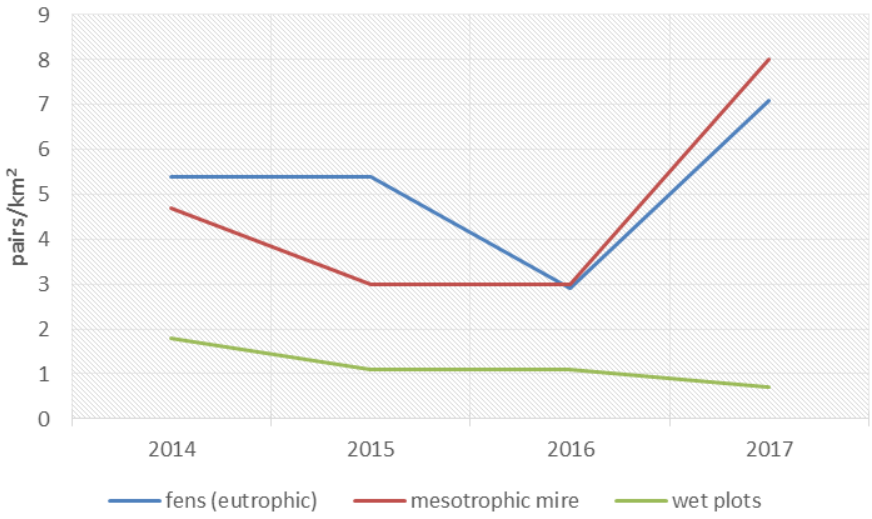

Figure 3. Common Snipe breeding density at swampy habitats of middle taiga (Lake Ladoga basin).

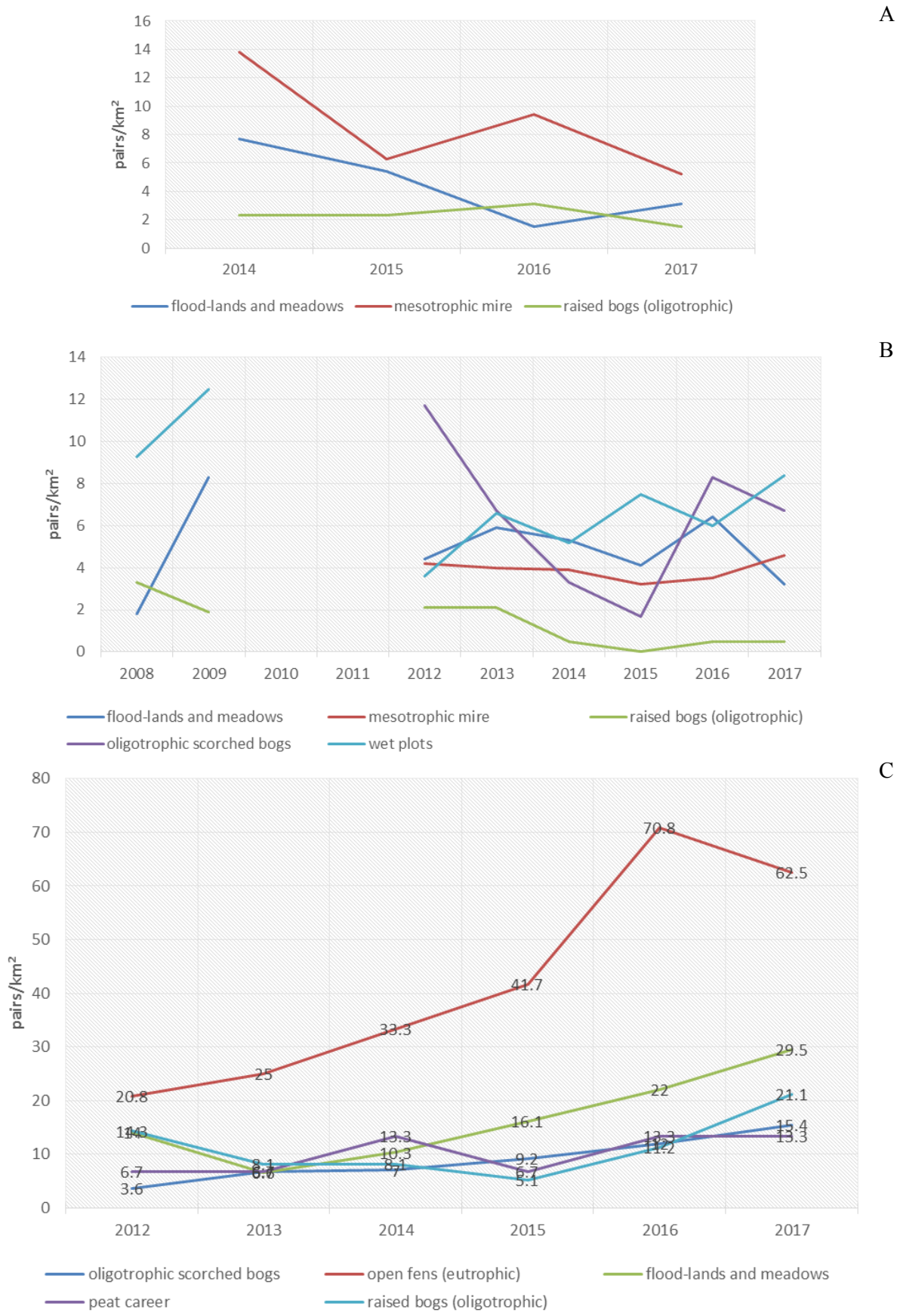

Figure 4. Breeding density of Snipe at swampy habitats of south taiga (A - Pskov-Chudskaya lowland; B - Zapadnaya Dvina basin; C - upper Volga basin).

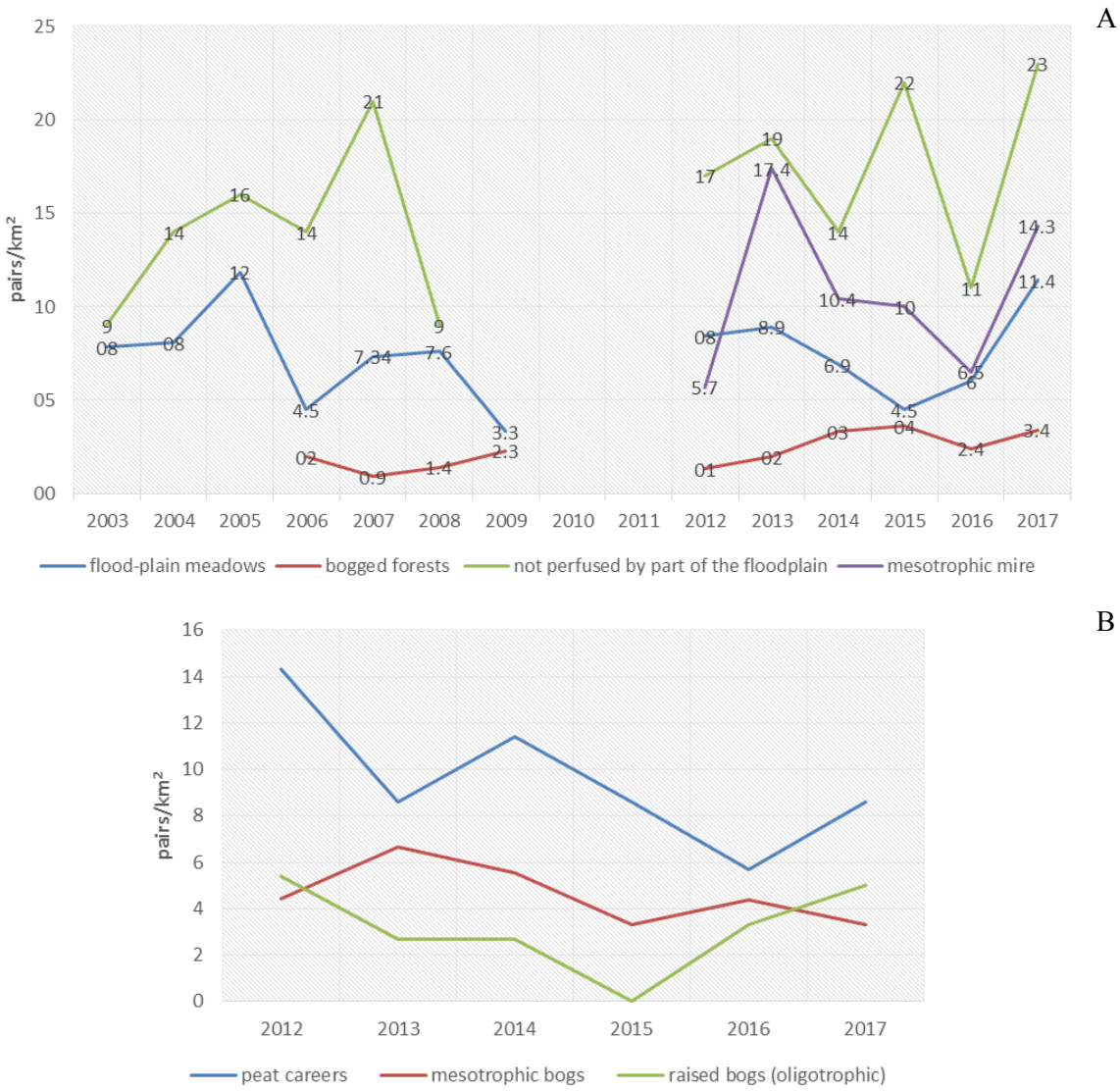

Figure 5. Common Snipe breeding density at swampy habitats of coniferous-deciduous forest (A -upper Volga basin; B - middle Volga basin).

Deciduous forest

In areas of sedge open fens in combination with hydromorphic meadows, river flood-lands of the upper Volga (the Moscow Region) 4.9 ± 0.6 pairs/km^2 were revealed. At similar Snipe habitats in flood-lands of the middle Volga basin (Penza province), 3.6 ± 1.4 pairs/km^2. In the basin of the middle Volga at watershed forest fen the density of Snipe made up 3.2 ± 1.2 pairs/km^2.

In flood-lands of the Dnepr basin (Kursk province) the density of Snipe at damp meadows in combination with open fens, made up 3.0 pairs/km^2.

In the humid season of 2017, in the broad-leaved forest subzone, the population of Snipe was high in river floodplains (the basins of the Upper and Middle Volga). By contrast, in the basin of Dnepr it was lower, than in other years (Fig.6A). The population of Snipe at forest watershed bogs remained at the level of the last year. At treatment facilities Snipes were absent again (Figure 6B).

Forest-steppe

In flood-lands of the Dnepr basin (Kursk province) the density of Snipe at damp meadows in combination with open fens, made up 2.7 pairs/km^2, and at open fens, 3.0 pairs/km^2.

In 2017, in comparison with the previous year, the density of Snipe was the lowest at fen of artificial origin (former peateries and fish ponds) and on the floodplain meadows and on the floodplains simultaneously increased (Figure 7).

Figure 6. Common Snipe breeding density at swampy habitats of deciduous forest (A - flood-lands upper Volga and middle Volga basin; B - middle Volga basin).

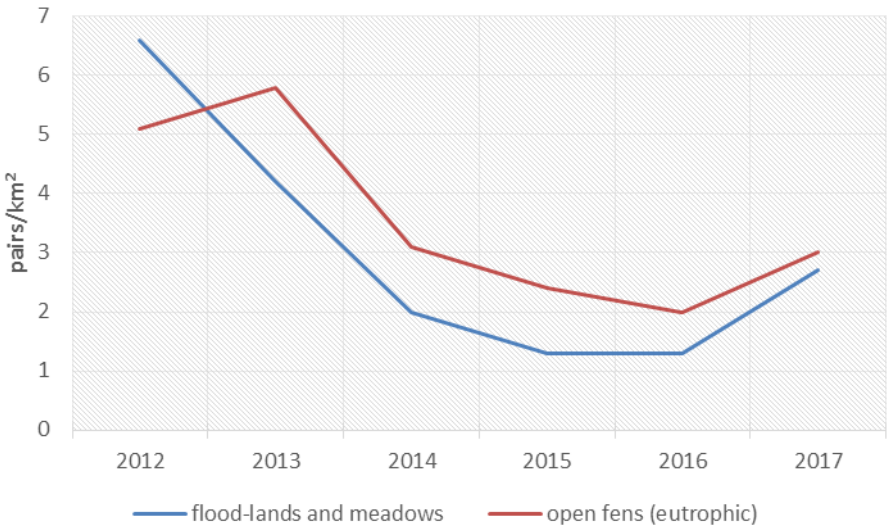

Figure 7. Common Snipe breeding density at swampy habitats of forest-steppe (Dnepr basin).

Conclusion

According to monitoring in different geographic areas, the number of Snipe during the breeding season was higher than in 2016, in forest-tundra (in various habitat types in 2017 breeding density of Snipe ranged from 4.4 to 8.2 pairs/km^2), middle taiga (0.7 – 8.0 pairs/km^2), south taiga (0.5 – 62.5 pairs/km^2), coniferous-deciduous forests (1.8 – 23.0 pairs/km^2) and forest-steppe (2.7 - 3.0 pairs/km^2). Lower than in 2016, the number of Snipe was in south tundra (3.3 – 7.8 pairs/km^2) and north taiga (0.4 – 14.6 pairs/km^2). Probably on the same level as last year, but with opposite vectors of trends in individual habitats, was the number of Snipe in deciduous forests (3.0 - 4.9 pairs/km^2). In the main sorts of habitats, the number of breeding Snipe was higher than in 2016, at big-hilly bogs, mesotrophic mires and river floodplains. At flat-hilly bogs and, possibly, fens it was at the level of the last year. This number was lower at raised bogs. Among different sorts of habitats, the breeding population of Snipe was the highest at floodplain fens of south taiga (62.5 pairs/km^2), the lowest at damp clearings and also in floodplains at damp meadows and meadows in combination with fens in the north taiga subzone (0.4 pairs/km^2).

