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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

This issue of the Woodcock & Snipe Specialist Group Newsletter (number 45) is released with a considerable delay, about a year. I am sorry and apologize for that, especially to those who contributed with articles. Since the end of 2019, I have had some additional difficulties. COVID-19 came to complicate things even more... From the end of 2019 until the middle of 2020 I was involved, with some of you, in the process of re-evaluation of the IUCN Red List status of the world's birds. The 2020 comprehensive update to the Red List assessments was coordinated by BirdLife, as the Red List Authority for Birds. Priority for 2020 was updating globally threatened and Near Threatened species, but we ended up reviewing also the information for Least Concern species, which the WSSG deals with. For the latter, this review will only be reflected in the species factsheet, published on the BirdLife Data Zone and the IUCN Red List website, next year, 2021. I want to thank everyone who collaborated in this process for all the work they did. Meanwhile, the 2020 Red List of birds has been published (in this month; available on the websites mentioned above).

Returning to the present issue of the Newsletter, it starts with an interesting article sent by Edward H. Miller and Juan Ignacio Areta, about the differences in tail sounds and vocalizations within the **South American Snipe**, that suggest the two recognized subspecies to be considered as different species.
From the USA, Erik J. Blomberg and Alexander Fish inform us about the important Eastern Woodcock Migration Research Cooperative, a collaboration between the USA and Canada, to advance the study of **American Woodcock in eastern North America**. To study migration, they have relied on Pinpoint GPS Argos tags, which feature integrated GPS and Passive Terminal Transponder (PTT) technologies.
From **Denmark**, Thomas Kjær Christensen, presents an update of the results of the 2018/2019 Woodcock hunting season. The total bag decreases to a value comparable to that of previous years, suggesting that the numbers bagged in the 2017/18 season were just higher than normal.
The Russian colleagues Sergei Fokin, Petr Zverev, Andrey Blokhin, Alexandr Kormilicin, and Elena Severtcova, report the results of the **European Russia Woodcock ringing** activities in autumn 2019. That year the meteorological conditions have been rather good for breeding and autumn migration. Again it is made a warning call to the degradation of habitat conditions for Woodcock in central Russia.
Another Russian colleague, Yuri Yu. Blokhin, presents an update of the monitoring of **Common Snipe breeding populations in the European part of Russia**. In most of the study area, the 2019 breeding season was less successful than in 2018.
From **France**, Kevin Le Rest, Maxime Passerault and Damien Coreauwe make an update of the **Woodcock monitoring** (2018/2019), using new analysis tools in the treatment of data collected from ringing and hunting.
Also for France, the same colleagues and Patrice Février updated the monitoring of the **Common Snipe and Jack Snipe** in France, during migration and wintering periods. Densities were good during the 2018/19 season but a marked deficit in juveniles was registered.
From **Hungary**, Bende Attila, Király Angéla, and László Richárd, present an analysis of **white-feathered Woodcock** occurrences in Hungary between 1921 and 2019 and explain the difference between albinism and leucism.
Finally, from **Ireland**, Don Ryan lets us know about the "**Snipe Conservation Alliance**", a network of enthusiasts interested in the conservation of the Common and Jack Snipe.

Best wishes to all. May 2021 be much better than 2020.
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Tail sounds and vocalizations suggest that the South American Snipe comprises two species

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Introduction

Readers of this newsletter will be familiar with the non-vocal "drumming" or "winnowing" sound of breeding male snipe in their aerial displays. The sound and display of Common Snipe (*Gallinago gallinago*) in aerial display have been well-described by Reddig (1978, 1981); good compilations also exist for that species (Glutz von Blotzheim *et al.* 1977, Cramp 1983). Differences between the "winnow" sound of Common Snipe and Wilson's Snipe (*G. delicata*; Bahr 1907, Thönen 1969, Miller 1996) were part of the reason for elevating those forms from subspecies to species status (Banks *et al.* 2002, Knox *et al.* 2008). In addition, Common Snipe and Wilson's Snipe differ in size of the outer rectrices (Bahr 1907, Tuck 1972), which produce the "winnow" sound when males dive in their display flights. The species also differ in how outer rectrices are spread during sound production, a point that has been noted rarely: Common Snipe spread only the single outermost rectrices to ~90° to the side, whereas Wilson's Snipe do the same but also spread the next one or two rectrices (Paulson 2005; for other images see Bahr 1907, Glutz von Blotzheim *et al.* 1977, Reddig 1978, and O´Brien *et al.* 2006; Figure 1).

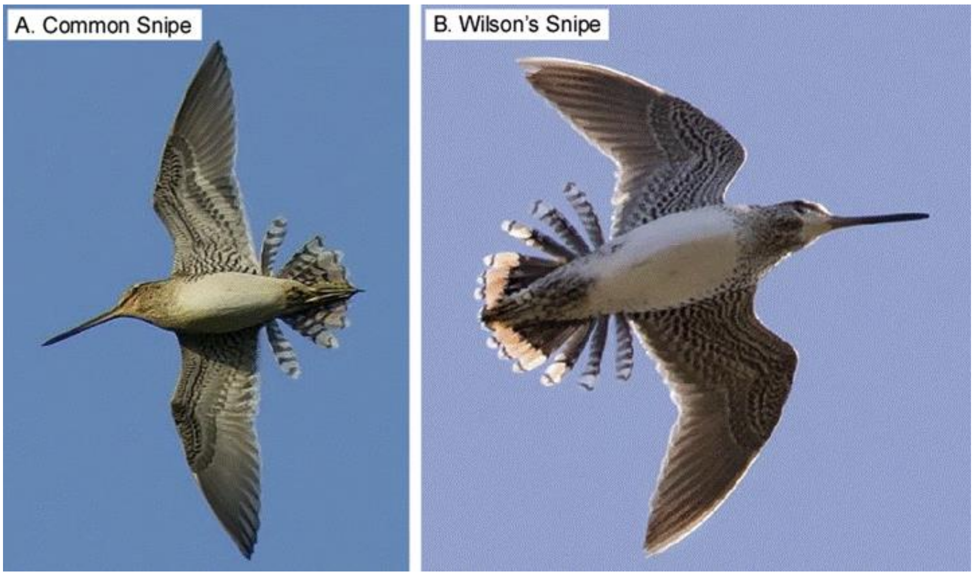

Figure 1. Male Common Snipe (A) and Wilson's Snipe (B) in breeding-season aerial displays, showing the difference between how rectrices are spread when rectrix-generated "winnow" sounds are produced during dives. A -- Narew National Park, Poland (53°05'N 22°53'E), 6 May 2017. Photograph by Stanislav Harvančík (Internet Bird Collection IBC1375917). B -- Seward Peninsula, Alaska (64°37'N 165°17'W), 30 May 2016. Photograph by Lars Petersson (IBC1294368).

The striking difference between Common Snipe and Wilson's Snipe in the tail-generated "winnow" sounds (and in how tail feathers are spread) prompted us to consider whether there are other cases of unrecognized snipe species. Our attention was drawn immediately to the South American Snipe (*G. paraguaiae*) because: (a) it breeds over an unusually large and ecologically diverse geographic range, from tropical areas in northern South America to southernmost Patagonia east of the Andes, and north to at least Santiago, Chile, west of the Andes; and (b) two distinctive subspecies are recognized (*paraguaiae*, *magellanica*), separated in Argentina by the Monte Desert. In addition, some workers have considered that the taxa represent different species (e.g. Piersma 1996). Jaramillo (2003: 227) noted that the subspecies differ in their "winnow" sound and predicted that further study, incorporating acoustic analysis, would confirm that the two forms are different species. Therefore we investigated "winnow" sounds of the South American Snipe, and included main breeding-season ground calls.

Methods

We recorded South American Snipe in several South American countries, and analyzed those plus others in sound archives or online. We included the closely related Puna Snipe (*G. andina*) in our study. For all species, we recorded "winnow" sounds only by birds displaying by themselves, i.e. not flying closely beside and diving in parallel with possible females, as many observers suggest that females can produce "winnow" sounds in such circumstances (*e.g.* Bahr 1907, Manson-Bahr 1931). For details about recordings and analyses, see Miller *et al.* (2019). For the present article, we prepared spectrograms in Raven Pro 64 1.5 (www.birds.cornell.edu/raven).

Results

The Winnow of *G. p. paraguaiae* is a series of sound elements that gradually increase in duration and energy; that of *G. p. magellanica* usually has two (sometimes more) kinds of sound element that roughly alternate and are repeated as couplets, which imparts a distinctive stuttering quality (Figure 2).

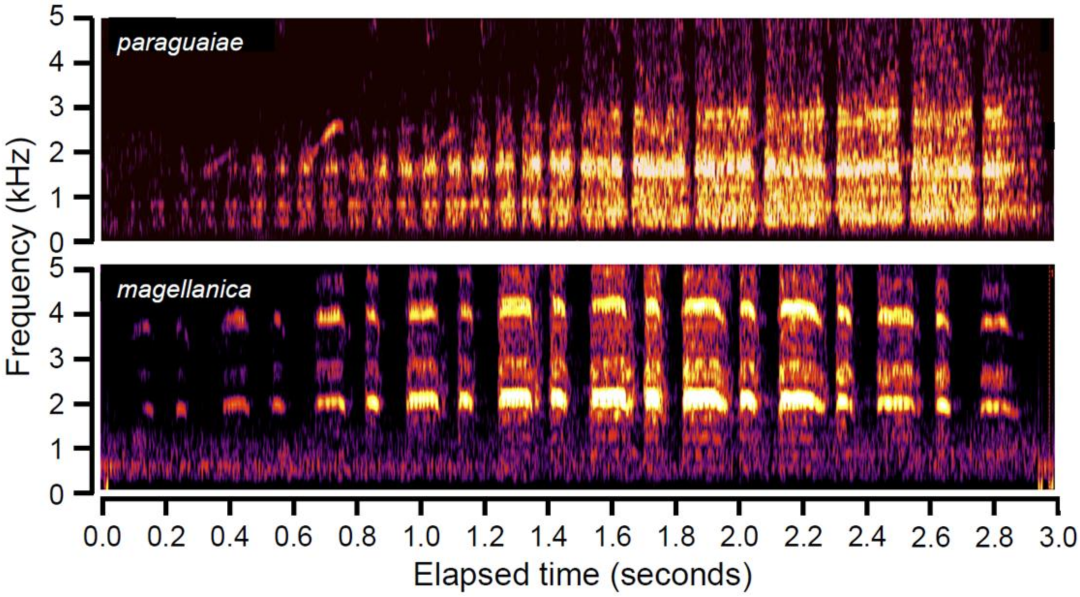

Figure 2. "Winnow" sounds of South American Snipe, subspecies paraguaiae *(upper) and* magellanica *(lower) in breeding-season aerial displays, shown as spectrograms (frequency ("pitch") x time). The sound of* G. p. paraguaiae *is a series of broadband pulses that increase gradually in duration and amplitude ("loudness") over each "winnow", until just before its end. That of* G. g. magellanica *is a series of pulses that similarly increase in duration and amplitude over the sound, but show sharper frequency bands and are organized as multiples (couplets, in this example) of pulses that vary in duration.* G. p. paraguaiae *-- Ñeembucú, Paraguay (25°06'S 57°48'W), 15 November 2008. Recording by Edward H. Miller.* G. p. magellanica *– Magallanes, Chile (53°10'S 70°55'W), 24 October 2004. Recording by Edward H. Miller.*

Both *G. p. paraguaiae* and *G. p. magellanica* utter two types of ground call. In the former, the calls are bouts of identical sound elements repeated rhythmically and slowly (about 5 elements per sec [Hz]; "slow chip") or rapidly (about 11 Hz; "fast chip"; Fig. 3, upper two panels, respectively). One call of *G. p. magellanica* is qualitatively similar to "chip" calls of *G. p. paraguaiae* but sound elements are repeated more slowly (at about 3 Hz; Fig. 3, third panel). The other type of call of *G. p. magellanica* differs greatly: it is a bout of rhythmically repeated sound couplets, each containing two kinds of sound element ("chipper"; Figure 3, bottom panel).

The "winnow" and calls of Puna Snipe resemble those of *G. p. paraguaiae* more than *G. p. magellanica*; however our small sample size of calls included only one call type (see Discussion).