In 2017, the number of Snipe males found at all control sites, and their mean number were slightly less only in comparison with the favourable season 2013. But the number of sites where Snipes were absent in 2017, was the highest for the last 5 years (25.7%), largely due to a great number of "empty" sites in north taiga.

Thus, for a significant part of the study area, the last breeding season was more successful for Snipe than it was in 2016, through an improved moisture schedule of the habitats of this Species.

According to monitoring in different geographic areas, the number of Snipe during the breeding season was lower than in 2014, in south tundra (in various habitat types in 2015 breeding density of Snipe ranged from 3.3 to 4.9 pairs/km2), middle taiga (1.1 - 5.4 pairs/km^2) and forest-steppe (1.3 - 2.4 pairs/km^2). Higher than in 2014, the number of Snipe was in forest-tundra (3.3 - 8 pairs/km^2) and north taiga (1.8 - 4 pairs/km^2). Probably on the same level as last year, but with opposite vectors of trends in individual habitats, was the number of Snipe in south taiga (1.7 - 41.7 pairs/km^2), coniferous-deciduous forests (1.7 - 22 pairs/km^2) and deciduous forests (1.6 - 4.4 pairs/km^2). In the main types of habitats the density of breeding Snipe was higher than in 2014, at fens out of flood-land and lower - at high bogs, mesotrophic bogs (except for north taiga, where the density of Snipe increased) and in river flood plains (except south tundra and forest-tundra, where the density of Snipe remained at the same level). Among different sorts of habitats, the breeding density of Snipe was the highest at flood-land fen bogs of south taiga (41.7 pairs/km^2), the lowest on damp abandoned fields in the middle taiga subzone (1.1 pairs/km^2). Thus, for a significant portion of the study area, the past breeding season was not too successful for Snipe. The reasons for this were drying up of many habitats of this species in middle and southern latitudes, flooding of habitats and summer cold in the high latitudes of the European Russia.

Acknowledgments

We thank the project coordinators in France Dr. Yves Ferrand and Dr. Kevin Le Rest and all the participants of the census: Dr. S. Yu. Fokin, Prof. A.V. Artem'iev, Dr. S.V. Korkina, M. V. Kozlova, Dr. V. N. Mel'nikov, Dr. A.L. Mischenko, V. V. Morozov, Yu. M. Romanov, A.M. Rikov, Dr. O. V. Sukhanova, Dr. M.V. Sidenko, Dr. S.N. Spiridonov, Dr. T.V. Sviridova, Dr. S.V. Jerdeva, and S.N. Andreev, A.Yu. Blokhin, D.V. Chasov, Dr. D.E. Chudnenko, A.A. Esergepov, E.A. Hudyakova, O.A. Hudyakova, I.I. Loginov, A. P. Mezhnev, G. P. Shmeleva, O.A. Zubkova who have taken work on implementation of the Snipe project in the regions.

References

Blokhin Yu.Yu. 2012. Monitoring of Common Snipe populations in European Russia in 2012//Wetlands International - Woodcock & Snipe Specialist Group (WI/IUCN-WSSG) Newsletter 38: 13-20.

2016-2017 French Woodcock Report

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After the very mild 2015/2016 season, 2016/2017 season recall us what is a normal winter. October and November 2016 were good for Woodcock migration with cold periods in Scandinavia and Russia. A heavy cold area appears early in Siberia likely announcing a cold winter in Western Europe. A cold spell has actually reached south-eastern Mediterranean countries during the first days of January from Turkey, Greece and Balkans to Italy. France has also been briefly reached by this cold period early in January but has been more severely impacted later by ten days of frost from 17 to 26 January. Most of the regions concerned by the strong frost have suspended the hunting of migratory birds for five to ten days. This cold period has not lead to direct mortality (due to starvation) as in February 2012 but an increase of mortality is expected in some hideaway littoral regions where the hunting pressure is high and where Woodcock found good conditions to escape from cold regions. We have however not recorded unreasonable abuses in the hunting bags thanks to the bag limit already in progress (usually three to five birds per week and a national bag limit of thirty birds per year).

Ringing results

Quantitative ringing results

In total, 6 253 Woodcock were ringed during the 2016/2017 season and 494 retrapped. This number of ringed Woodcock is the highest since the 2012/2013 season but was still in the numbers we have since 2007/2008 (5 500 to 6 800 birds ringed per year). 26 331 contacts of Woodcock were recorded from the 5 625 hours of ringing trips carried out by French ringers of *Réseau Bécasse ONCFS/FNC/FDC*. The success rate (number of birds caught divided by the number of birds seen) was as usual near 1 to four. The number of birds ringed was very high in November (1 916, 31%) and remained still high from December to February (about 1 200 birds ringed per month). The results from March were low due to the early departure of Woodcock in spring (no Woodcock ringed in April).

Proportion of juveniles

The proportion of juveniles among birds ringed was 55.4 %. This percentage was close to the ones we have from 2014/15 which were already quite low. Nevertheless, spring 2016 was rather good for breeding Woodcock in Russia as were the autumn migration conditions. The cold weather in autumn and winter would have pushed young bird towards classical wintering grounds in Western Europe, so that we expected a higher proportion of juveniles.

2016/2017 ringing season in numbers:

N. départements:	92
N. ringing sites:	1 446
N. ringers:	363
N. nocturnal trips (hours):	2 907 (5 625)
N. contacts:	26 331

N. ringed Woodcock:	6 253
Success rate:	25.6 %
N. direct retraps:	173
N. indirect retraps:	321
N. direct recoveries:	356
N. indirect recoveries:	638
Annual direct recovery rate:	5.7 %

Monitoring of abundance during the migratory and wintering period

Two indices allow the monitoring of Woodcock migratory and wintering numbers in France: the nocturnal abundance index (number of Woodcock seen per hour, IAN) registered during ringing trips at night and a hunting index (number of Woodcock seen per standardized hunting trip of 3.5 hours, ICA) collected by the *Club National des Bécassiers* (CNB).

In 2016/17, the IAN was 4.62, the highest value ever recorded (Figure 1). The precedent record was from 2015/16 season (4.37). ICA also reached the highest value ever recorded: 1.76. It is slightly higher than the precedent record from 2011/12 season (1.74). Both of these abundance indexes thus outlined that the 2016/17 season was very good in terms of Woodcock abundance in France. The weather conditions in autumn and winter had very likely participated to inflate the relative abundance indexes by forcing Woodcock to reach their wintering grounds early in France (Figure 2). Overall, the synchronic positive trend of both indexes showed that Woodcock wintering abundance seemed to be quite good in France. However, we can't rule out some bias in the recorded indexes (e.g. increasing detection from ringers and hunters). We are still working on a project aiming to analyse both abundance indexes while accounting for period and location of samples.

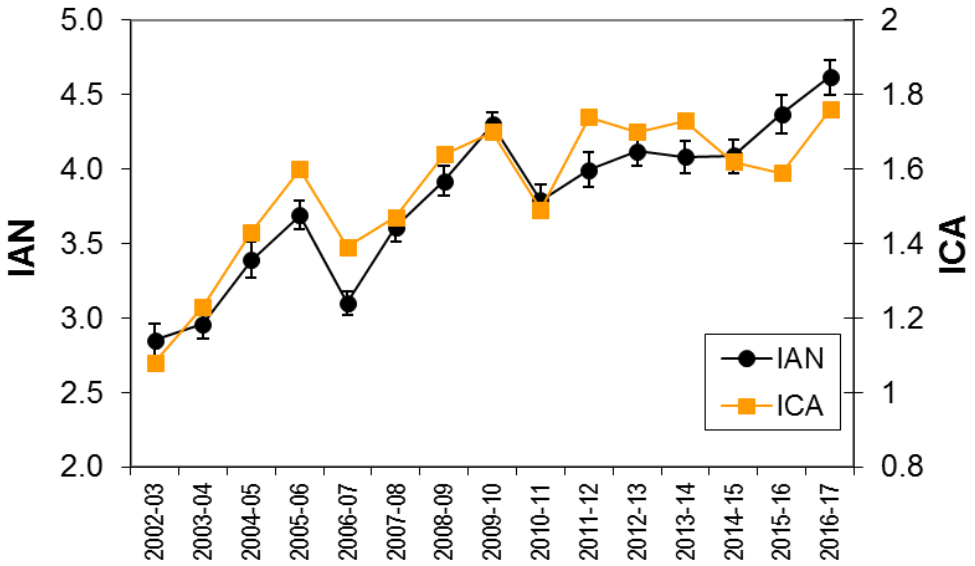

Figure 1. Annual fluctuations of the number of contacts/hour during ringing trips (IAN, nocturnal index of abundance) and hunting trips (ICA, hunting index of abundance from CNB).

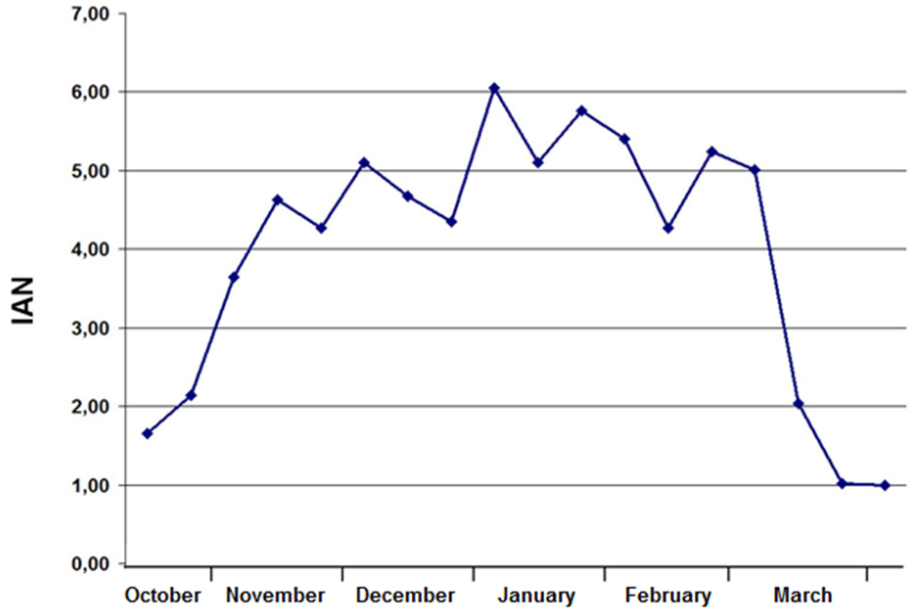

Figure 2. Monthly fluctuations of IAN in 2016/17.

Roding results

Spring 2016 was the fourth season with the new sampling design aiming to optimize the sample size while maintaining a good accuracy in estimates. The listening points are chosen at random in 7 broad scale ecological regions (GRECO, see Figure 3) defined mainly on the basis of forest habitats.

In total, 600 listening points were selected for the spring 2016 census and 549 were done by people from *Réseau Bécasse ONCFS/FNC/FDC* (Figure 3). The proportion of positive points (observation of at least one roding male) leads us to estimate the probability of Woodcock roding presence at a national level. In 2016, it was 17%, the same as in 2015 and very similar to those obtained since 2013. In the same way, we estimated the proportion of high abundance points (≥ 5 roding Woodcock) from the positive points at 28% (27% in 2015).

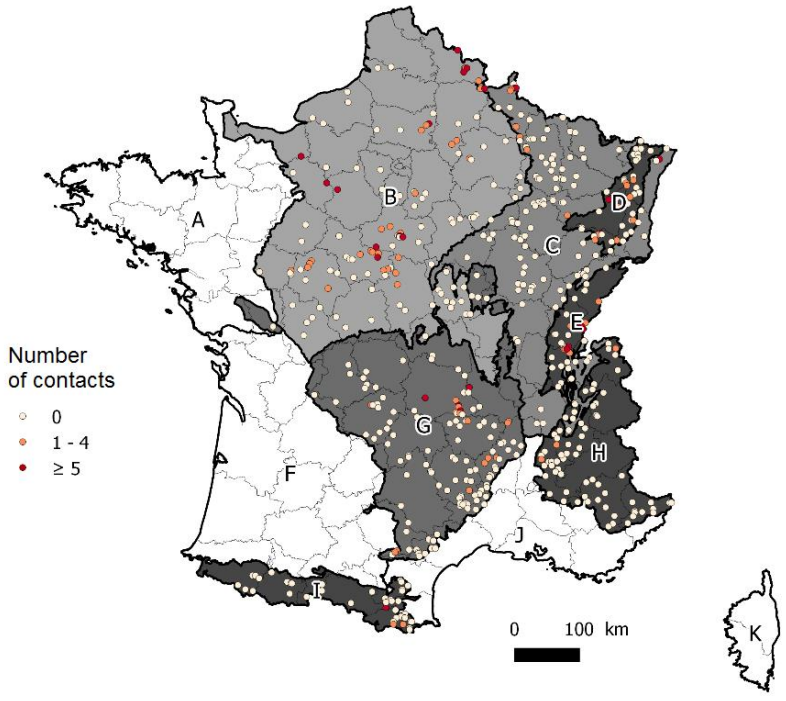

Figure 3. Location of randomly chosen listening points for the 2017 roding census in France and number of contacts registered. Letters correspond to the GRECO (broad scale ecological regions) considered in the analyses (see Figure 4).

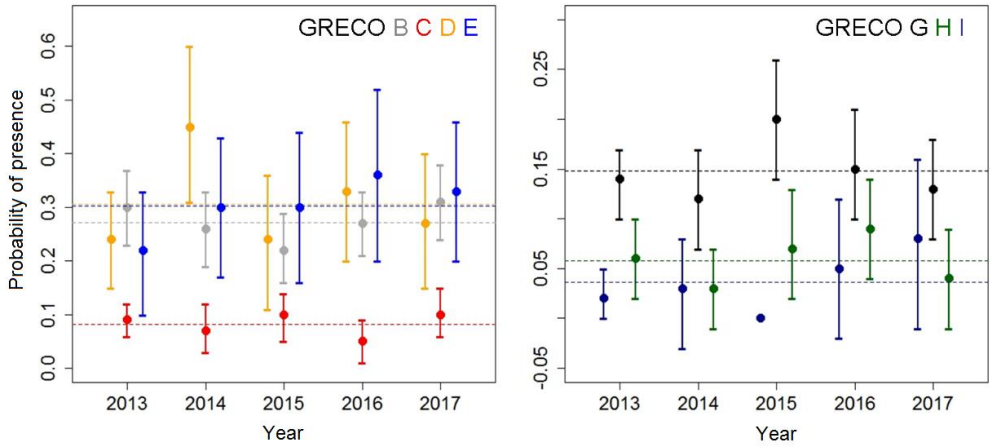

Figure 4. Probability of presence of roding Woodcock (proportion of positive points) since 2013 for each GRECO (broad scale ecological regions, see Figure 3).

No trend was shown since 2013 in the probability of Woodcock roding presence since 2013 but strong differences were outlined between ecological regions (Figure 4). GRECO B (*Centre Nord semi-océanique*), D (*Vosges*) and E (*Jura*) presented the highest probability of presence. Intriguingly, GRECO C (*Grand Est semi-continental*) showed low roding probability while being surrounded by areas having the highest probability in France. Clearly, the habitat would not be favourable for breeding Woodcock in that GRECO whereas forest covert is high.

Migration tracking program

A migration tracking program is in progress since 2015 in France (ONCFS/CNB partnership). Twelve birds were fitted in February 2015 and twelve in March 2016 with 9.5 g Solar Argos PTT tags. Three capture sites were defined: one in Brittany, one in Landes (South-West) and one in Ardèche (South-East) corresponding to three different types of habitats. Eight Woodcock from birds equipped in 2016 were tracked again during the spring 2017 showing high fidelity to breeding area.

In spring 2017, we have also fitted 23 Woodcock with 10 GPS/GSM and 13 Cell-ID prototype tags. GPS/GSM recorded GPS fixes and stored the data before trying to connect with GSM antenna to transmit the GPS location. Cell-ID only connected and identified some GSM antennas near the bird location (few to tens of kilometres). The location of the bird can then be assessed from database of antenna's ID and positions (by triangulation when several antenna's ID were recorded). Cell-ID positions were less accurate than GPS but necessitated much lower energy levels.

GPS/GSM results were disappointing because the energy level needed was much higher than the ability of the tags to restore the battery level (by the solar panels). We had no data during migration from the birds fitted with GPS/GSM tags. Cell-ID tags were more interesting because even if the accuracy of locations were only about few to tens kilometres, it was enough to study migration travel. Nonetheless, the Cell-ID tags used were not sufficiently optimized and only seven birds provided data during spring migration. Most of the Cell-ID tags stopped prematurely just before the start of migration or few days after.

Our aim is to find a solution to track both spring and autumn migration and we will test another tag system in spring 2018 without solar panel.

Acknowledgements

This report is the result of an important field work carried out by members of the ONCFS/FNC/FDC Woodcock network *Réseau Bécasse ONCFS/FNC/FDC*. We thank all of them, being professionals of ONCFS, *Fédérations départementales des chasseurs (FDC)* and volunteers. We also thank the CNB for allowing us to use the data collected by CNB members.

2016-2017 French Snipe Report

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Ringing results

The French Snipe network ONCFS/FNC/FDC/CICB gathers about 130 ringers spread over the major part of France where snipe can be observed in migration and winter. 1 575 snipes were caught by the network during the 2016/2017 season. Number of Common Snipe *Gallinago gallinago* captured (1 140) was the lowest since 2006/2007 season, the beginning of the monitoring. However, the number of Jack Snipe *Lymnocryptes minimus* (431) was the second highest (record on 2015/2016 season, 485 birds). Two Great Snipe *Gallinago media* were also captured and ringed, one in late August 2016 and one early April 2017.

In total, 134 recoveries (from hunting) were registered: 102 Common Snipe and 32 Jack Snipe. These numbers are very close to those of 2015/2016 season. In details, 87 Common Snipe recoveries came from birds ringed in France, five from Poland, three from Czech Republic and seven from other countries (Belarus, Germany, Spain, Great-Britain, Hungary, The Netherlands and Finland). Note also that one Common Snipe ringed in France was recovered in Spain, and another one in Senegal. It was the first time we have a recovery of snipe in West-Africa.

The Jack Snipe recoveries also mainly came from France (22) but some others came from Finland (2), from Czech Republic (2), the Netherlands (2), from Spain (2), from Germany (1) and from Russia (1). One Jack Snipe ringed in France was recovered in Morocco.

Plumage collection

As for the previous years, an examination of Common Snipe and Jack Snipe plumages was carried out to determine age and sex of shot birds (based on wing and tail feathers). In total, 6 086 Common Snipe and 2 190 Jack Snipe plumages were collected mainly by the CICB (*Club International des Chasseurs de Bécassine*, a non-profit organization of snipe hunters) members and by the *Fédérations Départementales des Chasseurs* (FDC) of *Aveyron*, *Cantal*, *Gironde, Haute-Loire, Indre, Lozère* and *Puy-de-Dôme*.

It is the highest number of plumages ever collected from the beginning of this survey (2004/2005). The number of Jack Snipe plumages is just below the record of 2015/2016 (2 205). Temperatures in subarctic area were higher than the median averaged over 30 years and precipitations were close to the median value. Jack Snipe would thus have rather good breeding conditions in spring 2016 (as in 2015). Scandinavia and Eastern Europe climate was hot and wet from May to July, which would be also quite good for breeding snipes. However, the precipitations were low in Central Russia from May to July. The monitoring of the breeding Common Snipe there showed poor results.

Common Snipe

Geographical distribution of collected plumage

The plumages were collected in 38 French *départements*. As in the past, the total sample was divided in two parts (Figure 1): one corresponding to the Fennoscandian flyway

(n = 3 835), the other to the Continental flyway (n = 2 178).

From August to November, territories were very dry in France, which led to concentration of birds in areas where there was still water. The water level can be managed on some hunting territories, which has provided good conditions for snipes. Conversely, most of territories used by ringers could not have their water level modulated. It explained why there was low number of bird ringed while rather high number of birds shot during autumn migration.

Temporal distribution of collected plumage

Under the same assumption as in the previous reports (i.e. the number of collected plumages is positively correlated with real numbers), the post-nuptial migration was characterised by a marked peak of abundance in the second half of September and first half of October (Figure 2). This pattern was close to the averaged one observed since 2006/2007 but with a quicker decrease in October and November than usual. Fennoscandian and Continental flyways showed the same peak but the decrease in the second half of October was more pronounced in the former. Conversely, the continental flyway showed a slow decrease in abundance from October to December. The number of wings collected in January was very low in January, which would be likely due to the cold periods which reached France at this time, first early in January and then more severely from 16 to 27 January 2017.

There is evidence that weather conditions play a role on migration phenology of Common Snipe. High temperatures from Scandinavia to Central Europe in September may have reduced habitat suitability in these regions and constrained snipes to move towards Western Europe. Moreover, the cold weather having reached these regions in October would have participated to bring the snipes remaining from this part of Europe, which resulted in constant arrivals of birds in France from September to October.

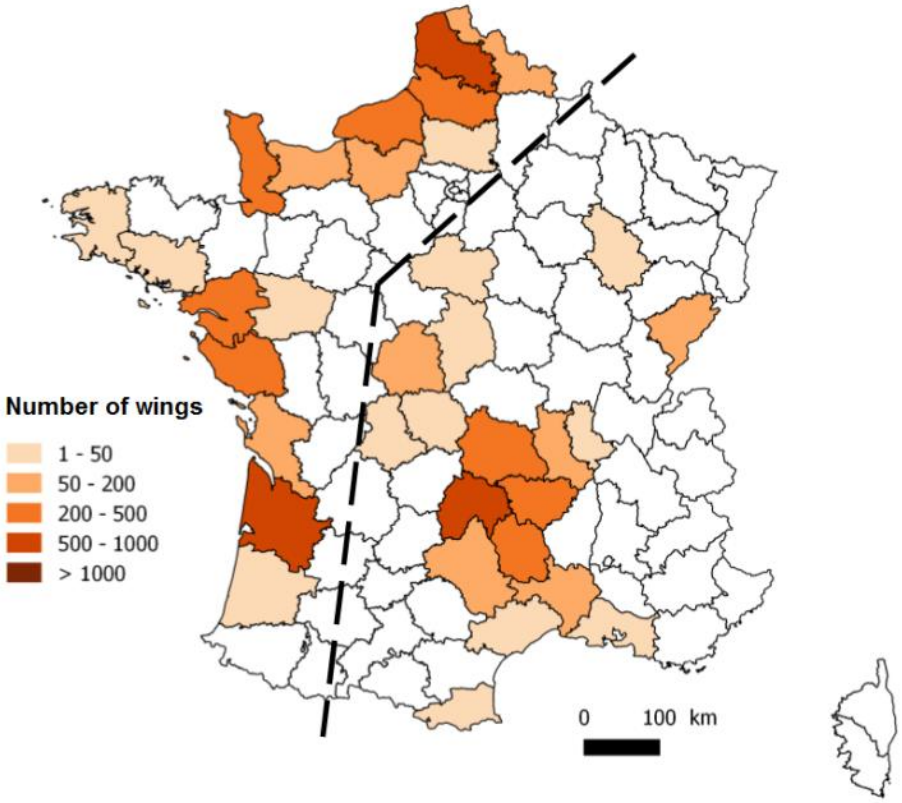

Figure 1. Geographical distribution of numbers of Common Snipe whose plumage was collected in 2016/2017 and limit between the two sub-samples corresponding to a distinct migratory flyway

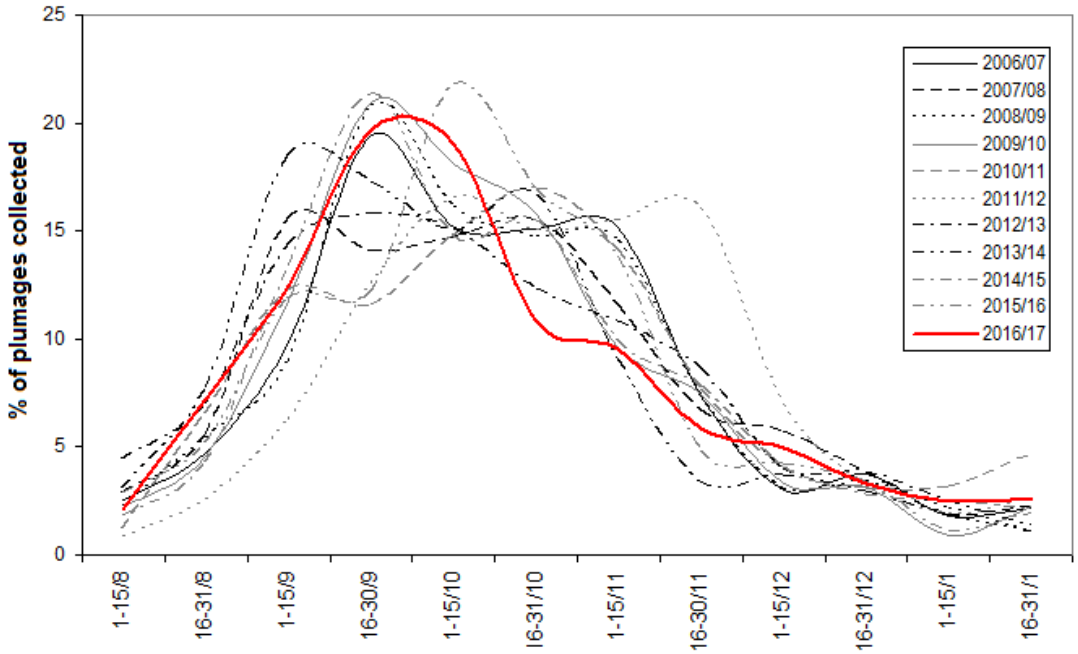

Figure 2. Intra-annual variations of the proportion of Common Snipe plumages collected from 2006/2007 to 2016/2017.

Proportion of juveniles

In total, 5 903 plumages were separated in 2 age classes: juvenile or adult. The proportion of juveniles among them was 69.2% (age-ratio = 2.2). Without the data collected in August for which almost 100% of birds were juveniles, this proportion was 66.2%. These values were very close to the average of the last 12 years (69.7% and 67.5 % respectively; see Figure 3).

Juveniles represented 68.0% of plumages from the Fennoscandian flyway (n = 3 752) and 71.1% from the Continental flyway (n = 2 151). The difference is significant both with and without August data (Fisher exact test; p = 0.008 and p = 0.0001 respectively). This result suggested that breeding success would have been better in Russia and Central Europe than in Finland and Scandinavia, which was the opposite of our first thought based on climate synthesis (see above). However, the exact origin of Common Snipe wintering in France was fairly unknown. The identification of the exact geographical origin of birds collected in the Fennoscandian and Central Europe flyways would help to better understand the effect of climatic conditions in the breeding range on the proportion of juveniles observed in France. We have started such investigation using stable isotope and tracking.

In the Fennoscandian flyway, the migration phenology of adults and juveniles fitted the usual pattern: about 99% of juveniles in August followed by a decrease till the end of January caused by the arrival of adults birds. In the Continental flyway, there was no data in August and the proportion of juveniles was more stable from September to January (no significant trend, Cohran-Armitage test, p = 0.29). Overall, the general trend in the age-ratio was very close to the average observed since 2006/2007 (see Figure 4). It however decreased quickly in January, indicating an arrival of adults. A cold period reached France in January but it was difficult to explain why adults would have reached western areas in greater proportion than juveniles. Where juveniles were during that cold period? They may have escaped in more southern regions (Iberian Peninsula?) but no data was available to prove it for now.

Under the assumption that the analysed sample is representative of the breeding success, we can consider that spring 2016 was in the average, and thus much better than spring 2015 (the worst year). The results from our Russian colleagues on the number of displaying males were lower than the average yet. Other regions in the breeding range would have compensated for the poor breeding pair numbers in Central Russia. Actually, weather conditions in spring and summer were highly heterogeneous, with good conditions in

some parts of the breeding range but too dry in others.