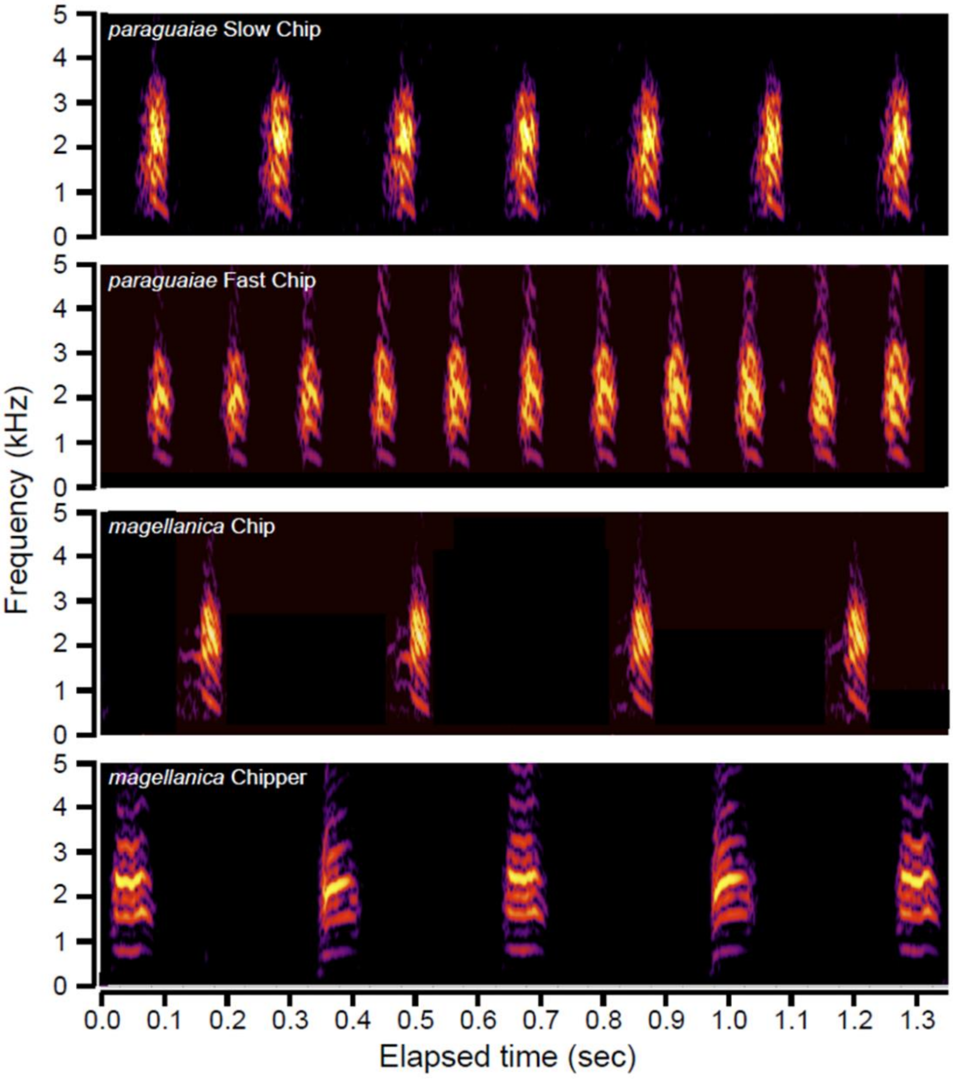

Figure 3. The two subspecies of South American Snipe differ in their ground calls both quantitatively and qualitatively. <u>paraguaiae</u> utters "slow chip" and "fast chip" calls (upper two panels, respectively). <u>magellanica</u> also has two kinds of call, one ("chip") resembling those of <u>paraguaiae</u>, but the other ("chipper") consisting of two alternating types of call (third and bottom panels, respectively). Top panel. Rio Grande do Sul, Brazil (32°7'S 52°13'W), 1 August 2008. Recording by Nick Athanas (xeno-canto #22080). Second panel, Chaco, Argentina (26°0'S 59°0'W), 15 May 2015. Recording by Juan Ignacio Areta. Third panel. Chiloé (Isla, Chile (41°48'S 73°55W), 1 September 2006. Recorded by Edward H. Miller. Bottom panel. Malvinas/Falkland Islands (51°15'S 60°34'W), 15 December 2010. Recorded by Laurent Demongin (International Bird Collection #1127147).

Discussion

Differences in aerial "winnow" displays and ground calls of breeding *G. p. paraguaiae* and *G. p. magellanica* are strong and consistent from samples taken throughout the geographic ranges of the two subspecies. The differences are greater than between other closely related snipe taxa that are recognized as species (*e.g.* Common Snipe and Wilson's Snipe; South American Snipe and Puna Snipe (Jaramillo 2003, Miller *et al.* 2019). Therefore we suggested that the two taxa be considered as different species: *G. paraguaiae* east of the Andes in much of South America except Patagonia, and *G. magellanica* in central and southern Chile, Argentina east of the Andes across Patagonia, and Falklands/Malvinas (Miller *et al.* 2019).

Recommendations for future research

Several lines of investigation would be valuable to build on our findings. First, sexual differences in usage and physical properties of ground calls would substantially improve understanding of the taxonomic differences we found, as we did not know the sex, social context, or breeding state of the birds that we (or other workers) recorded. In fact this is true of almost all sound recordings of all species of snipe. Therefore the actual species differences may be much greater than those we documented if analyses were restricted to males, for example. A detailed study on marked breeding birds of *paraguaiae* or *magellanica*, or perhaps even of related *Gallinago* species like *delicata*, *gallinago*, *macrodactyla*, or *nigripennis*, would illuminate this matter.

A second line of investigation is suggested by the difference between Common Snipe and Wilson's Snipe in how the tail is spread during production of the "winnow" sound. Very few good photographs of other snipe species in aerial display are available. The availability of good photographs would be informative about how widespread are species differences in how rectrices are spread, and in the number and size of rectrices. The only species for which there are both good photographs and good information about rectrices are Common Snipe and Wilson's Snipe. In the former species, males usually possess 14 rectrices; in the latter, males usually have 16. In addition, the outer rectrix is longer and wider in the Common Snipe (Bahr 1907, Tuck 1972). The outer rectrices also differ in size and shape among *G. p. paraguaiae*, *G. p. magellanica*, and Puna Snipe, being longest in *G. p. magellanica* and widest in Puna Snipe (Tuck 1972). How do other outer rectrices differ between species? Are there structural differences in the "winnow" that parallel species differences in tail-spreading or number of rectrices (Figure 4)?

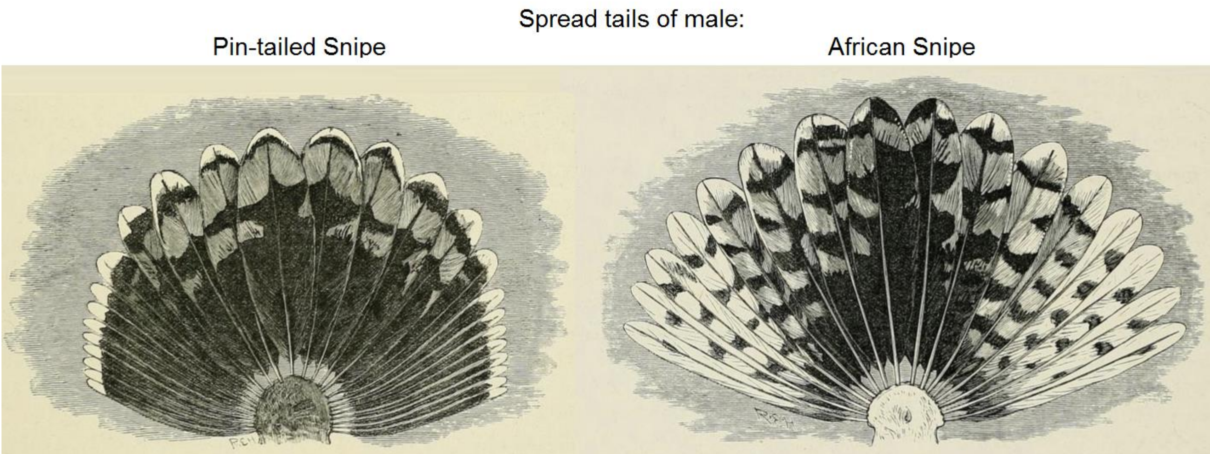

Figure 4. Tail feathers of snipe vary greatly in markings, number, and size. Our understanding of the characteristics and roles in generation of "winnow" sounds of snipe would be advanced by photography of aerially displaying birds and detailed investigations of rectrices in different species. Images from Seebohm (1888: 477 and 500, respectively).

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The Eastern Woodcock Migration Research Cooperative; advancing the study of American Woodcock in eastern North America through large-scale collaboration

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Indices of American Woodcock abundance have declined in North America for more than half a century (Seasmans and Rau 2018), prompting concerns over population status. In North America, American Woodcock are managed as two discrete populations corresponding with Central and Eastern Management Regions, as defined by the US Fish and Wildlife Service and Environment and Climate Change Canada. While populations in each management region have experienced comparable declines, the rate of decline has been somewhat steeper for the Eastern Region (Seasmans and Rau 2018).

Until somewhat recently we've been unable to track individual woodcock over long distances, hampering our ability to understand how factors associated with migration may contribute to long-term declines. Traditional approaches to tracking bird migration, such as band returns and very high frequency (VHF) telemetry, have provided some information on American Woodcock migration (e.g. Myatt and Krementz 2007, Moore and Krementz 2017), but these approaches are ultimately limited in the regularity and precision of the data they provide, which in turn restricts inferences on key elements of migration such as timing and stopover behavior. Inspired by pioneering work on Eurasian Woodcock (*Scolopax rusticola*), researchers in the Central Management Region began applying satellite transmitters to American woodcock in 2014 (Moore *et al.* 2019) and gained significant new insights to American Woodcock migration. Using this momentum, we initiated the Eastern Woodcock Migration Research Cooperative (EWMRC) in 2017 to expand our understanding of American Woodcock migration in the Eastern Management Region, which comprises approximately ½ of the species' global distribution.

The EWMRC is an international research cooperative, at present spanning 3 Canadian provinces and 13 U.S. states. Cooperators include members of state and federal governmental wildlife agencies, non-profit conservation organizations, and university researchers. We operate under a dispersed funding model, where individual cooperators contribute resources to support purchase of GPS transmitters, capture of woodcock to deploy transmitters, and payment of satellite data fees, and we work together to capture and mark birds. The project is coordinated through the research labs of Dr. Erik Blomberg and Dr. Amber Roth at The University of Maine.

To date we have relied on Pinpoint GPS Argos tags supplied by Lotek Wireless (lotek.com), which feature integrated GPS and Passive Terminal Transponder (PTT) technologies. The GPS component of the tags provides precise location data, while the PTT gives a mechanism for data transmission through the ARGOS satellite network. These tags also use a technology referred to as pass prediction, where the transmitter collects 3 GPS locations and then predicts the next time an Argos satellite will pass overhead, at which point the PTT transmits stored location data that we can then retrieve through an online portal. The pass prediction feature reduces the amount of time the units spend transmitting PTT signals, and in doing so extends battery life as transmitters are not solar-rechargeable. Transmitter programing is flexible, and we typically program tags to collect either daily or bi-daily locations during periods of suspected migration, whereas outside of migratory periods we collect less frequent location data. This schedule allows us to precisely determine migratory behavior and stopover duration, while extending battery life such that in many cases we can capture multiple migrations from a single bird. We use a 6.3 g transmitter on the heavier female woodcock (~180 - 200 g), and a smaller 4 g transmitter on the lighter male birds (140 - 170g). Both transmitter sizes are secured using a leg loop harness comprised of elastic cord fed through a surgical tubing sleeve, and sit on the rump of the woodcock (Figure 1; Moore *et al.* 2019).

We capture birds prior to major migration periods, which is typically during September and October for fall migration and during January and February for spring migration. We have found that a combination of nighttime spotlighting in roosting fields and mist-netting during crepuscular periods is most effective to capture birds. Also of great importance is pre-capture scouting of potential areas to identify likely habitat, and preparing roost fields by mowing strips into taller vegetation to attract birds for roosting. Our capture, handling, and marking of birds is approved by the University of Maine Institutional Animal Care and Use Committee (IACUC) and permitted by the USGS Bird Banding Laboratory, Environment and Climate Change Canada's Bird Banding Office, and individual state scientific collection permits as relevant. To date we've deployed GPS tags on woodcock at 22 distinct field sites spread across 3 Canadian provinces and 10 U.S. states (Figure 2), and we plan to add at least 5 additional sites and 3 states during winter 2020. We store all collected location data on the movebank data repository (www.movebank.org), where it is available to all cooperators.

Figure 1. Examples of A) transmitter leg loop harness, B) 6.3 g (top) and 4 g (bottom) GPS transmitters with standard sharpie marker for scale, and C) positioning of transmitter on the back/rump of a marked American woodcock.

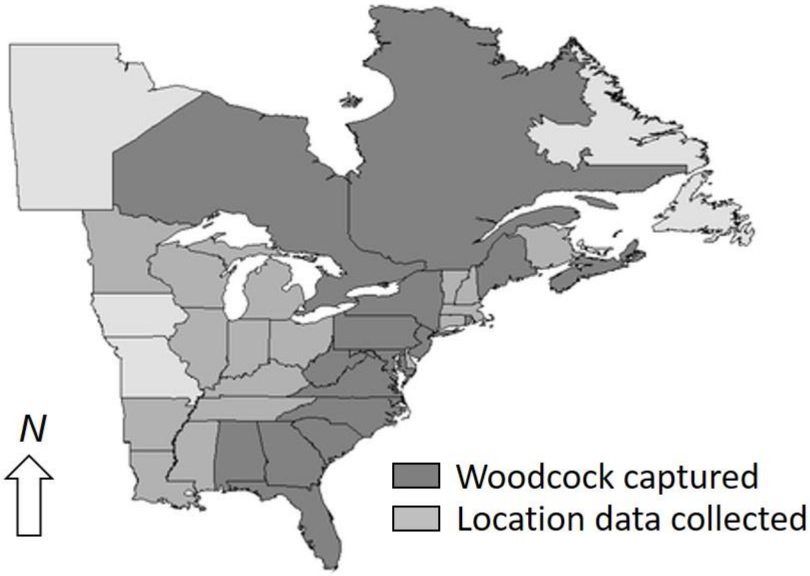

Figure 2. Portions of Eastern North America and distribution of states/provinces where we have or are working to capture and mark American Woodcock with GPS transmitters during 2017-2020 and collected location data (dark gray) and states/provinces where we have collected location data from GPS-marked birds (lighter shade of gray).