Proportion of males/females

Sex was defined for 1 539 adults and the proportion of males was 43.6 %. This proportion was 47.2% from adults and juveniles (n = 5 231). The overall deficit in males was attributable to the Fennoscandian flyway (37.1% and 42.5% of males from adults and all birds respectively) since males were more numerous than females in the Continental flyway (55% from adults and all birds).

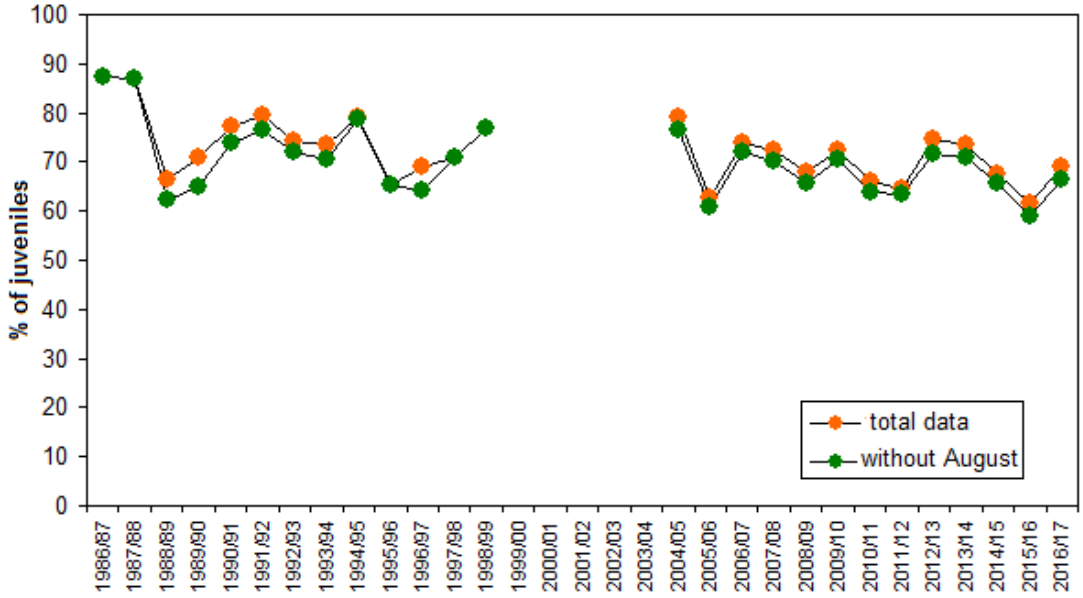

Figure 3. Inter-annual variations of the proportion of juveniles among Common Snipe plumages collected from 1986/1987 to 2016/2017 season for all data and for a sub-sample without August data (no data collected from 1999/2000 to 2003/2004 season).

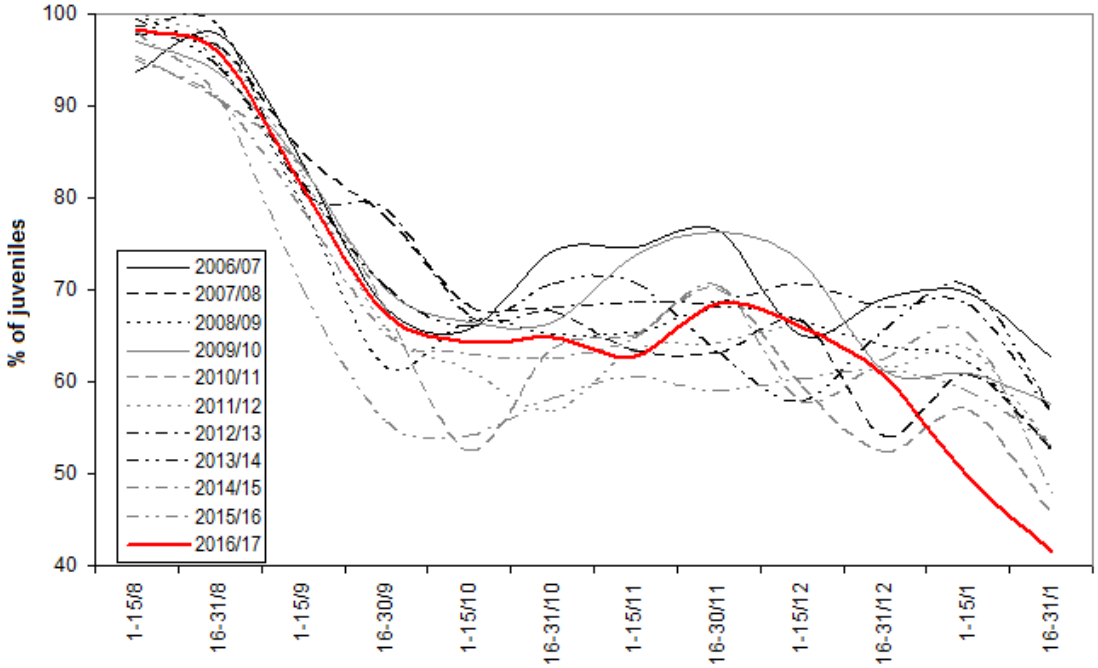

Figure 4. Intra-annual variations of the proportion of juveniles for the Common Snipe from 2006/2007 to 2016/2017.

Jack Snipe

Geographical distribution of collected plumage

In 2016/2017, 2 200 Jack Snipe plumages were collected in 34 *départements* (Figure 5). As for previous seasons, we defined a Coastal flyway and an Inland flyway for which the sample sizes were 1 297 and 892, respectively.

Temporal distribution of collected plumage

As for Common Snipe, the analysis was made under the assumption that the number of plumages collected was positively correlated with the abundance of birds in the field. The peak of abundance was observed during the first half of October in 2016/2017. It was the earlier peak of the studied period, about 15 days earlier than the average (Figure 6). The maximum abundance was also early during the 2015/2016 season. Abundance remained then still high from the mid-October to mid-November, a period during which maximum abundances were usually observed. Abundance decreased quickly in November and slowly from December to January. The percentages of wings collected from November to January were very close to the average since 2006/2007.

The Coastal flyway weighted a lot in the general pattern observed in the number of collected plumages. Indeed, the changes in abundance were the same as the ones described above. Conversely, the Inland flyway showed less conspicuous changes in abundance from October to mid-November. Then the number of plumages collected decreased quickly but remained rather high until the end of December.

The 2016 autumn migration phenology recorded from the plumage collection was thus similar as the ones observed during the last three seasons: early arrival of birds and spreading of migratory run. It was clearly different from the classic pattern registered from 2006/2007 to 2013/2014 during which the main peak occurred during the second half of October following by a very quick decline in November.

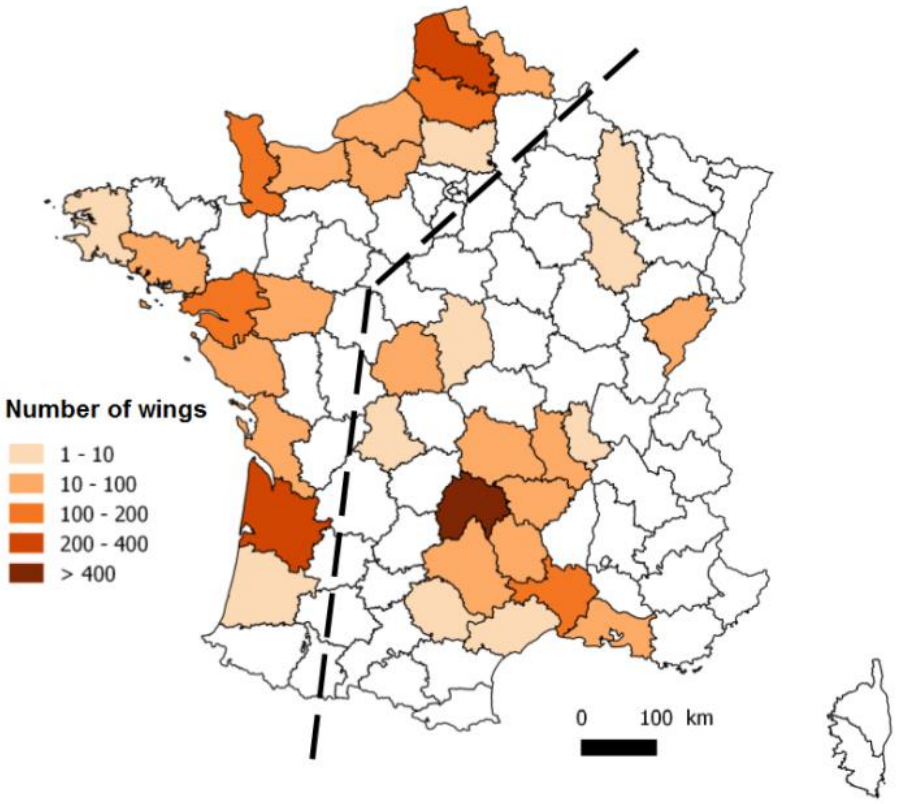

Figure 5. Geographical distribution of numbers of Jack Snipe whose plumage was collected in 2016/2017 and limit between the two sub-samples.

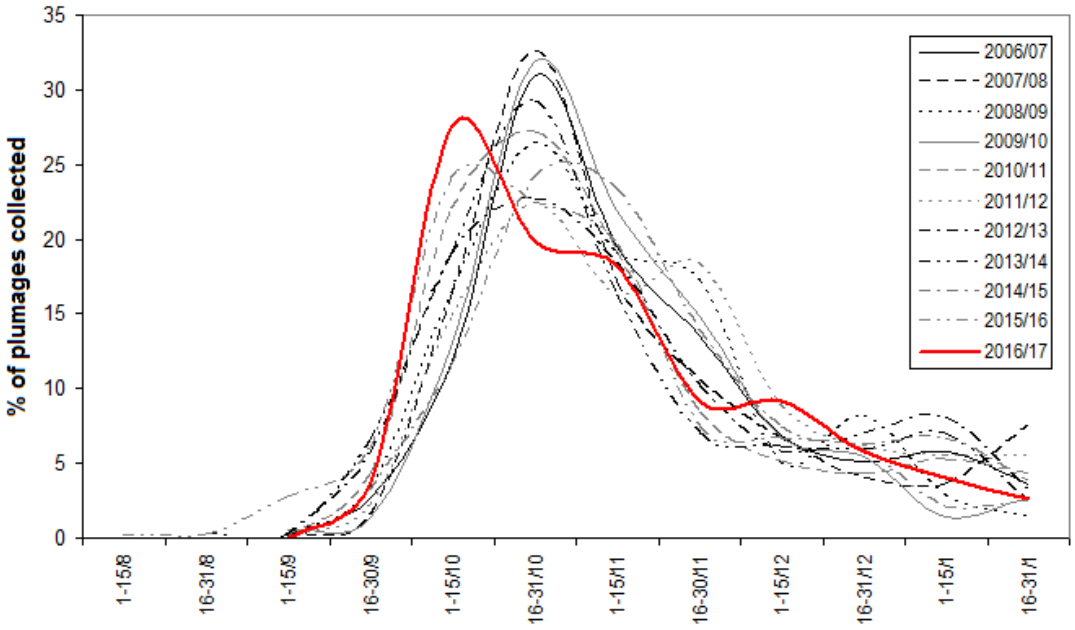

Figure 6. *Intra-annual variations of the proportion of Jack Snipe plumages collected from 2006/2007 to 2016/2017.*

Proportion of juveniles

The proportion of juveniles (estimated from examination of tail feathers) in 2016/2017 rose 64.7% (n = 1 987, see Figure 7). This value is on the average of the last 10 years (65.0 %), which suggested that the breeding success in spring 2016 was normal. Higher success was expected since weather conditions in the subarctic areas were rather good. However, as for Common Snipe, the exact origin of Jack Snipe wintering in Western Europe was fairly unknown. The identification of the exact geographical origin of birds collected would help to better understand the effect of weather conditions in the breeding range. The proportion of juveniles was 62.9 % (n = 1 175) in the Coastal flyway and 67.2 % (n = 812) in the Inland flyway. The difference is slightly significant (Fisher exact test; p = 0.03), but did not suggested strong differences of breeding success between the flyways.

The temporal distribution of the proportion of juveniles in the course of the season presented no particular pattern till the end of December. However, the age-ratio decrease strongly in January as which has been observed for Common Snipes (see Figure 8). Again it was attributable to the increase in the proportion of adults in the Coastal flyway since the Inland flyway did not show such trend. The cold period in January might have played a role in the distribution of adults and juveniles but it was difficult to explain why.

Proportion of males/females

The proportion of males in the whole sample was 39.1 % (n = 1741, considering wings length < 115 mm being females and wings length > 117 mm being males and a correction of 1.7 mm because of the wing drying). The deficit in males was the rule since the beginning of the survey. For now, we can't say if it reflected a true disequilibrium in the population or if it was a result of differential distribution during winter between males and females. However, males appeared again much more numerous in the Inland flyway than in the Coastal flyway (50.6 % *vs* 31.5 %) and this difference was significant (Fisher exact test; p < 0.0001). Such huge difference suggested that the latter hypothesis of differential wintering distribution according to sex of individuals was likely.

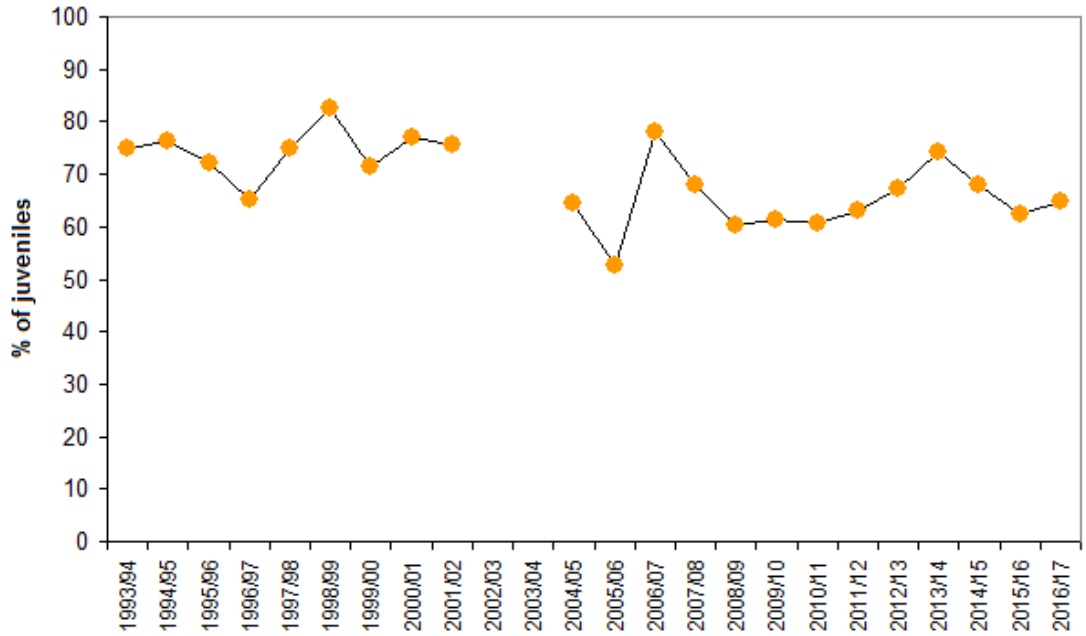

Figure 7. Inter-annual variations of the proportion of juveniles among Jack Snipe plumages collected from 1993/1994 to 2016/2017 period (no data collected from 2002/2003 to 2003/2004).

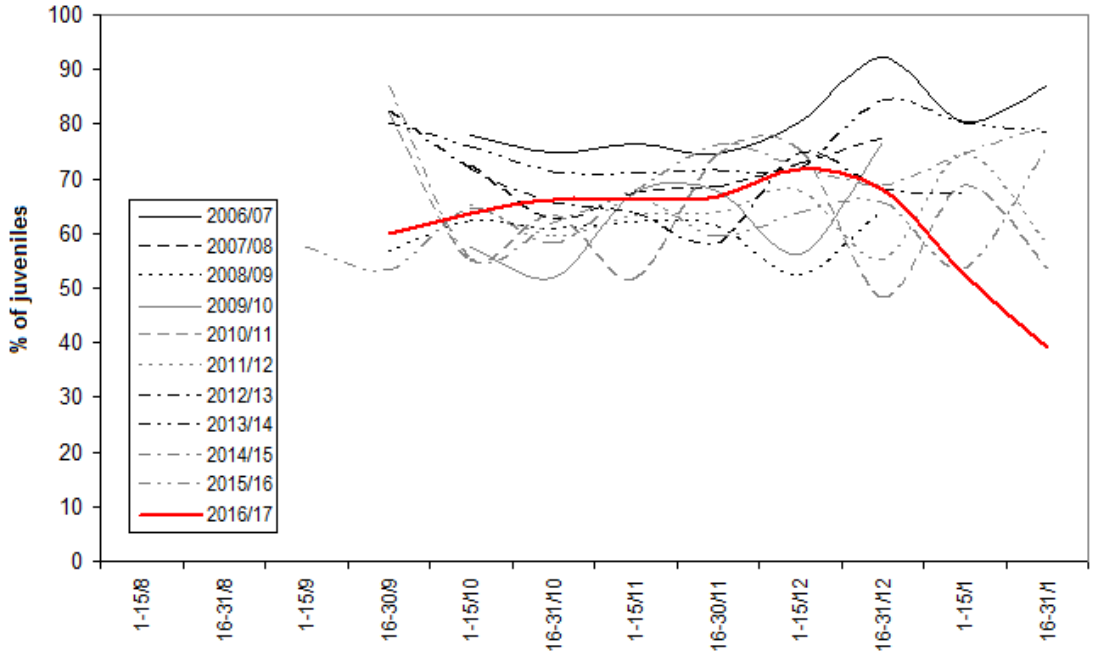

Figure 8. Intra-annual variations of the proportion of juveniles for the Jack Snipe from 2006/2007 to 2016/2017.

The monitoring of hunting bags

Focusing only one survey may be tricky to monitor Snipe's demographic trends because each method has their own benefits and drawbacks. The approach based on ringing activities provides substantial information on the study of demographic parameters. However, it gives little information on the abundance of cryptic species such as snipes. Hunters are undoubtedly the people who encounter the highest number of snipes. Collecting information from hunters on snipe's abundance thus appears a good way to provide reliable quantitative indexes.

A survey has been done since 2000's thanks to members of the *Club International des Chasseurs de Bécassines* (CICB) to collect hunting bags from a set of 23 hunting areas. The aim is to define trends of Common Snipe and Jack Snipe wintering populations in France. The assumption is that the hunting bags on these areas are directly positively correlated with actual numbers. Details of annual hunting bags are shown in Table 1. The annual mean total hunting bag in the 23 sites was about 4 317 Common Snipe and 1 005 Jack Snipe. The total bags were the highest in 2016/2017 for both Common Snipe and Jack Snipe (Figure 9). The total bag was 25% over the mean for Common Snipe and 70% for Jack Snipe. It thus suggested that snipe abundances were high that season, especially for Jack Snipe. However, the set of hunting areas was not selected at random. The sampling overrepresented the coastal areas near English Channel in the North of France, and thus the Fennoscandian flyway. We are trying to have more areas where hunting bags are monitored. Moreover, the hunting pressure according to the true number of snipes in the selected hunting areas can create high variation in hunting bags for a given abundance. We are thus cautious about the conclusions that we can done from this survey but it gave additional insight that the 2016/2017 season was rather good for Common Snipe and very good for Jack Snipe migration and wintering in France.

The synchrony in the trends of hunting bags observed till 2013/14 was altered since 2014/15. The Jack Snipe abundance seems to fluctuate a lot during the past five years. Common Snipe bags did not show significant trends from 2000/2001 to 2016/2017 (Page test; $p = 0.32$) but Jack Snipe bags showed a slightly significant increased; $p = 0.01$) mainly supported by the 2016/2017 data. This result shows the importance of long time series to estimate a population trend and encourages the continuation of such a monitoring.

Table 1. Details of hunting bags per season for 23 sites followed each year.

Season	Common Snipe	Jack Snipe	Total
2000/2001	3535	650	4185
2001/2002	3383	1068	4451
2002/2003	3933	901	4834
2003/2004	4794	1322	6116
2004/2005	5122	1077	6199
2005/2006	5080	1165	6245
2006/2007	4014	914	4928
2007/2008	4125	756	4881
2008/2009	4536	851	5387
2009/2010	4388	768	5156
2010/2011	3692	711	4403
2011/2012	4244	891	5135
2012/2013	3341	712	4053
2013/2014	5009	1421	6430
2014/2015	4413	825	5238
2015/2016	4379	1334	5713
2016/2017	5403	1715	7118
Average and total	**4 317.1**	**1 004.8**	**90 472**

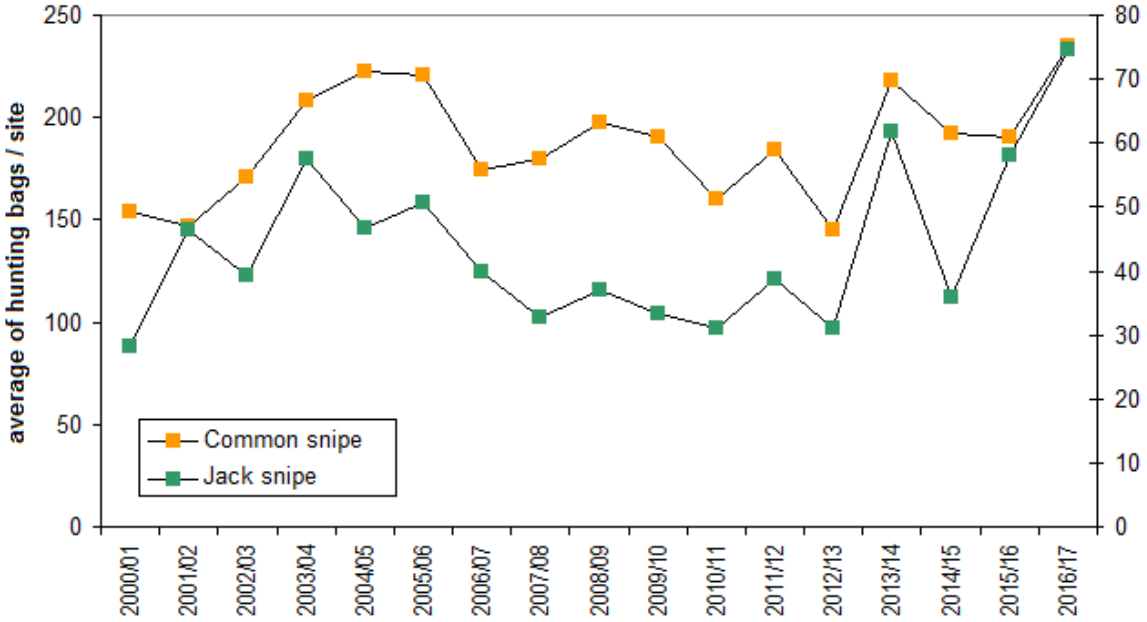

Figure 9. Average of Common Snipe and Jack Snipe hunting bags for a reference site for the period 2000/2001 - 2016/2017.

Conclusion

2016/2017 season was characterized by the early arrival of Jack Snipe in France. Birds arrived 15 days earlier than the usual date, likewise the season 2015/2016. It will be interesting to study if it will happen more and more often or if it was just stochastic.

Hunting bags were very high for both species in the 23 hunting areas followed since 2000's. This first suggested that the season was excellent but the soils were dry almost everywhere in France, which may have cause the presence of higher densities in the few areas with good levels of water. It would be cautiously saying that the season 2016/2017 was just good for snipes in France.

Age-ratio of Common Snipe was very low in 2015/2016 and it is a good new that it has increased substantially in 2016/2017. Indeed, we used age-ratio as a critical measure of population health in a dynamic model approach and the one observed in 2015/2016 was very close to the minimum where the population turns to decline. In 2016/2017, the model used showed that the population growth was still constant or increase.

All these results underline the importance of collecting data from different sources and during a time period as long as possible. This monitoring clearly appears essential to provide critical information on Common and Jack Snipe migrating and wintering in France.

Acknowledgements

This report is the result of an important field work carried out by members of CICB and by the ONCFS/FNC Snipes network. We thank all of them: volunteers, *Fédérations départementales des chasseurs* and professionals of ONCFS.

Breeding origin and migration characteristics: First GPS/Argos tags fitted to Common Snipe in France

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Introduction

The sustainable exploitation of migratory species requires the initiation of studies and research in order to determine the key parameters ensuring the natural renewal of populations subject to hunting. In this context, the AEWA (African-European Waterbird Agreement) recently published the general principles of a sustainable exploitation of migratory waterbirds. AEWA emphasizes, among others things, the need to know the geographical areas used by the hunted populations throughout their annual cycle (breeding, staging, wintering).

It is essential to know the breeding origin of birds, especially for species hunted in autumn and winter in Western Europe such as Woodcock and snipes. This information will then make possible to evaluate the impact of different factors (e.g. climate, habitat) on the annual reproductive success. It will also enable monitoring of breeding numbers in the areas concerned and their trends over time.

Migration characteristics (e.g. timing, pathways, stopovers) are also very important when assessing the environmental and anthropogenic pressures that birds experience during the different periods of the annual cycle. For many species, hunting bags are not negligible during migration. They need to be evaluated accurately and associated with the respective populations concerned.

There is no many way to collect reliable information on the breeding origin of birds wintering in Western Europe. The isotopes analyses have been used so far but the accuracy of the results are limited, especially in Europe where the gradients of Hydrogen isotope ratio do not have clear longitudinal limits (but see Hobson *et al.* 2004, 2013a, 2013b). Banding can be valuable if 1) rings are collected at breeding sites (recover by hunters or read by ringers) and 2) that the amount of information is significant and unbiased by the distribution of hunters or ringers. Important information were taken from some ring/recovery data (e.g. Eurasian Woodcock, Bauthian *et al.* 2007) but the probability to recover abroad a snipe ringed in France are extremely low because hunting is forbidden on a large part of its breeding range in Europe (see Figure 1). Moreover, it is not a popular quarry species in Russia. Russian hunters prefer hunting Great Snipe *Gallinago media*, bigger and easier to shoot. The hunting bags of Common Snipe are thus very low in Russia and so the number of recovered rings.

The recapture probability abroad of a bird ringed in France is also very low due to the small ringing activity on that species in other European countries. Actually, Common Snipe is rarely a target species for ringing schemes, excepted in France and Poland. The need to recapture the marked bird, alive or dead, therefore remains a barrier to the study of the breeding origin of snipe using ringing/recovery or capture/recapture data.

New technologies now make possible to track the movement of migrating birds throughout their annual cycle. Most of the tracking systems record locations in a memory card onboard and therefore the birds must be recapture to download the data (GLS, GPS). These systems are not suitable for species being difficult to recapture, such as the Common Snipe. However, some systems are also able to transmit data remotely. Among them, the Argos system (satellite system) is the most used.