We began our project with a pilot field season in Maine during fall 2017, wherein we marked an initial 6 woodcock with GPS tags. During our second field season of 2018/2019, we marked an additional 115 birds during both fall and winter. From these birds, 113 initiated at least one migratory movement, and we collected a full migration path from 83 birds. The 9 woodcock that did not initiate migration, and the 30 individuals that initiated but did not complete migration, reflect those that either died or lost their transmitters before beginning or completing migration, respectively. Migration paths for fall 2018 and spring 2019 can be seen in Figure 3.

Based on our data from Fall 2017 through spring 2019, the mean distance woodcock migrated between their capture locations and ultimate destination (wintering or breeding area) was 1,392 km during fall migration, and 1,245 km during spring migration. The average single night fight distance was 252 km in fall and 177 km in spring. For fall migration, the mean initiation date was 7 November, and on average birds completed migration by 5 December. It took woodcock 25 days on average to complete fall migration, and they used an average of 4.4 stopover sites and remained at each stopover for an average of 5.4 days. In general, spring migration was longer in duration and woodcock stopped over at sites for greater lengths of time than during fall migration. The mean initiation date for spring migration was 10 March, and woodcock completed migration, on average, by 7 April. It took an average of 29.3 days to complete spring migration, with woodcock using 4.8 stopover sites and remaining at each site for an average of 7.4 days.

Our project is ongoing. During fall 2019 we marked >70 additional birds, we have already begun deploying winter tags in the mid-Atlantic US, and we intend to continue the project into future years so long as funding remains available. Our ultimate goal is to use the data we're collecting to answer fundamental questions about woodcock migration that can inform conservation. We are particularly interested in the processes that influence timing of migration (i.e. migration phenology), factors associated with woodcock mortality during migration, and the spatial nature of migration. The latter category would include verifying major migration corridors, identifying important regions for stopover, and assessing the degree of migratory connectivity for woodcock throughout eastern North America.

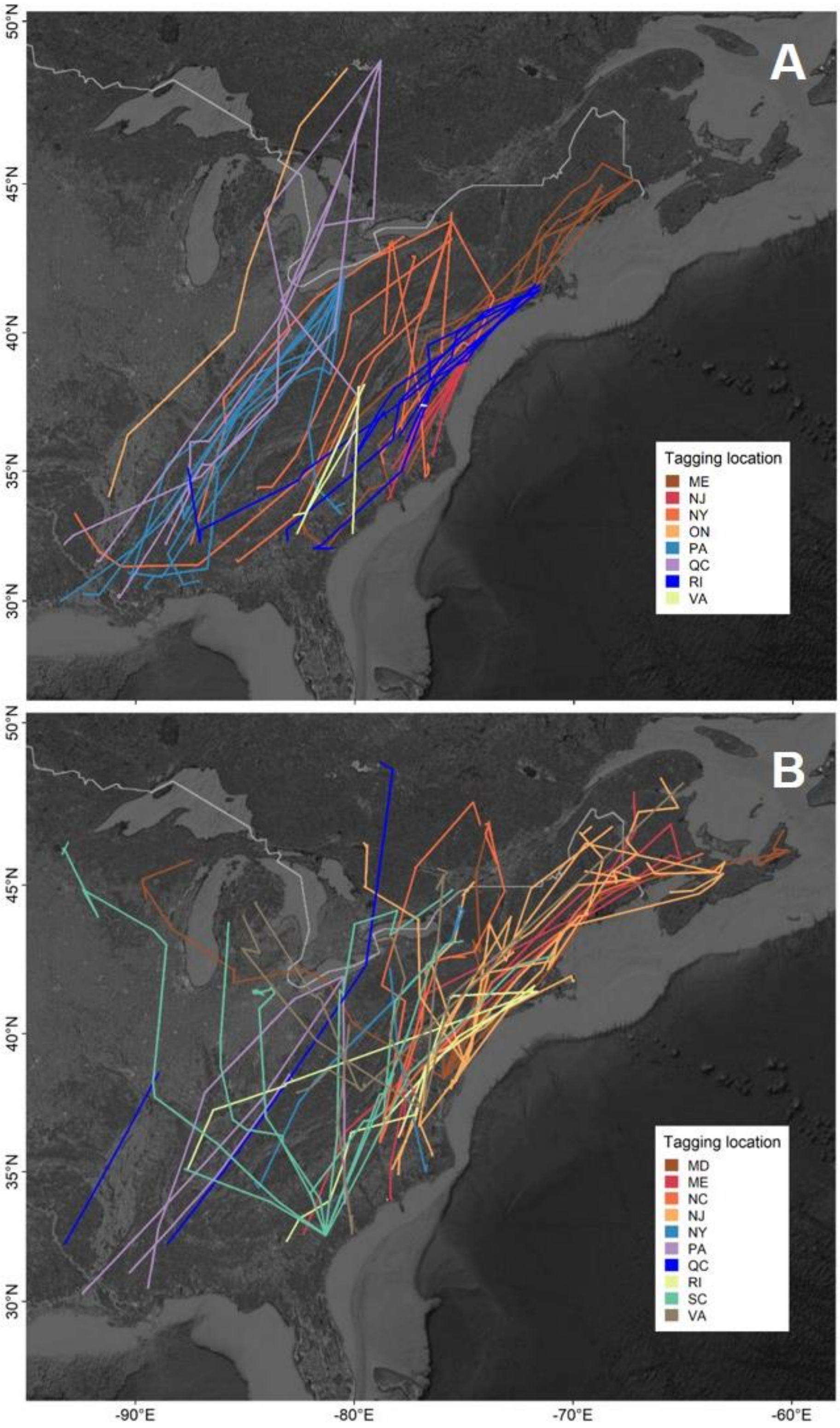

Figure 3. Example migration paths for American Woodcock marked with GPS transmitters during A) fall migration 2018 and B) spring migration 2019. Woodcock were marked by cooperators of the Eastern States Woodcock Research Cooperative at locations throughout the U.S. and Canada (Figure 2). Woodcock were color coded by capture state or province and each continuous polyline represents one individual.

More information about our project, including technical progress reports from our first two field seasons and updated information on migration tracking can be found on our project web page at www.woodcockmigration.org.

Acknowledgements

A full list of project cooperators, including agency leads for each state and province, may be found on our web page (www.woodcockmigration.org). We offer our sincerest thanks to all cooperators, as well as to the technicians, volunteers, and landowners who have helped facilitate woodcock captures. Funding for work completed to date was provided by the cooperating agencies listed online, including major fiscal support from the Ruffed Grouse Society and American Woodcock Society, and the Maine Agricultural and Forest Experiment Station. We have received dedicated grant support from the US Fish and Wildlife Service Region 5 and US Fish and Wildlife Service Webless Migratory Game Bird Research program.

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Woodcock hunting in Denmark 2018/19, and notes on ringing in 2019

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Total bag and wing survey data

Woodcock hunting in Denmark is open in the period 1 October to 31 January, and season length has not been changed since 2011. Hunting is not restricted by 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 all 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 (see on-line data at http://fauna.au.dk/en/).

In the hunting season 2018/19 a preliminary total of 39,914 Woodcock has been reported at the end of the season (June 2019). Compared to the preliminary number of 45,190 Woodcock from June 2018 for the 2017/18 hunting season, a smaller number has been bagged in the 2018/19 season. As can be seen from Figure 1, the total bag of Woodcock is back at the level of previous years, suggesting that the numbers bagged in the 2017/18 season were just higher than normal.

During the 2018/19 hunting season a total of 799 Woodcock wings were received by the Danish Wing Survey. As all wings are reported 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 and 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.

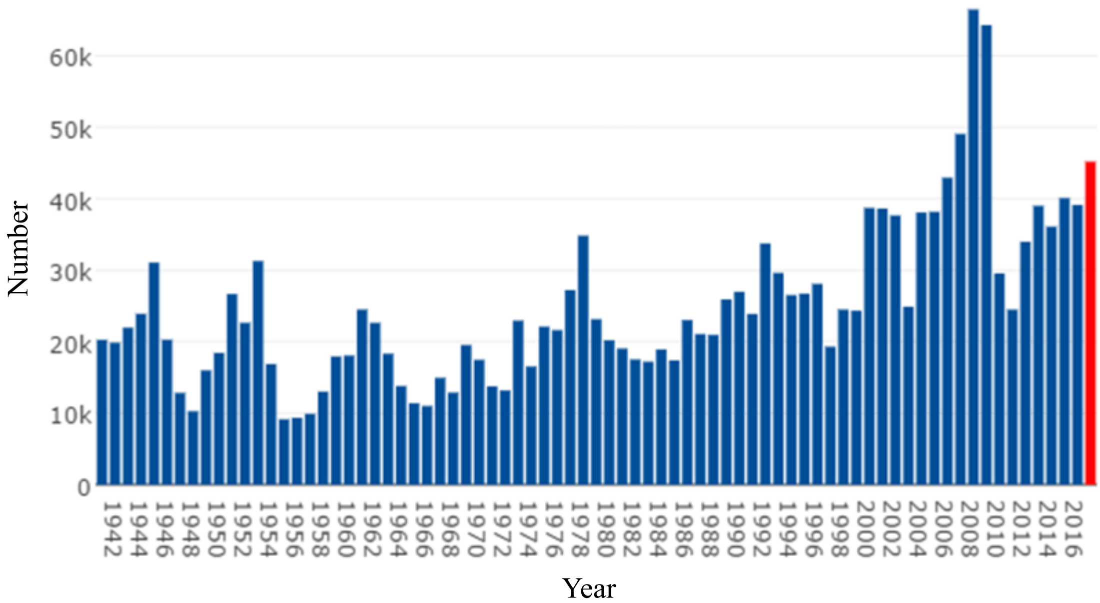

Figure 1. Number of Woodcock (in thousands) bagged by hunters in Denmark during the period 1941 to 2018. The number reported in 2018 is preliminary, as reporting for this season is possible until March 2019.

As in previous years, the geographical distribution of bagged Woodcock in Denmark 2018/19 follows the usual pattern, with the majority being bagged in the western part of the country (Figure 2). 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 2018/19 the temporal occurrence of bagged Woodcock in Denmark showed highest numbers in the first half of November, and then a remarkable constant number throughout the hunting season, with a surprisingly high number (14% of the annual bag) bagged in the second half of January. Compared to the long-term average, the temporal occurrence confirms the general pattern that Woodcock in more recent years arrive slightly later and stay in Denmark throughout the winter (cf. Christensen & Asferg 2013), although dependent on the weather conditions (Figure 3).

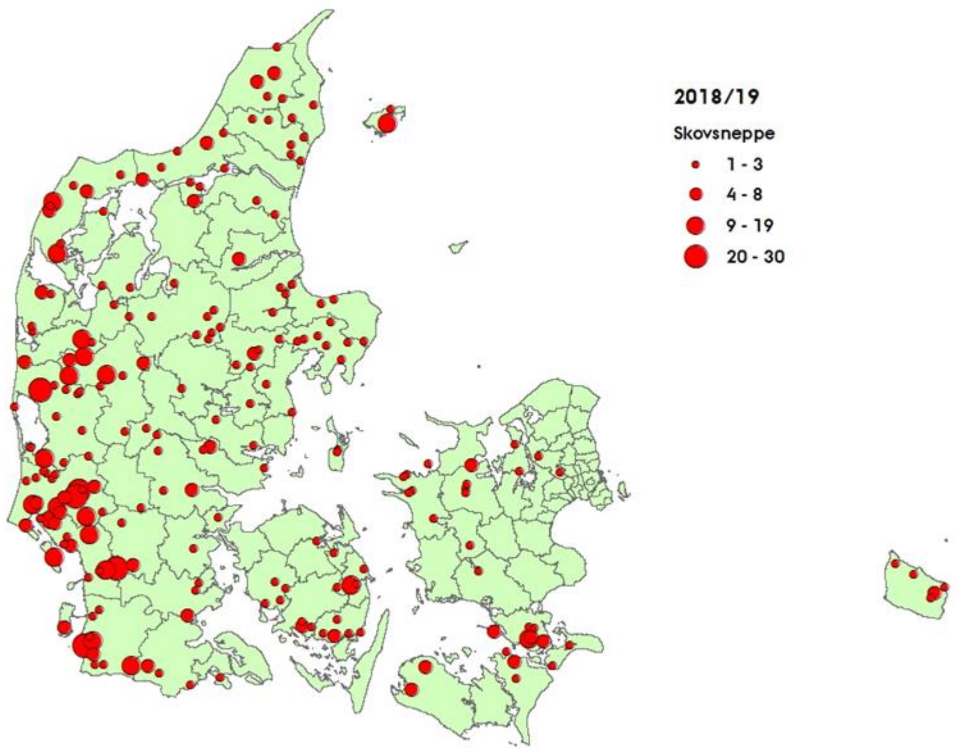

Figure 2. The geographical distribution of 799 wings from Woodcock ("Skovsneppe") received during the hunting season 2018/19.