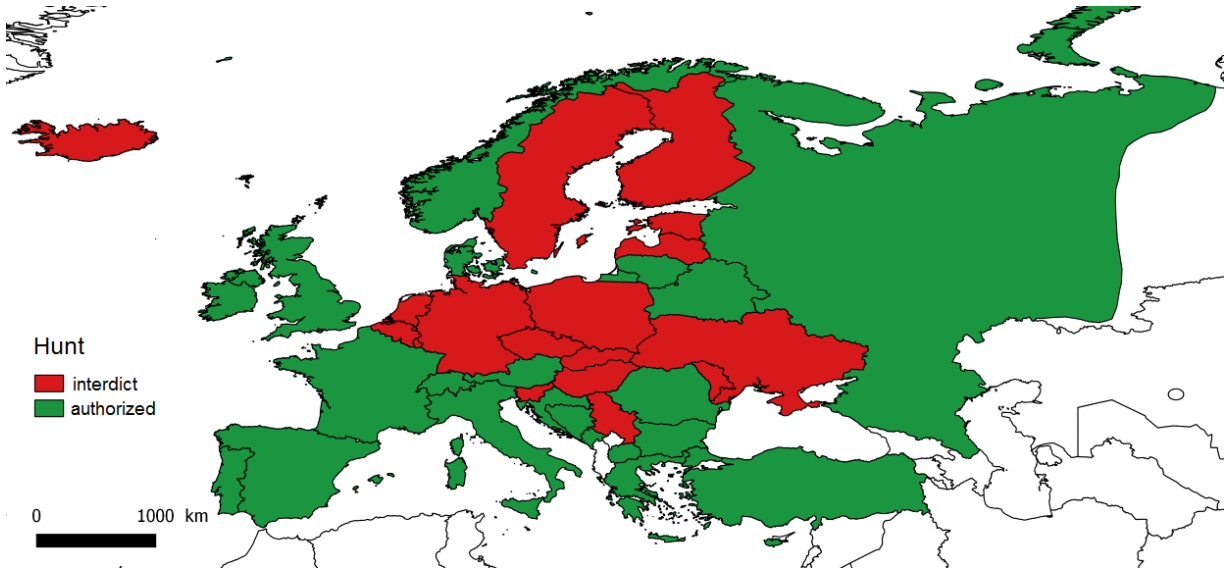

Figure 1. Hunting statut of the Common Snipe in Europe (green: permitted ; red: forbidden)

The GSM system (telephone network / internet) can also be a good alternative in areas well covered by GSM relay antennas. Both Argos and GSM technologies actually allowed transmitting data such as GPS points. The Argos system has the advantage to cover the entire planet without being constrained by the position of human infrastructures. It is only with the development of such technologies and their miniaturization that the questions relying on the breeding origin and migration characteristics of the Common Snipe can be studied serenely.

A project leaded by the *Office National de la Chasse et de la Faune Sauvage* (ONCFS) and *Club International des Chasseurs de Bécassines* (CICB) has begun since 2017. The aim is to increase our knowledge on the breeding origin and the migration characteristics of the snipes wintering in France by using high accuracy tracking system with remote data access. Ten 3.5 g GPS/Argos tags were fitted to Common Snipe in February/March 2017 in France. To our knowledge, it is the first time that such a system has been used on snipes. This project will continue for the next three years 2018-2020 and we present here the technical and scientific outcomes of the 2017 trial. It was the first step of the project and we would especially validate the tag attachment, the tracking system efficiency, the frequency and quality of data transmissions and the lifespan of the battery in real conditions.

Tracking material

No many tracking systems exist to fit birds of c. 100 g, such as snipes, with remote data transmitting. The tag and harness must not outweight 5% of the body mass and it is actually much better to have lighter tags (lower than 3% of the body mass) to limit the impact of the logger on the bird behaviour. We used 3.5g PinPoint Argos tags with 75 mAh battery from Biotrack Company. These tags can record 50–70 GPS positions at defined dates and transmit the data via satellite (Argos system) every three positions. The data can then be downloaded remotely from everywhere in the world thanks to an internet website.

The GPS position schedule is completely defined by the user but cannot be change remotely. In 2017, the PinPoint Argos where scheduled to take a GPS fix every 2.5 days, one at 12 h and one at 00 h. It was the best compromise between the data time lag and the life span of the battery. It also allowed evaluating the difference in data transmission between the day and the night. As Woodcock, snipes are expected to migrate during the night and Argos transmission would likely be more powerful when the bird is flying. With such parametrization, we expected a battery lifespan of 6–8 months.

Ten PinPoint Argos were fitted to Common Snipes in February/March 2017. Only birds with body mass over 100 g were fitted with a tag (103–121g). Age and sex were determined based on feathers characteristics (CICB & OMPO 2002) and sex was confirmed by molecular analysis on

dropped feathers. Six snipes were catch at *La Grand'Mare (Saint-Opportune-la-Mare ; Eure)* and four were catch at *« Nouvelles Possessions » (Braud-et-Saint-Louis ; Gironde)*. All tags were similar but the first five ones do not have incurved upward Argos antenna. If the antenna touched water or the soil while transmitting, the signal can be lost and so the data.

Results

The number of GPS locations received on the website was very low for the first five tags having non-incurved Argos antenna. We had no information from two tags and 2–3 GPS positions from two others. Only one of them has provided interesting information (i.e. out of the capture site). However the five tags with incurved Argos antenna have worked much better, most of them lasting until the summer and two until autumn migration starting (see Table 1),

Sparse migration data was available from two tags and breeding location can be assessed from four tags (see Figure 2). Complete spring migration details was only available from one tag but interesting information were recorded by most of the tags (date of departure and of arrival, some stopovers sites). One snipe arrived early April at its breeding location in Central Russia but others left their wintering grounds much latter, by the end of April or beginning of May). These late departures were likely due to bad weather conditions in 2017. Studied snipes were breeding faraway (3,000 – 4,000 km). One of them has bred out of the Ural Mountains in Western Siberia. Two others were breeding far north, in tundra regions. These birds arrived lately in their breeding grounds, late May to early June. The cold weather that came back to Central Russia by mid-April 2017 may explain these late arrivals on breeding sites.

The four tags transmitting data on the breeding grounds continue giving locations during summer on the same sites. One tag has stopped transmitting in July, another one in August, a third in October and the fourth last until the end of November. The dates of these last locations are conform to what we expected concerning the battery lifespan with the schedule of one point each 2.5 days. Only the tag transmitting until November had given significant information on autumn migration (see Figure 3). This bird has left its breeding site in Western Siberia by the end of September. Another bird, breeding in Kola Peninsula (Murmansk Oblast, Russia) has begun autumn migration between the 16th and 19th October but its tag had then stopped.

Table 1. Data synthesis from GPS/Argos tags.

Day of capture	Locality (*Commune*)	Number of location (GPS)	Last location (dd/mm/yyyy)
06/02/2017	St Opportune la Mare (27)	3	14/02/2017
21/02/2017	Braud-et-St-Louis (33)	22	06/05/2017
21/02/2017	Braud-et-St-Louis (33)	2	07/03/2017
21/02/2017	Braud-et-St-Louis (33)	0	
21/02/2017	Braud-et-St-Louis (33)	0	
14/03/2017	St Opportune la Mare (27)	25	08/06/2017
15/03/2017	St Opportune la Mare (27)	59	16/10/2017
15/03/2017	St Opportune la Mare (27)	68	11/11/2017
15/03/2017	St Opportune la Mare (27)	10	02/05/2017
15/03/2017	St Opportune la Mare (27)	19	04/08/2017

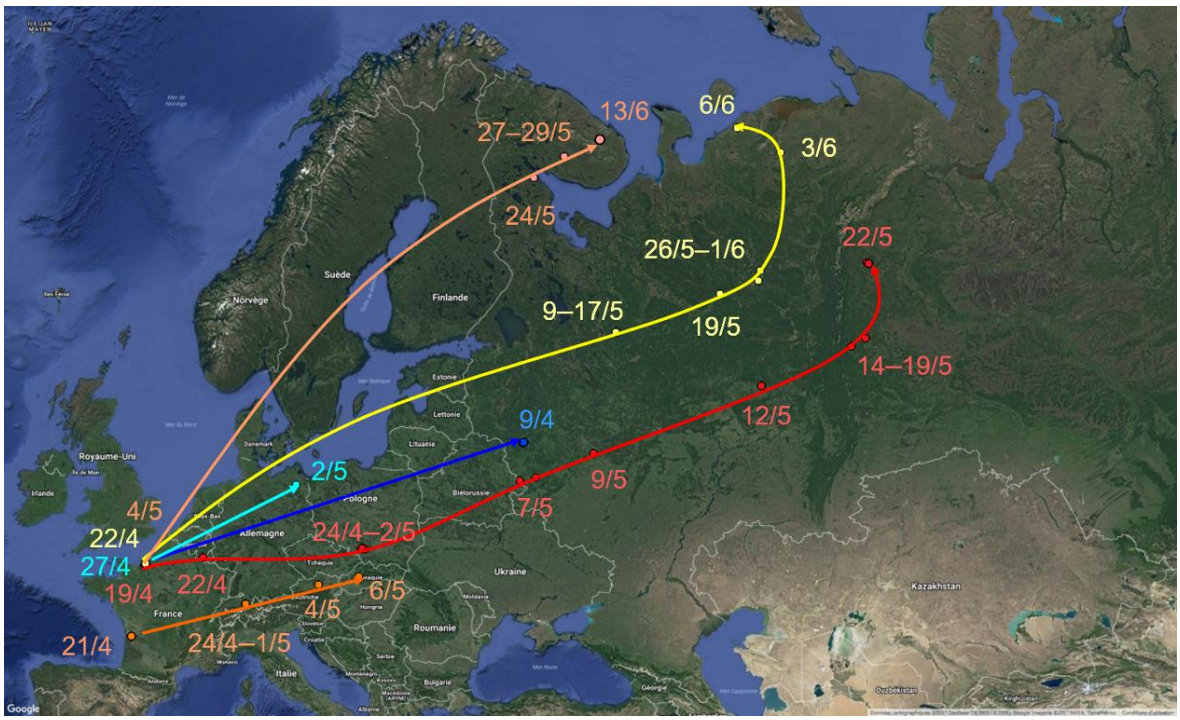

Figure 2. Spring migration travel of six snipes fitted with GPS/Argos tags. Numbers are the date of GPS locations. The breeding area of two snipes are unknown (light blue and orange lines, last location were in Germany and Slovaquia, respectively).

Figure 3. Begin of autumn migration of two snipes fitted with GPS/Argos tag.

Discussion & Conclusions

This first test is rather hopefully. We have validated that it is now possible to study Common Snipe broad scale movements by using a tracking system without the need to recapture the birds. Common Snipe body mass and behaviour made this task challenging. The rubber harness has the advantage to be very light and would break itself after a while (likely one or two years). The bird was thus not constrained to keep the tag throughout its all life.

Yet, we received almost no data from four tags (two without any location). All of these tags had flat Argos antennas. It is very likely that the antenna was in contact with water or soil during transmission periods, preventing any data to be sent to satellites. An automatic camera has taken a

photo of the first bird fitted with a tag few weeks after, showing that the bird has even incurved downward the antenna.

The main objective was to identify the breeding grounds of the birds. Four tags (from five tags having upward angled Argos antenna) have satisfied to this goal, which is a good result. Second objective was to study migration characteristics. Useful information was collected, such as migration timing (departure and arrival dates) and migration distances. However, the number of locations received during migration was not completely satisfying to study in details migration characteristics (e.g. location, number and length of stopovers). Argos transmissions seemed to be difficult during the migration period. Daytime transmissions were actually the worst. Indeed, most of the positions received from March to May were from signals sent by night. However, it was the opposite in summer: most of the GPS locations received from June to August came from signals sent during daytime. Therefore, it is possible to optimize GPS location schedule in order to increase the success of Argos transmission.

The small number of data received during autumn underlined that it will be impossible to study both spring and autumn migrations with the tag used here. It would thus be better to concentrate our project to the study of spring migration and the breeding origin of snipes. A test might be done on few individuals to evaluate the possibility in studying autumn migration using these tags. Such a test will consist in giving priority to autumn GPS locations rather than spring locations. However, the energy need for Argos transmission increase with time (because of tag's internal parameters), so it should be better to fit the tags on birds just before migration (i.e. on breeding grounds for autumn migration).

We cannot yet give general biological statements, neither about the breeding origin of snipes wintering in France, nor on their migration characteristics, because the number of snipes tracked is very small for now. Next step will thus consist in increasing the sample size. ONCFS and CICB planned to fit about one hundred of tags on Common Snipe in the next three years (2018-2020). Biological results will thus be presented latter.

Acknowledgments

This project has received strong financial support from the *Fondation François Sommer*. Some hunting non-profit organisations have also contributed (*ADCGEA, SIGEBLN, GASSAUNA, ACF, ACGP)* as well as 17 *Fédération Départementales des Chasseurs (FDC Aveyron, Cantal, Calvados, Charente-Maritime, Doubs, Eure, Gironde, Ille-et-Vilaine, Landes, Loire-Atlantiques, Lozère, Manche, Pas-de-Calais, Puy-de-Dôme, Seine-Maritime, Somme, Vendée* and *Union des Fédérations Côtières)*.

References

Bauthian, I., Gossmann F., Ferrand Y. & Juillard R. (2007) Quantifying the origin of woodcock wintering in France. Journal of Wildlife Management 71: 701–705.

CICB and OMPO (2002) Key to ageing and sexing of the Common Snipe *Gallinago gallinago* by the study of feathers. CICB & OMPO, Paris.

Hobson K.A., Bowen G.J., Wassenaar L.I., Ferrand Y., & Lormee H. (2004). Using stable hydrogen and oxygen isotope measurements of feathers to infer geographical origins of migrating European birds. Oecologia, 141, 477–488.

Hobson K.A., Van Wilgenburg S. L., Ferrand Y., Gossmann F. & Bastat C. (2013a) A stable isotope (d2H) approach to deriving origins of harvested woodcock (*Scolopax rusticola*) taken in France. European Journal of Wildlife Research 59, 81–892.

Hobson K.A., Van Wilgenburg S.L., Guzmán J. L. & Arroyo B. (2013b) Origins of juvenile Woodcock (*Scolopax rusticola*) harvested in Spain inferred from stable hydrogen isotope (d2H) analyses of feathers. Journal of Ornithology 154, 1087–1094.

2016-2017 Woodcock hunting season in mainland Portugal

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This report presents the results gathered by the *Associação Nacional de Caçadores de Galinholas* (ANCG; National Association of Woodcock Hunters) during the 2016-2017 Woodcock (*Scolopax rusticola*) hunting season in mainland Portugal. Hunting was allowed from November 1, 2016 to February 10, 2017, on, at least, two days per week (Sundays, Thursdays), and national holidays, with a bag limit of three birds/hunter/day. These regulations are the same since 2009-2010 hunting season, when ANCG started to collect information to evaluate the Woodcock hunting season in mainland Portugal.