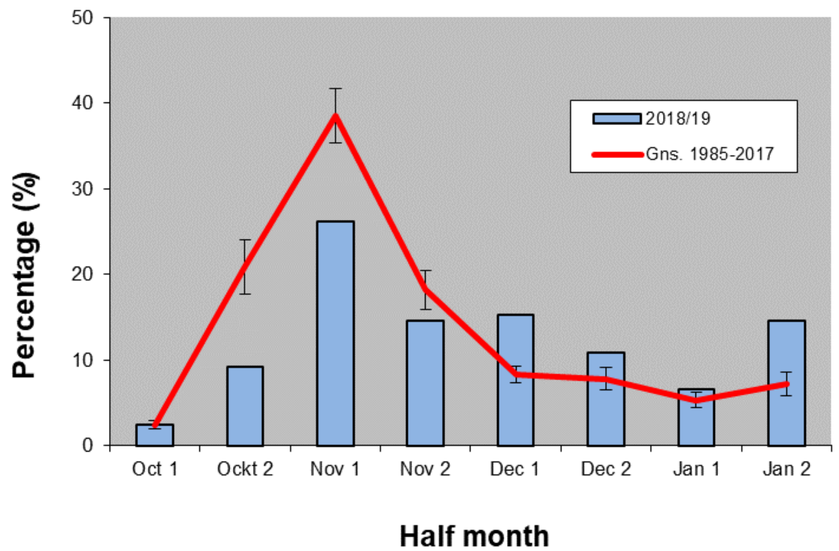

Figure 3. The temporal distribution of the woodcock bag in the hunting season 2018/19 and the average bag during 1985-2017.

In the hunting season 2018/19 the number of juvenile per adult was 1.1, which is lower than the 2017/18 season (1.5), but comparable to the preceding years. As in most years the proportion of juvenile birds decline over the season (Figure 4). Only in 2017/18 the percentage of juvenile birds did not decline throughout the season, but remain stable at 60%, suggesting that the higher numbers bagged in this hunting season may have been related to a higher reproductive success.

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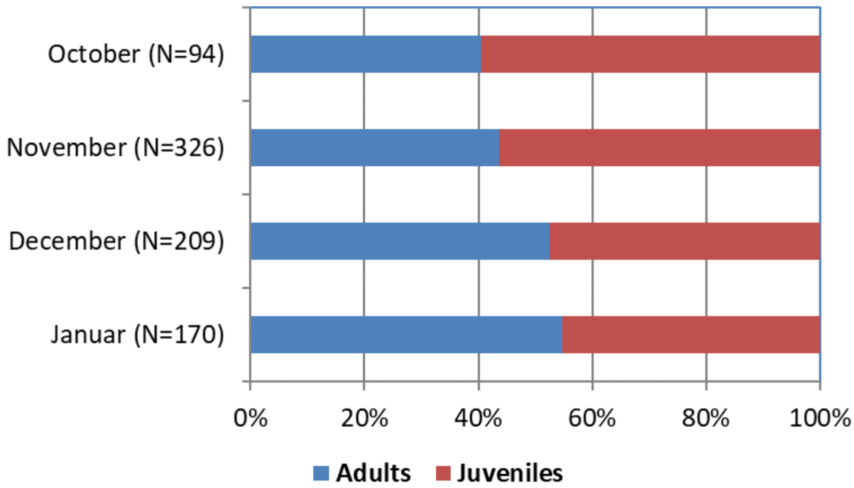

Figure 4. The monthly age composition of Woodcock wings during the hunting season 2018/19. The number of wings is shown in brackets

News from...	RUSSIA

2019 European Russia Woodcock ringing report

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This work was conducted in autumn 2019 within the framework of a scientific agreement between ONCFS (*Office national de la chasse et de la faune sauvage*; France) and BirdRussia ("Woodcock" project) with the help of *La Federation Regionale des Chasseurs d'Auvergne-Rhone Alpes*.

The expeditions for catching, ringing, and observations of autumn migration were organized in seven regions of Russia: Moscow, Vladimir, Ivanovo, Tver', Vologda and Kostroma oblasts and also in Mordovia republic (Figure1).

2019 ringing season in numbers:

Number of ringed woodcock - 309
Number of regions - 7
Number of ringer's teams - 11
Number of sites - 32
Number of ringers - 20
Number of night trips - 177
Period of night searching, hours - 569
Number of contacts - 1168
Capture success - 27.7 %
Number of retraps at this season - 13
Number of indirect retraps - 1
Adults - 63
Juveniles- 246
Juveniles Early Broods - 178
Juveniles Late Broods - 63
Juvenile undetermined - 5
Proportion of juveniles- 79.6 %
Proportion among juveniles:
early broods - 73.9 %, late broods - 26.1 %)

Figure 1. Regions of Russia where the expeditions for catching, ringing, and observations of autumn migration were organized: Moscow, Vladimir, Ivanovo, Tver', Vologda and Kostroma oblasts and Mordovia republic.

These results suggest the normal good breeding success of this year. Warm and dry weather in May and June lead to good condition for incubation, hatching and growing of small chicks. On the opposite, July and August were very rainy and wet. This led to good conditions for feeding of juveniles in the forest and in open habitats. The age ratio of woodcocks in the catch differed by region present in Table 1.

We can see that the percentage of young woodcocks as a whole is high in all regions where the ringing was carried out, except the Moscow region (of course, the number of ringing birds here is small). Among the young the age ratio of birds from early/late broods was normal.

In most of the Central region of Russia, meteorological conditions in 2019 were rather good, either for breeding (Table 2) and for autumn migration (Table 3). This data is from the regional meteo stations. The weather in the Central regions of Ivanovo, Tver' and Moscow was similar to Vladimir meteo stations.

The Figure 2 showed us that proportion of juveniles was high during the last 8 years except in 2017.

Table 1. Age ratio of captured woodcocks in different regions, %.

Region	Juveniles	Juveniles early brood	Juveniles late brood	Number of birds
Kostroma	78.5	75.0	25.0	98
Vologda	80.9	62.8	37.2	47
Mordovia	86.2	60.0	40.0	29
Tver'	91.6	81.8	18.2	12
Ivanovo	74.6	80.8	19.2	71
Moscow	61.5	75.0	25.0	13
Vladimir	87.2	79.4	20.6	39
Total	79.6	73.9	26.1	309

Table 2. The weather in 3 regions of Central Russia during the breeding period.

Regions/month	Average temperature ºC	Norm ºC	Deviation from norm ºC	Precipitation mm	Norm mm	Deviation from norm %
APRIL						
Vladimir	6.6	5.7	+0.9	25	35	70
Kostroma	6.0	4.9	+1.1	15	33	46
Vologda	4.2	3.5	+0.7	10	31	33
MAY						
Vladimir	15.5	12.6	+2.9	35	43	81
Kostroma	14.1	12.0	+2.1	61	46	132
Vologda	12.2	10.6	+1.6	32	41	77
JUNE						
Vladimir	18.3	16.5	+1.8	54	74	74
Kostroma	17.0	16.2	+0.8	50	77	65
Vologda	16.7	15.1	+1.6	51	68	75
JULY						
Vladimir	15.6	18.7	-3.1	111	61	182
Kostroma	15.1	18.6	-3.5	77	73	107
Vologda	14.6	17.5	-2.9	159	75	213

Table 3. The weather in 3 regions of Central Russia during autumn migration.

Month/Regions	Average temperature ºC	Norm ºC	Deviation from norm ºC	Precipitation mm	Norm mm	Deviation from norm %
AUGUST						
Vladimir	14.8	16.5	-1.7	87	64	135
Kostroma	14.1	16.0	-1.9	67	76	88
Vologda	12.9	14.7	-1.8	92	76	120
SEPTEMBER						
Vladimir	11.1	10.8	+0.3	35	51	53
Kostroma	10.5	10.4	+0.1	32	61	136
Vologda	9.5	9.3	+0.2	47	56	83
OCTOBER						
Vladimir	7.4	4.6	+2.8	93	61	153
Kostroma	5.8	4.2	+1.6	103	64	162
Vologda	4.0	3.4	+0.6	115	50	231
NOVEMBER						
Vladimir	- 0.3	- 2.7	+2.4	26	52	50
Kostroma	- 0.9	- 3.1	+2.2	68	49	140
Vologda	-1.5	-3.9	+2.4	102	42	239

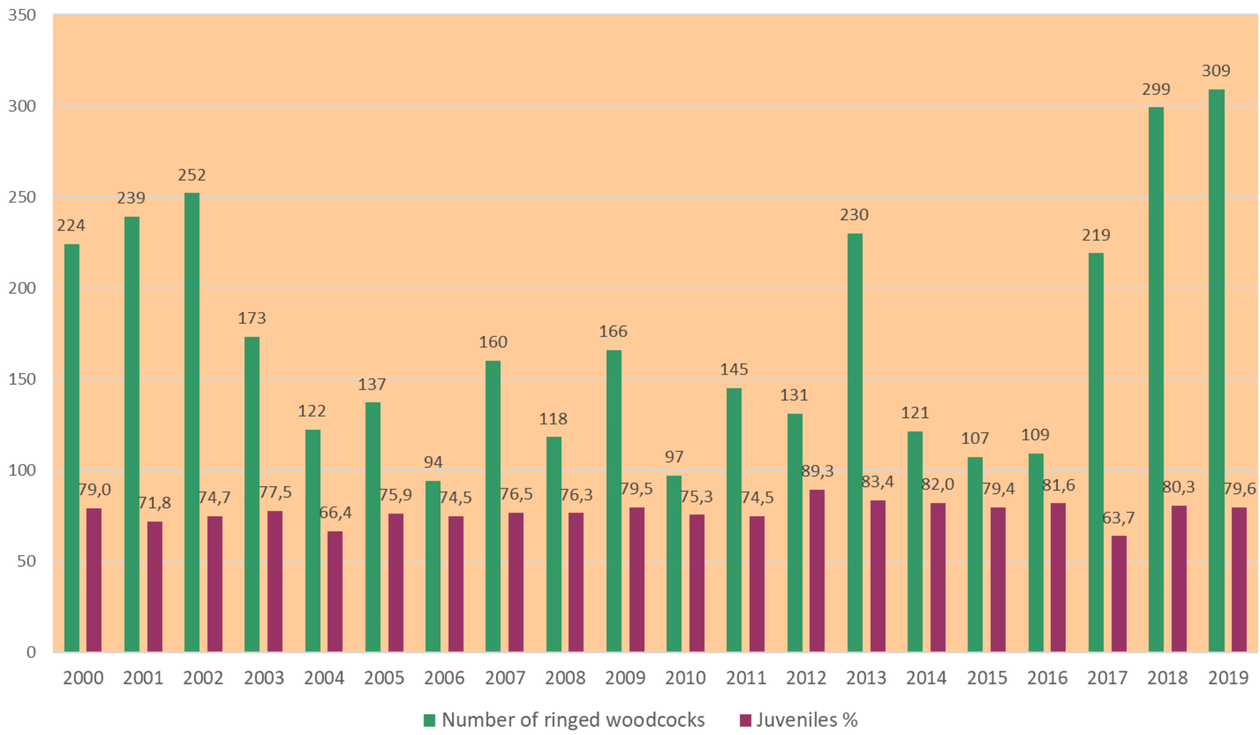

Figure 2. Age ratio (juveniles %) of the woodcock in catching and number of ringed woodcock in autumn (2000 to 2019).

The results of night censuses during ringing are presented in Table 4. The night abundance index (IAN) varied between regions, from 0.8 in Tver' to 3.0 in Moscow region. But average IAN (2.05) was the same as in autumn 2018 (2.05) and higher than previous years: 2015 - 1.54; 2016 - 1.36; 2017 - 1.60.

"Peaks" in the number of woodcocks for the periods 17-28 September, 03-11 October in the Ivanovo region; 18-22 September, 29 September-18 October in the Vladimir region; 21-30 September and 02-03 October, 07 October, 11 October (the Kostroma region), 01 October, 8-15 October (Mordovia), 28 September - 03 October and 06 October (the Vologda region). In the Tver region, in places of researches, migration has not been expressed. In the Moscow region, the data collected was not enough. According to the region, the last woodcock was registered on 20 October (the Kostroma region), 23 October (Mordovia), 25 October (the Tver region), 26 October (the Moscow and Ivanovo regions), 27 October (the Vladimir regions). Thus, in regions where long supervision was carried out, woodcocks practically have completely flown away on wintering areas by October, 25-28, 2019. Nevertheless, separate birds, according to hunter's reports, were met in woods, up to half of November (till 13 November in the Vladimir and Ryazan areas).

Despite the stable autumn number, conditions for night Woodcock feeding in central Russia last years became worsen. There are big difficulties also with the search for optimum squares for ringing. The tendency of moving of livestock of cows on the stable contents in boxes was outlined. Long-term pastures - the basic open habitats for Woodcock therefore disappear. Many abandoned pastures grow with grass, and later trees and bushes. Other problem is plough of long-term pastures under forage grasses and grain crops. As a rule, after mow (haymaking), Woodcock badly visit such fields. In some areas Woodcock visit for night feeding fresh arable lands, fields of winter crops, clover, however their density there is much lower, than on long-term pastures of natural plants. This autumn we have begun works on studying ground and an abundance of earthworms in various places of night and day time Woodcock habitats. They will be continued in the next years.

We are very grateful to our scientific adviser Dr. Kevin Le Rest for methodological help on our work and to Woodcock specialist Dr. Francois Gossmann for the big help determining the age of woodcocks on photos. We thank to all Russian colleagues, who took part in the works on ringing woodcocks this season.

Table 4. Night censuses and ringing results in Russia by Moscow woodcock group in autumn 2019. IAN - "Indice d'abondance nocturne" (night abundance index).

Region	Period of searching with projector, min	Total number of contacts	Average contacts/hour (IAN)	Number of ringed woodcocks	Number of retrapped woodcocks
Kostroma, Susanino	3 146	88	1.7	33	1
Kostroma, Manturovo	8 190	267	2.0	65	6
Vologda	4 320	132	1.8	47	2
Tver'	3 005	39	0.8	12	-
Ivanovo	5 275	240	2.7	71	4
Moscow	1 800	92	3.0	11	-
Vladimir	4 560	125	1.6	39	-
Mordovia	3 820	185	2.9	29	1
Total	34 116	1 168	2.05	307	14

2019 European Russia Common Snipe report

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In 2019, the cooperation between the Russian Society for Conservation and Studies of Birds and *Office national de la chasse et de la faune sauvage* (ONCFS), concerning the monitoring of Common Snipe (*Gallinago gallinago*) populations in European Russia has been continued. In April–July 2019, 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 2019, 139 plots were established with a total area of 103.56 km^2.

In 2019, after a warm winter in Western Europe, in European Russia the weather conditions observed are described in Table 1. In 2019, their number (387 males) were much lower than in 2018 (485). The number of sites, where drumming males were observed, was the lowest since 2013. Since 2012, the number of sites where fewer males were registered compared to the last year, has a positive trend.

Table 1. Weather conditions of the 2019 season.

Subzone	Pattern of spring	Pattern of flood	Snow cover in late winter-early spring	Precipitation	1st «drumming» snipe
South tundra	Late, cold and prolonged	Late and prolonged, average level	Collapsed late, abnormally snowy winter	Frequent rain and wet snow	Before 04.06
Forest-tundra	Cold and prolonged	Average and short	Collapsed in average terms, not much snow	Frequent rain and wet snow	Before 03.06
North taiga	Late, cold and rapid	High	Collapsed late in short terms, snowy winter	Frequent rain in June	06.05
Middle taiga	Average terms, cool	Below average	Collapsed in average terms	Frequent rain in June	08.04
South taiga	Early, prolonged, warm	Absent or low and short	Snowy winter	Low, but frequent rain in the west	
Mixed coniferous-deciduous forest	Average in terms, prolonged, dry	Absent or low and short	Collapsed in average terms, snowy winter or average by snow cover	Low	09.04
Deciduous forest	Average in terms, dry	Absent	Little snow	Low	
Forest-steppe	Warm and humid	High and prolonged	Collapsed late, snowy winter	Moderately frequent	26.03

Results & discussion

South tundra

In the basin of the **middle Pechora** in the north-east of Bolshezemelskaya tundra (Komi Republic), at watersheds Snipe inhabits flat-hilly bogs with willow bushes (5.4 ± 1.8 pairs/km^2) and open fens at flood-lands (2.2). The spring of 2019 reminded the spring of 2018. In spite that the flood was lower, it was prolonged, allowing Snipe to nest in the floodplain. In the floodplains of south tundra the number was lower than last year, characterized by an abnormally high flood. The number of Snipe on flat-hilly bogs was lower than in 2018, which was caused by the cold and the later destruction of the snow cover. Since 2004 negative trends of the Snipe breeding population have been observed in the flat-hilly bogs and in floodplains of south tundra.

Forest-tundra

In the basin of the **middle Pechora** in the south-east of Bolshezemelskaya tundra (Komi Republic) at watershed big-hilly bogs, more Snipe were found (9.4 ± 5.3 pairs/km^2), than at valleys and river flood-lands (6.7). However, as in the south tundra, at watersheds, Snipe gravitated to reservoirs (streams, lakes). There was already no snow cover by the beginning of the census in south forest-tundra, and the flood subsided. As a result, the population of Snipe in the forest-tundra on big-hilly bogs and river flood-lands was very high. It is possible that some part of the Snipe settled in south tundra in normal years, remained breeding in forest-tundra. Over the period of 16 years, a positive trend in the number of Snipe is observed in forest-tundra on big-hilly bogs.

North taiga

In the basin of **Severnaya Dvina** (Arkhangelsk province) Snipe were very few at floodplains at damp meadows in combination with fens and at fens out of floodlands - 0.3 ± 0.2 pairs/km^2. Snipe were not found at damp clearings. There were substantially more Snipe at mesotrophic mire – 1.9 ± 0.7 pairs/km^2 and raised bogs – 3.9. In 2019, the number of Snipe (r. Pokshenga) was very low everywhere, and lower than in 2018. This was probably due to the cold spring and adverse hydrological conditions. Since 2003, at r. Pokshenga negative dynamics of population of Snipe were observed in fens and damp clearings. The clearings become overgrown and the number of Snipe falls there. A positive trend in the population of Snipe can be traced over the past 16 years at mesotrophic bogs and floodplains.

Very high numbers of Snipe were revealed in the floodplain of **r. Kuloy** (Arkhangelsk province), where it reached - 19.5 ± 3.9 pairs/km^2 at damp meadows and at mesotrophic mire - 9.3 ± 5.5 pairs/km^2. In the floodplain of r. Kuloy the number of Snipe was higher than last year, although large areas were submerged by the flood.

Middle taiga

At the eastern shore of **Lake Ladoga** (Karelia Republic) at damp abandoned fields Snipe were very rare (0.7 ± 0.5 pairs/km2). Snipe was abundant at damp places in abandoned fields at floodplains (4.0), at forest fens (4.6 ± 1.5) and open mesotrophic mire (5.0 ± 3.5). The population of Snipe (Lake Ladoga basin) in 2019 was lower than last year at moderately moist mesotrophic mires and noticeably dry abandoned fields and damp places (in farmlands) outside the floodplain. In lowland forest fens the population of birds remained at the same level. Over the past 6 years, the number of Snipe at damp places and fens has decreased, fluctuates, but grows up at mesotrophic mire.

South taiga

At **Pskov-Chudskaya lowland** (Pskov province), the highest population of Snipe population was registered on mesotrophic mire (7.2 ± 2.8 pairs/km^2). It was lower at floodplain fens (3.1). On mires Snipe was absent. The population of Snipe was lower, than the last year at floodplain fens, and higher at mesotrophic mires. Obviously, the hydrological regime of non-floodplain bogs was less favorable (more dry spring), than in other years, and this was reflected in the decrease of the number of Snipe. For the 6-year period of census, there are some negative trends of the Snipe population in all habitats, bogs and floodplain.

In the basin of **Zapadnaya Dvina** (Smolensk province), most Snipe were at damp hollows near uninhabited villages and at damp spots in farmlands (7.5 ± 0.3 pairs/km^2), as well as there was once a fire in the raised bogs (8.3). The number of Snipe was lower at floodplains on grass and tussock meadows (4.0 ± 2.2) and at mesotrophic mire (6.3). In the basin of Zapadnaya Dvina (r. Yelsha) the number of breeding Snipe males has decreased in 2019, in comparison with the last year, only on damp depressions near uninhabited villages in farmlands. Snipe numbers have increased in floodplains, mesotrophic mires, mires at burnt places. Probably the reason for the increase in the number of Snipe in floodplains and watersheds (on scorched mires and mesotrophic mires) was a moderate moistening of habitats due to rains in May and an average flood level.

In the basin of the **Upper Volga** (Ivanovo province) at a lowland reed-cattail floodplain bog the number of Snipe was the highest annually (25 pairs/km^2), but lower than a year ago. Like last year, the population of birds was also very high at a mesotrophic mire out of floodplain (25.0). At damp floodplain meadows the population of Snipe made up 20.9 ± 5.4 pairs/km^2, at burnt overgrown places – 7.7 ± 1.6 pairs/km^2. At peat quarries completely covered with quagmire, the population of Snipe was 20.0 pairs/km^2. At raised bogs with separate undersized pines, territorial males gathered closer to mesotrophic edges of bogs (8.1 ± 2.7 pairs/km^2). In the Upper Volga basin, the population of Snipe in almost all habitats has decreased compared to 2018, as a result of dry spring and the absence of floods.

Coniferous-deciduous (mixed) forest

In the basin of the **Upper Volga** (Vladimir province and the Moscow Region) the highest population of Snipe was registered at damp meadows alternating with fens at non-flooded areas of the floodplain (16.0 pairs/km^2). At mesotrophic mires, the number of Snipe was high (11.7), also at floodplains where water meadows alternated with sedge fens and temporary reservoirs (7.3 ± 2.3). On watersheds, at meadow areas adjoining bogged depressions, less Snipe were found (6.7). Even less Snipe bred at drain depressions in farmlands (3.3 ± 2.4), in bogged floodplain woods (2.9 ± 0.1) and in watershed bogged woods (0.6 ± 0.4). In the breeding season of 2019 in the subzone of mixed forests in the Upper Volga basin, with an average and low level of moisture in the watersheds and floodplains, the number of Snipe was high (mesotrophic mires and floodplain terraces) or medium-level (floodplains and forest bogs), although lower than in 2018.

In the basin of **Middle Volga** (Mordovia Republic, Penza and Ryazan provinces) the most of all Snipe bred at peateries (8.6 pairs/km^2). Less Snipe were in river valleys at lowland open and forest fens (4.5 ± 1.2), raised bogs (3.3), mesotrophic mires (4.4) and damp floodplain meadows (1.8 ± 1.3). In the Middle Volga basin in almost all habitats the population of Snipe has decreased compared to the last year.

Deciduous (broad-leaved) forest

In areas of sedge open fens in combination with hydromorphic meadows, river flood-lands of the **Middle Volga** in the north of the broad-leaved forest subzone (r. Moskva, the Moscow Region), 1.8 ± 0.7 pairs/km^2 were revealed. At similar Snipe habitats in flood-lands in the south of the subzone (r. Sura, Penza province) – 2.9 ± 1.5 pairs/km^2. At watershed forest fens, the population of Snipe made up 6.2 ± 2.2 pairs/km^2. In the dry year 2019, with no flood, in the subzone of deciduous forests, the Snipe population in the floodplains of the middle Volga basin was low or at an average level.

In flood-lands of the **Dnepr** basin (r. Sev, Kursk province) the population of Snipe at damp meadows in combination with open fens, made up 3.0 pairs/km^2. In the basin of Dnepr, the population was lower than in 2018. The population of Snipe was higher than the last year and above average in forest bogs at watersheds. Since 2012, the population of Snipe has been gradually decreasing in the floodplain habitats in the basins of Dnepr and the middle Volga. The trend of increase in this indicator is observed at forest bogs.

Forest-steppe

In flood-lands of the **Dnepr** basin (Kursk province) the population of Snipe at damp meadows in combination with open fens, made up 1.3 pairs/km^2, and at open fens – 2.0 pairs/km^2. In 2019, in comparison with the last year and the average for 8 years, the population of Snipe was lower at fen of artificial origin (former peateries and fish ponds) and on the floodplain meadows. Since 2012 the Snipe population has been decreasing in these habitats.

According to monitoring in different geographic areas, the number of Snipe during the breeding season was higher than in 2018, in forest-tundra (in various habitat types in 2019 the breeding population of Snipe ranged from 6.7 to 9.4 pairs/km2) and on peatlands in the west of the southern taiga subzone (3.1 – 7.5). Lower than in 2018, the number of Snipe was in south tundra (2.2 – 5.4), north taiga (0.3 – 19.5) (except fens), middle taiga (0.7 – 5.0), in the central part of the south taiga subzone (7.7 – 25.0) (except paludified lands), in coniferous-deciduous forests (0.6 – 16.0), except the south of this subzone, in deciduous forests (1.8 – 6.2) and forest-steppe (1.3 - 2.0). On the same level as the last year was the number of Snipe in the south of the coniferous-deciduous forest subzone. In the main sorts of habitats, the number of breeding Snipe was higher than in 2018 at big-hilly bogs, at river floodplains it was at the level of the last year or lower, and lower - at flat-hilly bogs. Trends of the Snipe population were different for fens, mesotrophic mires and raised bogs. Among different sorts of habitats, the breeding population of Snipe was the highest at floodplain at damp meadows of south taiga (33.3), the lowest - at damp floodplain meadows in the coniferous-deciduous forest subzone (0.2). Thus, in most of the study area, the last breeding season has been less successful for Snipe than in 2018 (Table. 2).

Table 2. Dynamics of the number of Snipe at boggy habitats in 2019 in relation to 2018. ↑ *– higher;* ↓ *– lower; = – level as last year.*

	peat lands				paludified lands	
	hilly bogs	oligotrophic	mesotrophic mire	eutrophic	flood-lands	other paludified lands
south tundra	↓				↓	
forest-tundra	↑				=	
north taiga			↓	↑	↓	↓
middle taiga			↓	=		↓
south taiga (North-West)		↑	↑		=	↓
south taiga (East)		↓		↓	↓	↑
mixed forest (North)			↓	↓	↓	
mixed forest (South-East)		=	=		↓	↑
deciduous forest				↓	=	
forest-steppe				↓	↓	

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2018-2019 French Woodcock Report

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Weather conditions

A first episode of cold occurred in late September in Scandinavia, Finland and also a little in North-West Russia. This first cold period had likely initiated migration for some birds nesting in the most northern breeding areas. However, no strong frost affected the main breeding area before late October. Arrival of cold weather then created a massive migratory movement towards Central and Western Europe. After that, the cold front reached Central Europe by the end of November, with temperatures clearly below the mean, which pushed the birds stationing in these regions towards their wintering areas in Western Europe. December 2018 was very mild in France and therefore did not bring additional change on the Woodcock spatial distribution but the numbers were already at a very high level. The alternation of cold episodes in January 2019 probably brought some additional birds from neighboring countries and caused movements towards the coastal regions. February 2019 weather was almost spring like and therefore very favorable for the survival of Eurasian Woodcock.