Abundance

We analysed 474 hunting trip reports, performed by 43 different collaborators in 17 districts (Figure 1a). One hunting trip corresponds to one morning or one afternoon of hunting, with pointing dogs. Nine of the 17 districts represented had more than 10 hunting trips reported. The mean (± SE) duration of a hunting trip was 3.33 ± 0.05 hours (n = 474), and most (64.3%) were performed by hunters hunting alone.

We estimated a hunting index of abundance (ICA – *Indice Cynégétique d'Abondance*) which corresponds to the number of different Woodcock seen, per hunter, during a standard hunting trip of 3.5 hours. The ICA mean value (± SE) for the 2016-2017 season, 1.60 ± 0.07, was higher than those recorded on previous hunting seasons, except 2009-2010 ($z = -1.172$, $p = 1.000$) and 2012-2013 ($z = -2.755$, $p = 0.082$) (Figure 2).

The pattern of variation in abundance throughout the 2016-2017 hunting season (Figure 3, red line) was similar to the mean pattern of the previous six hunting seasons (2010-2011 to 2015-2016; Figure 3, black line), namely in the increase in abundance from the first decade of November until the start of December, and afterwards, in a period during which the abundance remained high. However, during the entire hunting season, the mean level of abundance was always higher than the mean level of the previous ones. An important difference from the general pattern was the large fluctuations observed during the period of high abundance, between December and the end of the hunting season.

The abundance of Woodcock tended to be higher in the districts of the center-interior than in those in the coast and north of Portugal (Figure 1b). The difference in the distribution of abundance, between northern and southern regions of mainland Portugal was already observed before (Rodrigues *et al*. 2013), however, in the 2016-2017 hunting season there was also an important difference within the south, namely between the coastal and interior regions. The geographic distribution of Woodcock abundance in mainland Portugal needs a more careful analysis.

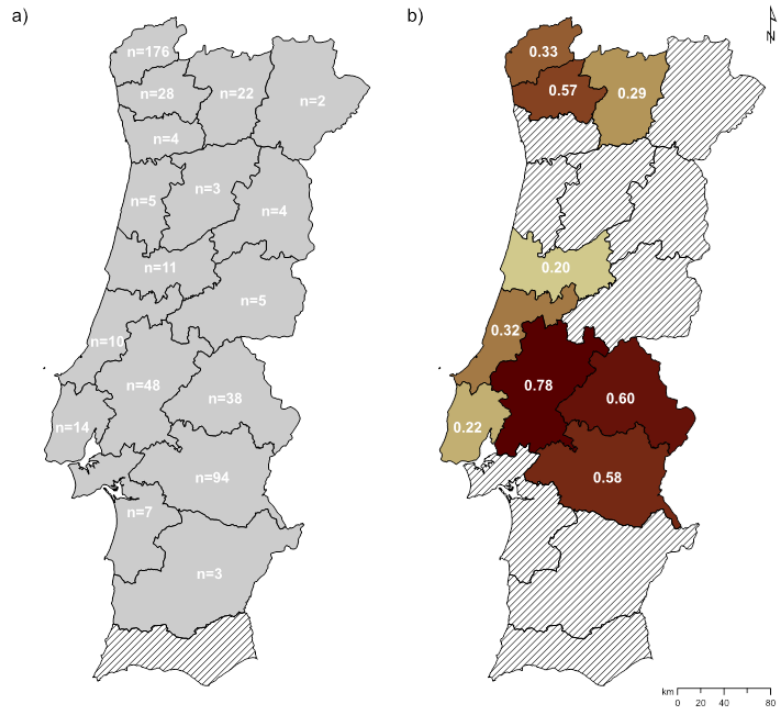


Figure 1. Results for the Woodcock hunting trip reports in mainland Portugal, by district, in the 2015-2016 hunting season: a) Distribution of the hunting trip reports analysed (in grey). b) Variation in the mean value of Woodcock abundance (hunting index of abundance = number of different Woodcock seen, per hunter, during a standard hunting trip of 3.5 hours); (only districts with 10 or more reportswere considered).

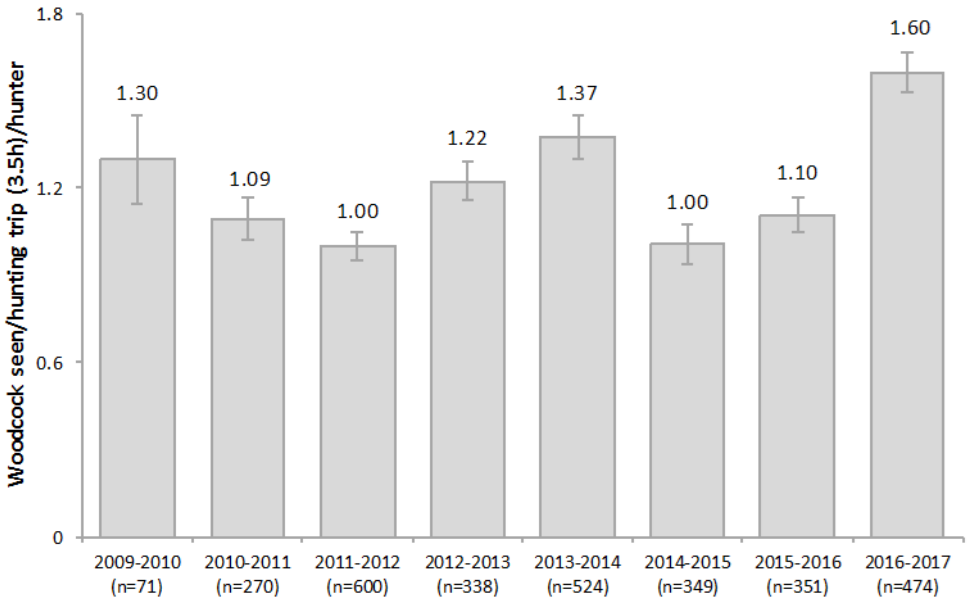


Figure 2. Variation, by hunting season, of the mean (±SE) value of abundance of Woodcock (hunting index of abundance = number of different Woodcock seen, per hunter, during a standard hunting trip of 3.5 hours), in mainland Portugal; n = number of hunting trips analysed.

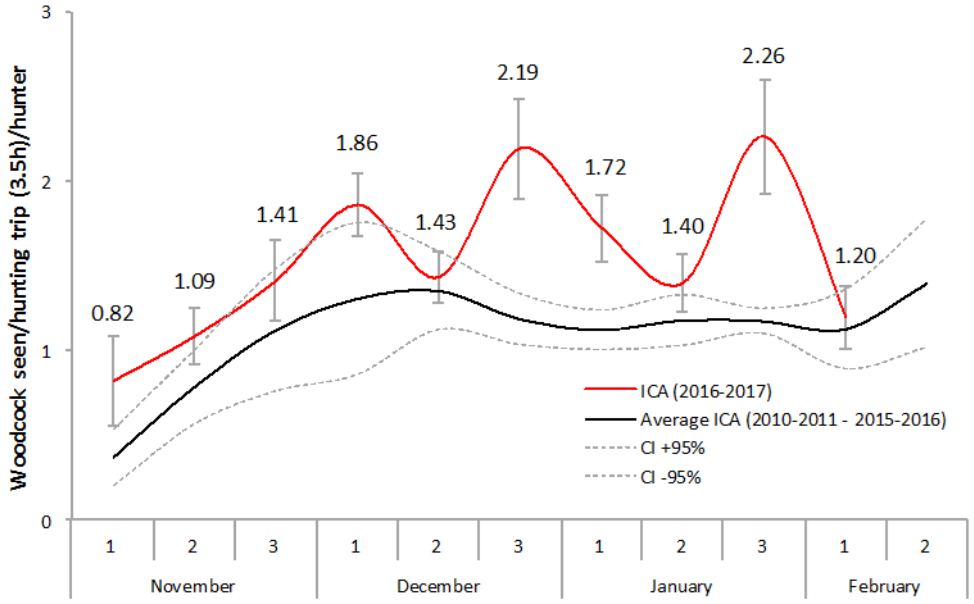


Figure 3. Variation, by decade (period of ten days), of the mean value of abundance of Woodcock (hunting index of abundance, ICA = number of different Woodcock seen, per hunter, during a standard hunting trip of 3.5 hours), in the hunting season 2016-2017 (red line; vertical lines: ± CI 95%), and the average for the seasons 2010-2011 to 2015-2016 (dark line; dashed line: ± CI 95%) in mainland Portugal.

Demography

We analysed 152 wings, collected by 15 different collaborators in nine districts (Figure 4), but only for five of these districts the number of wings was equal to or greater than 10.

The age class [young (< year old) or adult (> 1 year old)] was determined by wing examination, according to Ferrand & Gossmann (2009), and hunters were asked to determine the birds' sex by gonad examination. The percentage of young birds was 62.5 % (Table 1), a decrease when compared with the previous hunting season (Rodrigues *et al*. 2016), but still one of the highest registered among the studied hunting seasons (Figure 5). The proportion of young and adults varied significantly between hunting seasons (χ^2 =16.774, d.f. = 7, p = 0.019), there were relatively more young during the 2012-2013 (66.1 %) and 2015-2016 (67.3%) hunting seasons than in the other hunting seasons (Figure 5). The percentage of males was 44.1 %. The proportion of males and females showed no significant variations between seasons (χ^2 = 7.662, d.f. = 7, p = 0.363); the sex ratio of the Woodcock in mainland Portugal remains close to one (Rodrigues *et al*. 2013).

The percentage of young birds along the country was relatively lower in the north (Viana do Castelo, Braga, Porto, Aveiro and Vila Real) compared to the south (Santarém, Setúbal, Portalegre and Évora) seasons (χ^2 =19.345, d.f. = 1, p < 0.001). We highlight the high percentage of young registered in Évora (95.5%), where only 2 of the 44 birds analysed were adults. We do not know if there is a relationship between this geographic pattern and that observed in abundance.

Body condition

The hunters determined the weight of 143 Woodcock shot. The mean body weight (± SE) of the birds in the 2016-2017 hunting season was 297.0 ± 2.1 g (Table 2). There were no differences in body weight between sexes ($F_{1,98}$ = 2.102, p = 0.150), or age classes ($F_{1,98}$ = 0.002, p = 0.968). Weight varied between hunting seasons ($F_{7,866}$ = 4.733, p < 0.001), but it remained relatively constant during the last four hunting seasons.

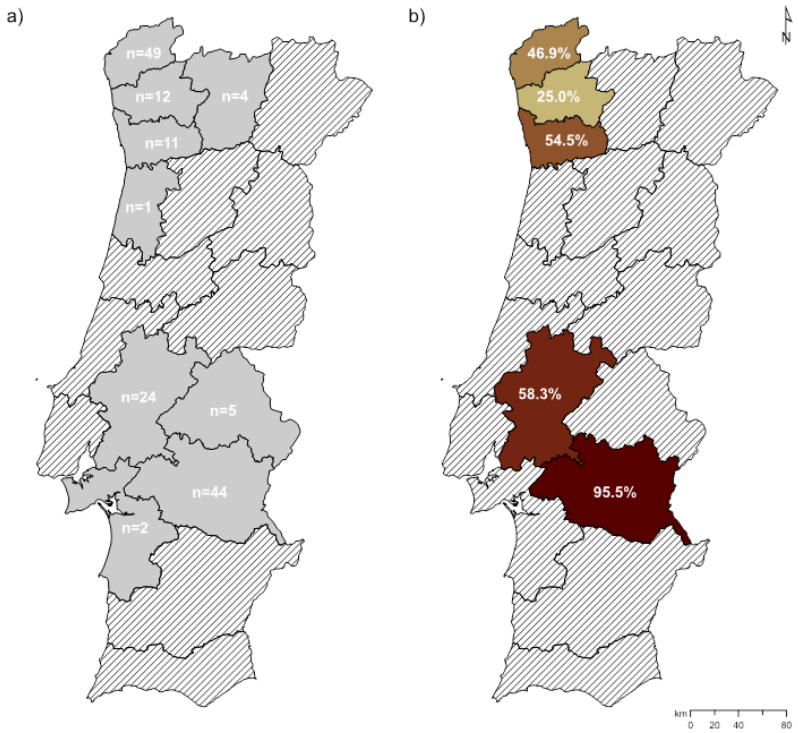


Figure 4. Results for the Woodcock wings collected in mainland Portugal, by district, in the 2016-2017 hunting season: a) Distribution of the number of Woodcock wings collected (in grey). b) Variation in the percentage of young Woodcock (only districts with 10 or more wings were considered).

Table 1. Frequencies of age and sex classes among the Woodcock analysed in the 2016-2017 hunting season.

		Age		
		Adults	Young	Total
Sex	Females	19	38	57
	Males	24	21	45
	Undetermined	14	36	50
	Total	57	95	152

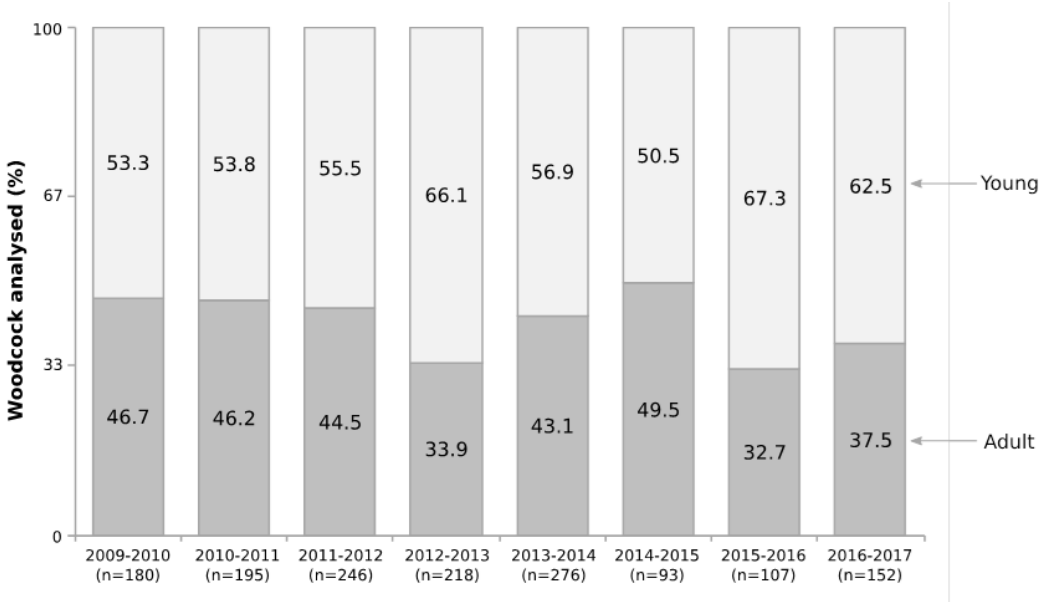


Figure 5. Variation, by hunting season, of the percentages of young and adult Woodcock analysed in mainland Portugal; n = number of wings analysed.