Once again, the distribution of birds at the beginning of the hunting season was constrained by hydric conditions. But unlike 2017-2018 season, the Mediterranean regions were very wet while a large area located in the North-East suffered from a significant water deficit. These regions were somewhat shunned by the first migrants, and in particular by the juveniles. Conversely, West of France had good hydric conditions by mid-November and therefore hosted the migrants on loose and wet soils.

Ringing results

Relative abundance

The nocturnal abundance index (NAI, number of Woodcock seen per hour of prospection) reached 5.2 over the 2018-19 season, which indicates a good season. The season was a bit slow to start, with few birds caught by the end of October. In November, the NAI quickly rose to high values. It then remained well above the average (Figure 1). Despite the spring like temperatures in February, abundance maintained high levels until the beginning of March.

Quantitative ringing results

The 2018-19 season is the record year! Between October 2018 and March 2019, 7,661 Woodcock were ringed, that is 1,300 more birds than during the previous season. This number could be partly explained by the commissioning of a new online database allowing the ringers to report their data more easily and to have all ringing and recovery information available. But this record is mainly explained by the fact that 2018-19 was a very good season, despite a very calm start in October (very few birds observed and banded).

Proportion of juveniles

Woodcock's age-ratio from birds captured (banding and controls) was 54.8% of juveniles It was slightly higher than last year but it remained below the average of the last 20 years (56.6%). Juveniles recolonized the South-East of France which had suffered from drought during the previous season (Figure 2). The difference between the Channel-Atlantic coast and the inland regions is partly related to hunting pressure (more adults in low pressure areas).

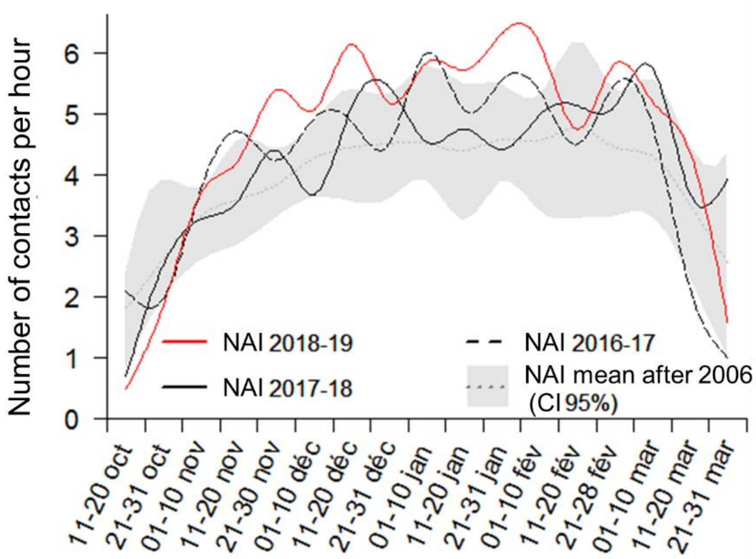

Figure 1. Monthly variations of the number of contacts/hour during ringing trips (NAI, nocturnal index of abundance) from October 2018 to March 2019.

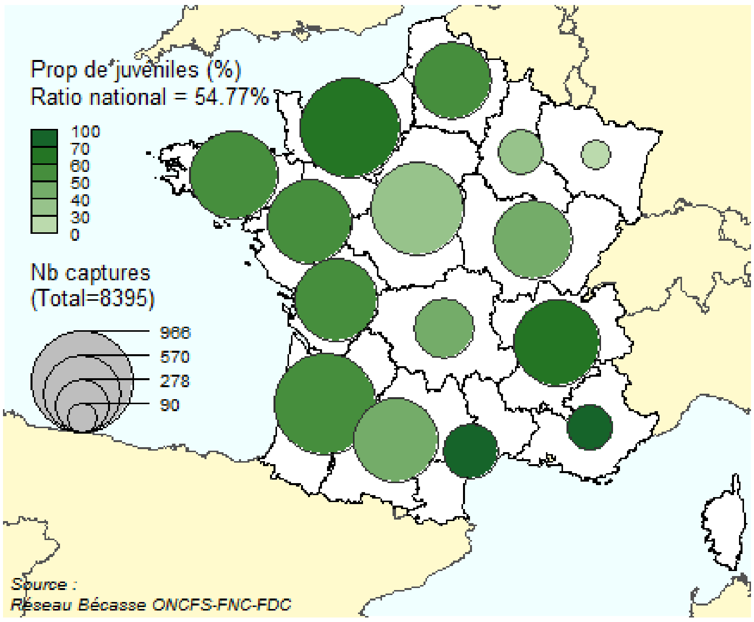

Figure 2. Proportion of juveniles in France during the 2018-2019 season.

Monitoring of abundance during the migratory and wintering periods

Woodcock abundance indices, the Nocturnal Abundance Index (NAI) and the Hunting Abundance Index (HAI), are collected without a sampling protocol. This can be problematic when one is interested in the evolution of these indices over time since observers, whether banders or hunters, look for the sectors and periods where most birds are present. By thus optimizing their behavior and gaining experience, observers could be led to see more and more Woodcock while the abundance is stable or even declining. One way to correct this is to analyze these clues, taking into account the spatial location and date of each observation, as well as the observer. This analysis was carried out by an intern, Rachel LEFRAN, as part of her Master 2 internship. We present here the main results of this work.

The NAI, which corresponds to the number of birds seen per hour of prospection at night, has been recorded for the past twenty years by the French Woodcock Network. The HAI, which corresponds to the number of birds flushed during the day over a standardized duration of 3 hours and 30 minutes, has also existed for about twenty years but it has been computerized with a sufficient level of precision (with date and precise spatial location) only for ten years. This index is collected by the Club National des Bécassiers (CNB) and Bécassiers de France (BdF) but only the CNB data (the most numerous) were analyzed as part of this internship.

Generalized mixed linear models were used to take into account the date and the spatial location of each data collected. A random effect was added on the site and on the observer level to take into account the differences in abundance observed between the catching sites (here the French *commune*) and between the observers (detection probability). Two types of analyses were carried out: a first "season by season" (main results) and a second "multi-season" to verify that the results were similar. Intra-seasonal evolution of both indices is shown in Figure 3.

For each curve, the maximum value represents the maximum number in France for a given season. The evolution of the abundance indices between seasons was evaluated by considering these maximum values.

The results showed a significant increase in the NAI from 1996-97 to 2008-09 seasons (Figure 4), followed by a stagnation of the index over the past ten years. The gross average of the NAI, in blue, was above the estimated NAI, indicating that observers were effectively selecting dates and locations for their trips that maximize the number of Woodcock seen. However, this was mainly true from 1996-97 to 2008-09 (big difference from the blue curve) but less evident nowadays. This result is consistent with the fact that Woodcock banding was originally mainly done in the coastal regions, which are places with larger numbers of Woodcock than in the central and eastern parts of the country. The French Woodcock Network has gradually spread to the whole of France and now covers the entire territory. Contrary to the initial hypothesis being that banders optimize the timing and the location of their trips (which could explain the observed increase in the gross index), the results showed that it is the opposite which occurs at a broad scale, with the spread of the French Woodcock Network over the entire country. The increase of the estimated index was therefore even greater than that the one observed with the gross index. The estimated index, however, showed stagnation over the past ten years while the gross index still continued to increase slowly.

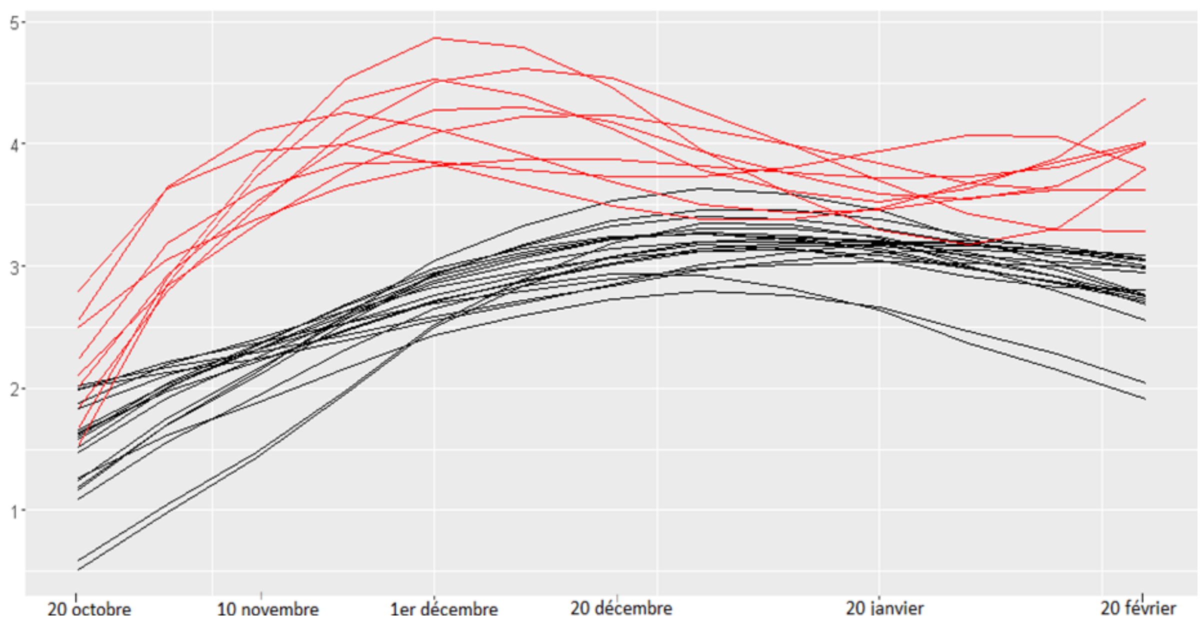

Figure 3. Comparison of the changes in the abundance indices estimated from October 20th to February 20th. Black curves: NAI estimated for the 22 seasons (1996-97 to 2017-18). Red curves: HAI estimated for the 9 seasons. Each curve represents the NAI or HAI estimated by season, weighted by the average of the season in order to present all the curves on the same scale.

The trend of HAI over the period 2009-10 to 2017-18 was stable, but showed important variations between hunting seasons (figure not shown here). Unlike the results of the NAI, the gross HAI is below the estimated HAI, indicating that hunters were not optimizing their hunting trips as much as banders. This result is also consistent because hunters generally do not wait for the peak of abundance before starting to hunt. They, therefore, prospect at periods when the abundance is lower than the maximum estimated per season.

Figure 4 shows the NAI trend at the national level, but it is also interesting to check for spatial variation of this trend. This is the purpose of Figure 5. The increase in the NAI over the studied period was slow in the West (+0.01 units/year for *Finistère*) but much quicker in the North-East (+0.06 to +0.08 units/year) (Figure 5). It is therefore mainly the increase in the northeastern part of the country that is responsible for the increase in the NAI at the national level. Additional analyses and surveys will be carried out to rule out a potential observer effect. Indeed, banders are less numerous in this part of the country and more recently trained.

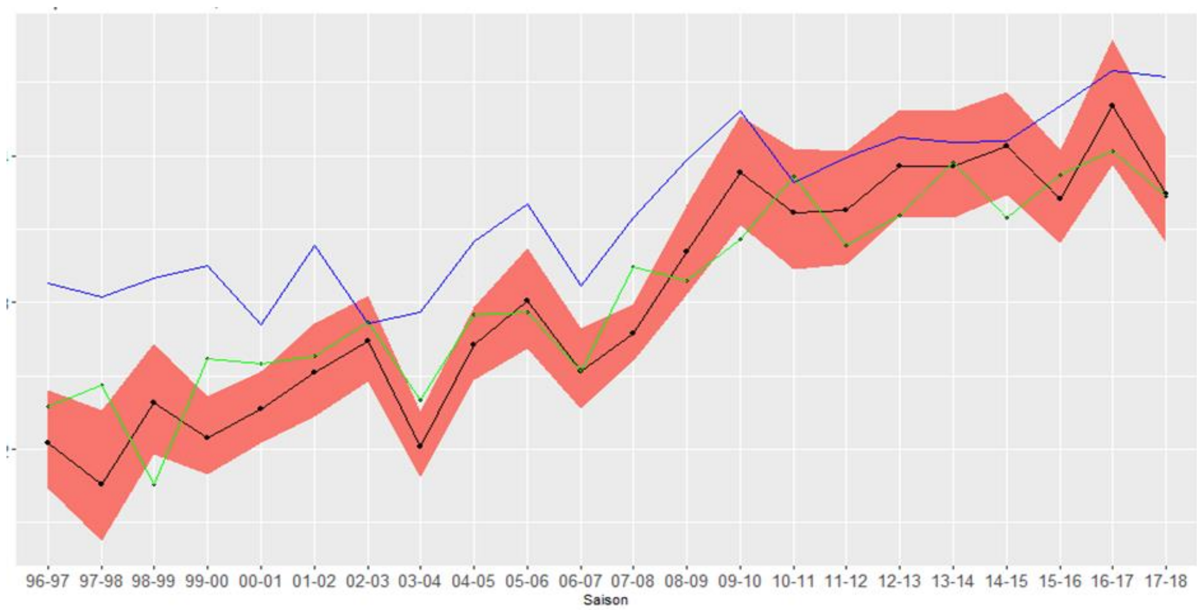

Figure 4. Trend in maximum NAI estimated in each season for the period 1996-97 to 2017-18. In blue, the observed NAI (gross average of observations), in black, the NAI estimated by the models per season (and 95% confidence interval) and in green, the NAI estimated by the complete model (all seasons considered together).

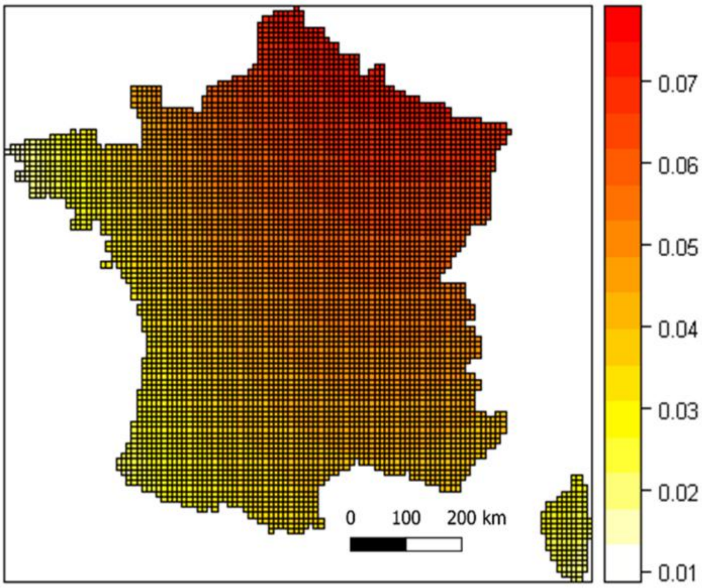

Figure 5. Spatial distribution of NAI trend from 1996-1997 to 2017-2018.

With mild winters, birds are likely to stay longer and in greater numbers in the eastern part of the country, which were before mainly stopover areas during migration. There are fewer Woodcock hunters in these areas; so Woodcock choosing this strategy are more likely to survive than those wintering in the western part of the country. This will be studied using our ringing/checking/recovery data.

Roding results

A new protocol has been proposed during spring 2019 to study the potential impact of climate change on roding phenology. A complementary roding record has been carried out by the same observer at least 15 days before the usual survey date. The French observers have done the two roding records (complementary and normal) over 170 points. Among them, 92 points had no contact during both records. Of the remaining 78 points, 35 points had a positive variation in contact between the early and normal dates, 10 points had the same number of contacts (not zero) and 33 points had a negative variation.

By performing a comparison of means using a Student test on paired data, no difference between early and normal dates was found. Additional analyses will be carried out to include additional factors such as altitude.

Acknowledgements

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

2018/2019 French Snipe Report

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I - Ringing results

Once again, the weather conditions were heterogeneous during the 2018/19 season. Summer generated significant water deficits in multiple French regions. Most banders from our French Snipes Network had difficulties to find attractive territories at the beginning of the season. Conversely, some areas located in the North, the South-west, the Loire Valley, and Brittany had good water levels, which concentrated the first migrants.

Despite this marked drought, the number of snipes captured at the start of the 2018/19 season is much higher than in the two previous ones. Unfortunately, the low precipitation and very hot autumn continued to dry up the areas favourable to waterfowl, and banders hardly found acceptable concentrations of birds to put the nets. The rains finally arrived in December. Winter remained relatively mild and did not show intense and/or continuous cold periods that could have a significant impact on snipes, except in January with two episodes of snow on the plains in northern and central France. During prenuptial migration (end of February to early May), the hydric conditions were good and, as usual, the number of captures during these months was high. The months of February to April totalized half of the total captures done during the 2018/19 season.

The French Snipes Network OFB/FNC/FDC aims to capture about 2000 snipes per year to estimate correctly the demographic parameters of interest. In 2018/19, banders captured 1996 snipes, which was very close to our objectives and was 400 to 500 more than the last two seasons. Banding data by species was 1611 Common Snipe *Gallinago gallinago* and 385 Jack Snipe *Lymnocryptes minimus*. The proportion of Jack Snipe among the total captures was stable for several seasons. Specific captures of this species using horizontal nets in the Massif Central regions had increased this rate since some years (96 captures in 2018/19).

II - Plumage collection

The number of plumages collected during the 2017/18 season was rather weak but the 2018/19 season was much better, with 7,455 samples returned (5,874 Common Snipe and 1,581 Jack Snipe). This is the second-largest dataset collected since the beginning of this monitoring for the Common Snipe (after the 2016/17 season) and the fourth for the Jack Snipe. These numbers are undoubtedly the result of good snipe densities on the hunting territories and the strong interest of the snipe hunters for this survey. For the 2013-14 season, the annual bags were estimated at between 145,501 and 210,275 for the Common Snipe and between 27,032 and 59,335 for the Jack Snipe (Aubry *et al*. 2016). These numbers suggest that the plumages collected this season could represent between 3% and 4% of the annual bag. This is not exhaustive but this sample size is relevant to evaluate the ages and sexes of the bagged individuals and to detect changes over time.

II.1 The Common Snipe

Spatial distribution of collected plumages

5,874 plumages of Common Snipe were sent by correspondents. It was nearly 1,300 more than the previous season. This number is close to the 2016/17 record (N = 6,086) and, therefore, suggests a good season for snipe hunters. As with previous reports, we have distinguished two main areas: the Channel/Atlantic coast area and the so-called inland area, which includes the Mediterranean coast.

With 950 samples, the French department Pas-de-Calais was, by far, the largest supplier of data for the Channel / Atlantic coast area (Figure 1), followed by Seine-Maritime (550) and Gironde (539 plumages). These three departments provided more than 50% of the data, which gives them a very strong weight in the results. Loire-Atlantique also supplied more than 10% of the Channel / Atlantic sample and Vendée 9.5%.

As usual, the French department Cantal was the area where most plumages were collected in the inland zone (724, that is 40% of the total collected in this zone). General statistics given in this report are therefore strongly influenced by the data provided by this department. The Loire, Haute-Loire, Lozère and Puy-de-Dôme departments are also good data providers. In total, the Massif Central region represented more than 75% of the sample from the inland zone.

Temporal distribution of collected plumage

The variation in the number of plumage collected in 2018/19 shows a classic pattern, with a quick increase in August, a peak in September, a slow decrease in October, stronger in November, and finally a stabilization in December-January (Figure 2).

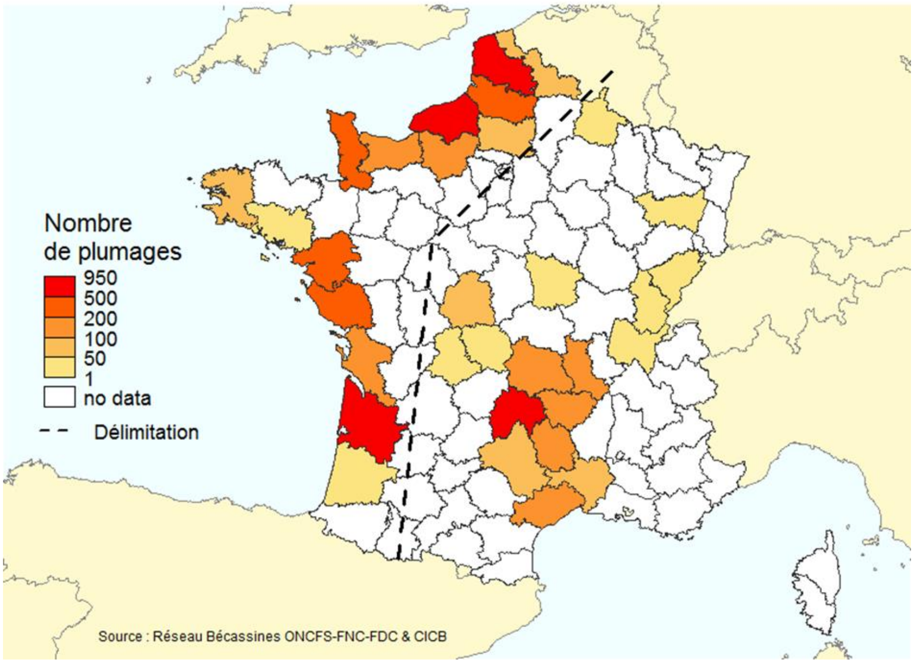

Figure 1 - Geographical distribution of Common Snipe plumages collected in 2018/19 and limit between the two sub-samples

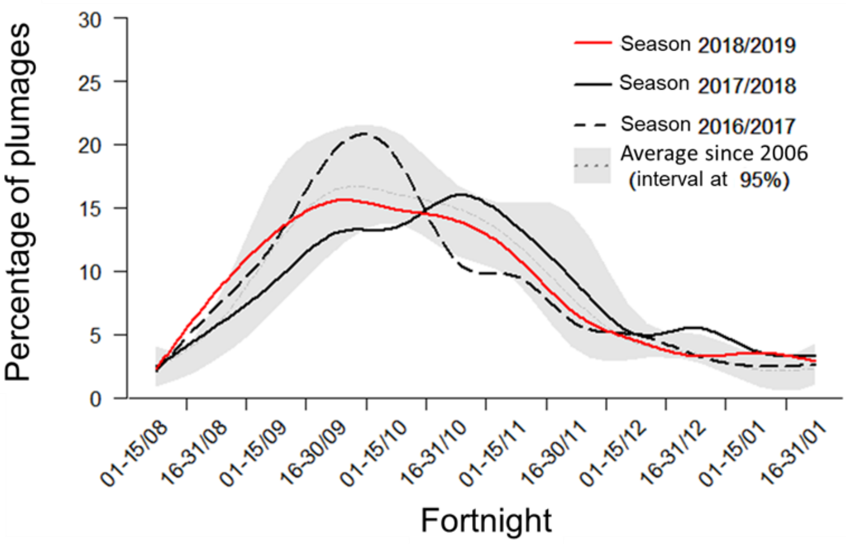

Figure 2. Intra-annual variation of the proportion of common snipe plumages collected from 2006/07 to 2018/19 and comparison with the specific patterns observed during the last three seasons.

Proportion of juveniles

The proportion of juveniles was almost 100% in August, which is expected since adults reach Western Europe later. In September, the proportion of juveniles was below the average but remained within the usual range. However, in October, when most of the adults had finally reached France, the proportion of juveniles clearly showed a deficit, with values being 10 to 15 points below the average calculated since 2006 (see Figure 3). The age of the birds sampled in October and November is particularly important to consider because it is at this period that the age-ratio stabilizes and therefore better reflects the real age structure of the population.

Two hypotheses can explain the poor proportion of juveniles: 1) the spatial distribution of juveniles compared to adults changed in 2018/2019 compared to other seasons; and 2) a decline in reproductive success in 2018 (fewer juveniles produced by adults). The proportion of juveniles decreased synchronously in the two zones considered, which does not support the first hypothesis. The most likely is, therefore, that the 2018 snipe's breeding success was low in Western Palearctic.

Proportion of males and females

The proportion of males among the plumage collected was below 50%, whatever the age class or the area considered (Table 1). This proportion was higher in the inland zone than in the coastal zone, which is not usual. This phenomenon was also observed during the 2015/16 and 2016/17 seasons, with even a predominance of males in the inland zone (almost 55%). The difference between the two areas considered is more pronounced when considering only adults.

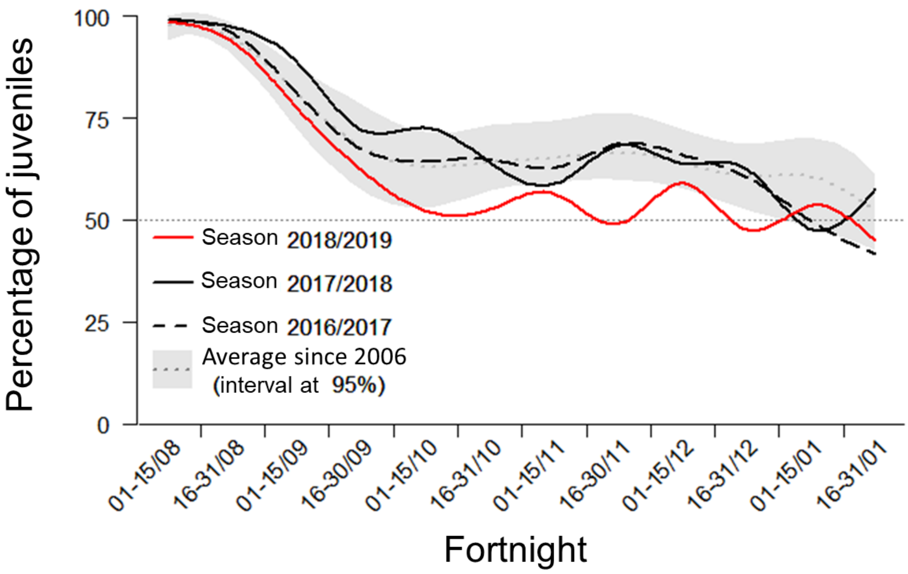

Figure 3. Intra-annual variations of the proportion of juveniles for the Common Snipe from 2006/07 to 2018/19 and comparison with specific patterns observed during the last three seasons.