Table 2. Weight of the Woodcock analysed in the 2016-2017 hunting season by age/sex class.

	Weight (g)				
	Mean	Median	Minimum	Maximum	SE
Adult females (n=19)	301.0	300.0	250.0	350.0	6.0
Young females (n=38)	300.9	300.0	260.0	350.0	3.6
Adult males (n=24)	293.3	294.5	201.0	350.0	7.8
Young males (n=21)	292.9	295.0	250.0	315.0	3.1
Total (n=143)	297.0	300.0	201.0	350.0	2.1

Conclusions

In the 2016-2017 hunting season in mainland Portugal, the variation in Woodcock abundance followed the general pattern of the previous hunting seasons, but the season's ICA mean value was the highest ever recorded since 2009-2010, 1.60 (Woodcock seen/hunter/hunting trip). The abundance was relatively higher in the center-interior than in coastal and northern Portugal.

Concerning the number of wings received, in 2016-2017 it increased in relation to the previous hunting season: 152 wings, sent by 15 hunters; nine districts were represented. Still, the sampling remains relatively modest. The percentage of young birds (62.5%) was one of the highest among all the hunting seasons studied and the values tended again to be lower in the coastal and northern districts. The percentage of males (44.1%) returned to a value close to those observed before 2015/2016. The birds had a body weight similar to that of the previous season.

Acknowledgements

We would like to thank all the hunters who provided the data used in this study.

References

Ferrand, Y. & F. Gossmann. 2009. Ageing and sexing series 5: Ageing and sexing the Eurasian Woodcock *Scolopax rusticola*. Wader Study Group Bulletin 116(2):75-79.

Rodrigues, T.M., Gonçalves, D., Verde, A. & M. Russo. 2013. The Woodcock in mainland Portugal: results of four hunting seasons monitoring. WI/IUCN-WSSG Newsletter 39: 42-46.

Rodrigues, T.M., Andrade, P., Verde, A. & D. Gonçalves. 2016. 2015-2016 Woodcock hunting season in mainland Portugal. WI/IUCN-WSSG Newsletter 42: 41-45.

Recent Woodcock and Snipe publications

ARNOLD, T.W., DE SOBRINO, C.N. & SPECHT, H.M. (2016). Annual survival rates of migratory shore and upland game birds. Wildlife Society Bulletin 40(3): 470-476. (*Gallinago delicata*)

CALLADINE, J., HUMPHREYS, E.M., GILBER, L., FURNESS, R.W., ROBINSON, R.A., FULLER, R.J., LITTLEWOOD, N.A., PAKEMAN, R. J., FERGUSON, J. & THOMPSON, C. (2017). Continuing influences of introduced hedgehogs *Erinaceus europaeus* as a predator of wader (Charadrii) eggs four decades after their release on the Outer Hebrides, Scotland. Biological Invasions 19:1981-1987. (*Gallinago gallinago*)

CHRISTENSEN, T. K., FOX, A.D., SUNDE, P., HOUNISEN, J.P. & ANDERSEN, L.W. (2017). Seasonal variation in the sex and age composition of the woodcock bag in Denmark. European Journal of Wildlife Research 63:52.

CICB & ONCFS (2017). Rapport technique sur le suivi des populations de Bécassine des marais (*Gallinago gallinago*) et Bécassine sourde (*Lymnocryptes minimus*) faisant escale ou hivernant en France. (available here: http://www.cicb.asso.fr/rapports_techniques.html) [In French]

CRESPO, A., RODRIGUES, M., TELLETXEA, I., IBÁÑEZ, R., DÍEZ, F., TOBAR, J.F. & ARIZAGA, J. (2016). No Habitat Selection during Spring Migration at a Meso-Scale Range across Mosaic Landscapes: A Case Study with the Woodcock (*Scolopax rusticola*). PLoS ONE 11(3): e0149790.

DEVORT, M., LERAY, G. & FERRAND, Y. (2017). Age determination of Jack Snipe by plumage characteristics. Wader Study 124(1): 60–65.

EKBLOM, R. & WANG, B. (2017). Development of transcriptome genetic markers for the great snipe (*Gallinago media*). Conservation Genetics Resources 9(4): 643-645.

FERRAND, Y., LE REST, K., COREAU, D. & AUBRY, P. (2017). Estimation des tableaux de chasse de bécassine des marais et de bécassine sourde en France pour la saison 2013-2014. Faune sauvage 315: 16-21. [In French]

FERRAND, Y., LE REST, K., GOSSMANN, F. & AUBRY, P. (2017). Estimation du tableau de chasse de la bécasse des bois en France pour la saison 2013-2014. Faune sauvage 315: 9-14. [In French.]

FRAIXEDAS, S., LINDÉN, A., MELLER, K., LINDSTRÖM, Å., KEIŠS, O., KÅLÅS, J.A. & LEHIKOINEN, A. (2017). Substantial decline of Northern European peatland bird populations: Consequences of drainage. Biological Conservation 214: 223-232. (*Gallinago gallinago, Lymnocryptes minimus*)

FRENCH, A.D., CANAS-CARRELL, J.E., KLEIN, D.M. & CONWAY, W.C. (2017). Exposure, Effects and Absorption of Lead in American Woodcock (*Scolopax minor*): A Review. Bulletin of Environmental Contamination and Toxicology 99 (3): 287-296.

GUZMAN, J.L., CARO, J. & ARROYO, B. (2017). Factors influencing mobility and survival of Eurasian Woodcock wintering in Spain. Avian Conservation and Ecology 12(2):21.

HEINRICH, B. (2016). Note on the Woodcock Rocking Display. Northeastern Naturalist 23(1): N4-N7.

HEWARD, C.J., LOWE, A. & HOODLESS, A.N. (2017). A method for mist-netting breeding Eurasian Woodcock: use of visual and audio lures increases capture rate. Ringing & Migration 32:1, 50-53.

HÖGLUND, J., WANG, B., BLOM, M., HALVARSSON, P., EKBLOM, R., SÆTHER, S. & BURKE, T. (2017). Blood transcriptomes and de novo identification of candidate loci for mating success in lekking great snipe (*Gallinago media*). Molecular Ecology, 26(13): 3458-3471.

HU, C., ZHANG, C., SUN, L., ZHANG, Y., XIE, W., ZHANG, B. & CHANG, Q. (2017). The mitochondrial genome of pin-tailed snipe *Gallinago stenura*, and its implications for the phylogeny of Charadriiformes. Plos ONE 12(4): 1-19.

KRETZSCHMAR, F. & BAUER H.-G. (2016). Nachweis einer Zwergschnepfe Lymnocryptes minimus in extremer Höhe der Schweizer Alpen (Extreme high-altitude record of Jacksnipe *Lymnocryptes minimus* in

the Swiss Alps. Der Ornithologische Beobachter 113:249-251 [In German, with abstract in English]

LINDSTRÖM, Å., ALERSTAM, T., BAHLENBERG, P., EKBLOM, R., FOX, J.W., RÅGHALL, J. & KLAASSEN, R.G. (2016). The migration of the great snipe *Gallinago media*: intriguing variations on a grand theme. Journal Of Avian Biology 47(3):321-334.

LOMAN, Z.G., BLOMBERG, E.J., DELUCA, W.V., HARRISON, D.J., LOFTIN, C.S., & WOOD, P.B. (2017). Landscape capability predicts upland game bird abundance and occurrence. Journal of Wildlife Management 81(6): 1110-1116. (*Scolopax minor*)

LUČAN R. K., CEPÁK J. & ZICHA F. (2016). Výsledky kroužkování sluky lesní (Scolopax rusticola) v České republice / Results of bird ringing of Eurasian Woodcock (*Scolopax rusticola*) in the Czech Republic. Zprávy MOS 74:74-83.

MINIAS, P., SURMACKI, A., KUDELSKA, K., PODLASZCZUK, P., KAMIŃSKI, M., KACZMAREK, K., WŁODARCZYK, R. & JANISZEWSKI, T. (2017). Variation in melanin pigmentation of a sexually selected plumage trait and its adaptive value in the Common Snipe *Gallinago gallinago*. Ibis. doi:10.1111/ibi.12530

MINIAS, P., WŁODARCZYK, R. & JANISZEWSKI, T. (2016). Minor differentiation of foraging niche may have a major impact on the incidence of avian botulism in shorebirds. Basic and Applied Ecology 17546-551. (*Gallinago gallinago*)

MOORE, J.D. (2016). Migration Ecology of American Woodcock (*Scolopax minor*). Theses and Dissertations. 1787. http://scholarworks.uark.edu/etd/1787 (Master of Science in Biology; University of Arkansas. - MSc Thesis; Thesis Director: David Krementz)

MOORE, J.D., & KREMENTZ, D.G. (2017). Migratory connectivity of American woodcock using band return data. Journal of Wildlife Management 81(6): 1063-1072.

PAOLETTI, B., DI CESARE, A., IORIO, R., BARTOLINI, R., GATTI, A. & TAVAGLIONE, D. (2016). Survey on intestinal helminth fauna of woodcocks (*Scolopax rusticola*) in Italy. Veterinaria Italiana 52(2): 117-121.

PODLASZCZUK, P., KAMIŃSKI, M., WŁODARCZYK, R., KACZMAREK, K., JANISZEWSKI, T. & MINIAS, P. (2016). Plumage quality mediates a life-history trade-off in a migratory bird. Frontiers In Zoology, 13:47. (*Gallinago gallinago*)

PODLASZCZUK, P., WŁODARCZYK, R., JANISZEWSKI, T., KACZMAREK K. & MINIAS, P. (2017). When moult overlaps migration: moult-related changes in plasma biochemistry of migrating common snipe. Peerj 5:e3057.

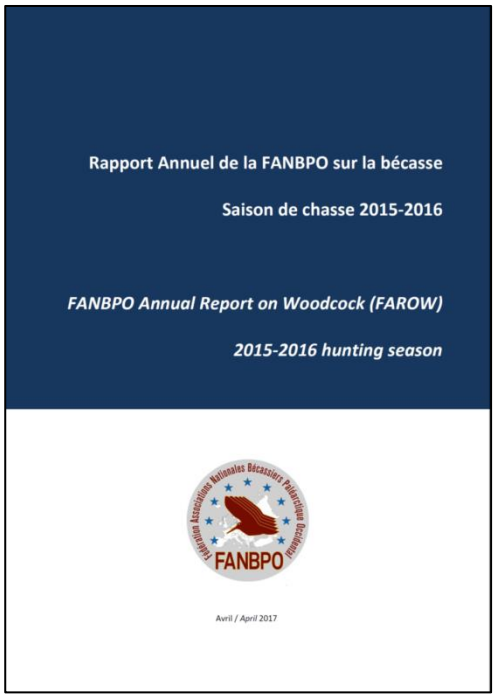
RIX, S. & SPANÒ, S. (2017). Sighting and unusual behaviour of a short-billed Woodcock *Scolopax rusticola* in Oslo Fjord (Norway). *Avocetta 41: 22-24.*

RODRIGUES, T.M., ANDRADE, P., RODRIGUES, M. & GONÇALVES, D. (2018). Mixed patterns of morphological adaptation to insularity in an aerial displaying bird, the Common Snipe Gallinago gallinago. Ibis DOI: 10.1111/ibi.12578

SCHÄFER, F. & SCHMITZ, G. (2016). Skull identification key for Central European shorebirds (Aves: Charadriiformes: Scolopaci and Charadrii). Stuttgarter Beiträge zur Naturkunde A 9:267-282.

SULLINS, D., CONWAY, W., COMER, C., HUNG, I.., HAUKOS, D., HOBSON, K. & WASSENAAR, L. (2016). American woodcock migratory connectivity as indicated by hydrogen isotopes. Journal of Wildlife Management 80(3): 510-526.

TIME, B.E. (2016). Hunting activity by urban Peregrine Falcons (*Falco peregrinus*) during autumn and winter in south-west Norway. Ornis Norvegica 39:39-44. (*Scolopax rusticola*; *Gallinago gallinago*)



GONÇALVES, D & RODRIGUES, TM (Coord.) (2017). FANBPO Annual Report on Woodcock (FAROW) - 2015-2016 hunting season. Federation of Western Palearctic National Woodcock Hunters Associations (FANBPO), 43 pp.

Bilingual publication: French and English.
Available to download at: http://www.fanbpo.fr/uploaded/rapport-annuel-de-la-fanbpo-sur-la-ba-casse-saison-de-chasse-2015-2016.pdf

SPANÒ. S., (2016). La Bécasse, de l'Ornithologie à l'Imaginaire. Fiorina Edizioni - Varzi. 24 p. [In French]

Price: 25 euros (+ postal charges)
It can be ordered from the website: https://www.fiorinaedizioni.com/categoria-prodotto/leporelli/ornitologia/
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In the words of Silvio Spanò: "This is a particular book, on a comic and folded 24 pages, where I tried to focus on the most important knowledge on Woodcock, to give people the image of a fascinating living being, not only a hunting prey or a greed."