Table 1. Number of male and female Common Snipe among adults & juveniles, and only adults, *and from the two areas considered*

Common Snipe	**Male**	**Female**	**% Males**
Adults and juveniles			
English Channel and Atlantic regions	1496	1913	43.9%
Inland and Mediterranean regions	727	836	46.5%
Only adults			
English Channel and Atlantic regions	489	726	40.2%
Inland and Mediterranean regions	278	303	47.8%

II.2 The Jack Snipe

The snipe hunters returned 1,581 plumages of Jack Snipe in 2018/19, which was much better than the previous season. Indeed, snipe hunters returned less than 1,000 plumages in 2017/18, a very low value in comparison with the numbers exceeding 2,000 plumages over last years. The average for the last past 10 years was about 1,320 plumages. The severe drought at the start of the season, mainly in the western and interior regions, and the absence of cold may have delayed the arrival of Jack Snipe in France.

Geographical distribution of collected plumage

As for Common Snipe, we assume that the geographic distribution of Jack Snipe migrating and/or wintering in France differs according to their geographic origin. Thus, we distinguish the same two zones for the analyses: the Channel/Atlantic coast area and the so-called inland area, which also comprises the Mediterranean coast.

The coastal zone represents 62.4% of the total plumages collected. Within this area, samples were distributed over almost the entire coastline, but their distribution was very heterogeneous. Three coastal French departments in the north of France, Pas-de-Calais, Somme and Seine-Maritime represented 45.7% of the data (224, 85 and 141 plumages respectively). With the Gironde samples along the Atlantic coast (183 plumages), these four departments totalized 64.3% of the samples from the coastal zone (Figure 4).

Concerning the inland area, samples came almost exclusively from the Massif Central, the department contributing the most being the Cantal with 244 plumages, which represented 41.2% of the samples from this area. Cantal and four other departments, Gard (n = 70), Hérault (n = 63), Lozère (n = 53) and Haute-Loire (n = 50), contributed to 81.1% of the samples from this area (Figure 4).

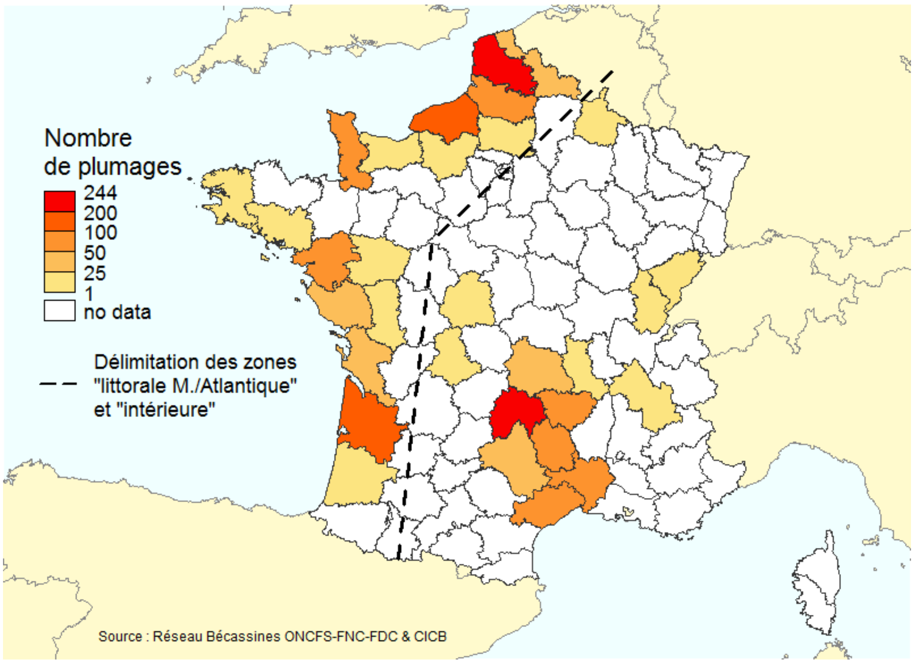

Figure 4 - Geographical distribution of Jack Snipe plumages in 2018/19 and limit between the two sub-samples.

Temporal distribution of collected plumage

In 2018/19, the arrival of Jack Snipe was a bit late in comparison with the average (Figure 5). Indeed, the peak occurred in late October / early November while it was in the average in 2017/18, and early in 2016/17. It should be related to the late arrival of birds in the inland zone, with a peak during the first half of November (Figure 5). The abundance then decreased regularly and progressively until the end of December. Snipe hunters collected very few plumages of Jack Snipe in December and January. This pattern contrasts with the classic one having relatively brutal "staircase" decrease after the peak of abundance.

Proportion of juveniles

Jack Snipe's age could be assessed based on the pattern on the outer tail feathers (Devort *et al.* 2017). Unlike Common Snipe, for which post-nuptial migration occurs differently between juveniles and adults (Figure 3), age-ratio of Jack Snipe is stable over the entire season (Figure 6). It suggests that the overall proportion of juveniles would be a reliable indicator of breeding success. The proportion of juveniles was 64.4% in 2018-2019, which was very close to the average of the last ten years (64.5%).

The proportion of juveniles slightly differed between the two studied zones: 66.3% in the coastal zone and 61.4% in the inland zone, but these values were not statistically significant. Thus, it is possible to consider the overall proportion of juveniles as an index of the breeding success. The strong variation of age-ratio at the end of the season (Figure 6) was likely due to the low number of plumages collected at this period.

Proportion of males/females

Measurements of wing lengths of Jack Snipe showed a deficit of males (Table 2). However, the proportion of males is higher than last season (39.2% versus 32%). There was a notable increase in this proportion of males on the inland zone, by 11 points for global data and by 12 points when considering only the adults.

A majority of female plumages has been collected each year since the beginning of this study. It suggests a differential distribution of sex in migration routes and/or in wintering areas. Some elements support this hypothesis. A study in northern Poland on 299 birds captured between September 2004 and March 2005 and genetically sexed, showed a proportion of 64.5% of males (Sikora and Dubiec 2007). Males are more corpulent than females and thus may overwinter in northern regions.

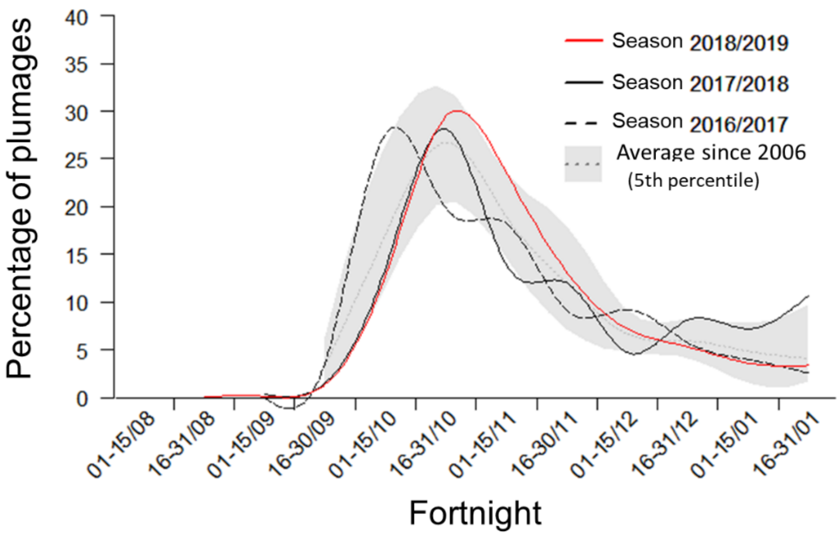

Figure 5 - Intra-annual variations of the proportion of Jack Snipe plumages collected from 2006/07 to 2018/19 and comparison with specific trends observed during the last three seasons.

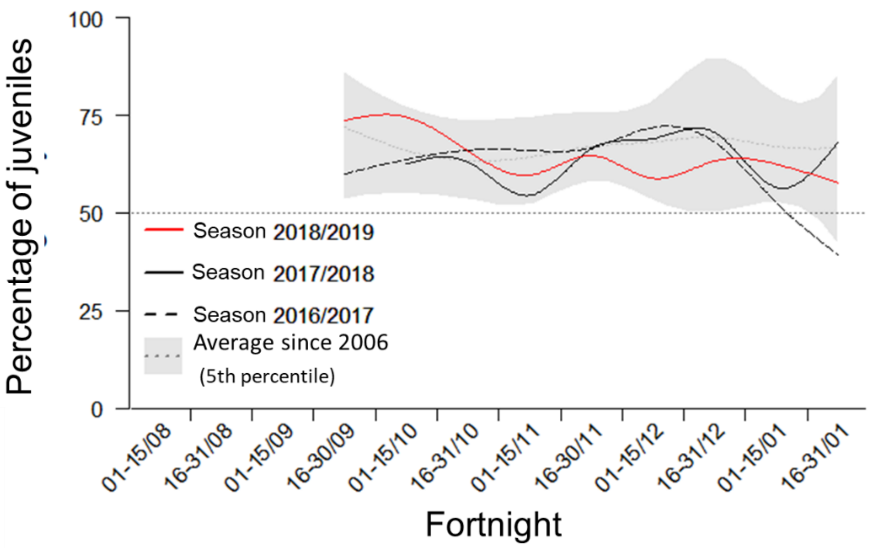

Figure 6 - Intra-annual variations of the proportion of juveniles for the Jack Snipe from 2006/07 to 2018/19 in comparison with specific patterns observed during the last three seasons.

Table 2 – Number of male and female Jack Snipe among adults & juveniles, and only adults, and from the two areas considered.

Jack Snipe	**Males**	**Females**	**% Males**
Adults and juveniles			
English Channel and Atlantic regions	268	506	34.6%
Inland and Mediterranean regions	219	248	46.9%
Only adults			
English Channel and Atlantic regions	78	182	30.0%
Inland and Mediterranean regions	76	109	41.1%

III. Conclusions

The number of snipes captured by banders and by hunters suggests that densities were good in France during the 2018/19 season. However, hydric conditions play a fundamental role in the number of snipes observed, therefore, the number of captures is not the only parameter to consider when assessing population dynamic. Details of feathers collected make it possible to estimate the proportion of juveniles and to compare these values year after year. Under certain assumptions, this parameter can be used to check whether the number of juveniles in the population (recruitment) allows or not the natural renewal of the population. Plumages collected in 2018/19 showed a very marked deficit in juveniles, which indicates a low breeding success. The application of the population dynamics model developed by Guillaume Péron (Péron *et al.* 2013) suggests that the proportion of juveniles observed is not sufficient to ensure the natural renewal of the population. These results strongly contrast with the feeling of snipe hunters and banders, who have seen many birds on their territories. These bird flocks were, in fact, composed of an unusually large number of adults. This bad year of reproduction may therefore have consequences on the population. Monitoring of breeding abundance in European Russia may give important information on the situation. In 2019, those breeders were less abundant than usual (Blokhin, this issue), which suggests a population decline. However, population's trend should not be evaluated from data of a single year. The long-term trend of increasing or decreasing population size is usually the result of a succession of good and bad breeding seasons. Considering the results obtained in previous seasons, showing positive growth rates, this result is, therefore, not worrying. However, bad breeding seasons must not be repeated or intensified as the size of the population could then be deeply impacted. Fortunately, the Common Snipe is still a very abundant species throughout Europe and Russia, but the threats to its habitats are real.

Acknowledgements
This report is the result of important fieldwork carried out by members of CICB and by the OFB/FNC Snipes Network. We thank all of them: volunteers, *Fédérations départementales des chasseurs* and professionals of OFB.

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Woodcock curiosities
White-feathered Woodcock (*Scolopax rusticola* L.) occurrences in Hungary between 1921 and 2019

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Publications about curiosities are known in the Hungarian and international ornithological literature since the 1800s. Although studies explaining the processes of pigmentation dysfunctions have been known since the mid-nineteenth century, specimens that exhibit such characteristic still appear only as curiosities in the professional press and the terminology used to specify them is generally incorrect.
In this article we provide a broad overview of partially or completely white Woodcock (n = 9) found in Hungarian literature. We have supplemented the literature background with our own studies. The large-scale analysis of colours and patterns variability was made possible by the countrywide wing sample collection within the biometric module of Woodcock Monitoring, which has been running under the coordination of the Hungarian Hunting Conservation Association since 2010. Within this framework, 13 729 samples were analysed between 2010 and 2019. We found that pigment deficiency occurred in the sample set only with a proportion of 0.01%.
Based on the Hungarian literature and our own samples, we present the known occurrences on maps of the state territory, indicating the causes of patterns of occurrence by migration and frequencies of occurrence.

Albinism and leucism

In the Hungarian and international ornithological and hunting literature there are often reports of birds with different pigment deficiencies mentioned as "***albino***" (Anonymus 1864, Anonimus 1906, Bodnár 1908, Donászy 1907, Fridli 1921, Iváncsics 2002, Szakáll 1921, Szabó, 2013; Anonymus, 2018a), or "***partial albino***" (Karakosevic 1927, Márok 2004, Ogilvie 2001, Anonymus 2015, Rollin 1964, Buckley 1982). This terminology is incorrect.
Fox and Vevers (1960) defined albinism as the complete absence of both melanins (eumelanin and phaeomelanin) not only in the feathers, but also in the iris and the skin, due to a congenital tyrosinase deficiency, which is why not only the plumage (white), but also the feet, claws and eyes are pigment-free. Real albino individuals are very rare in wild birds because of the stereo blindness of their pigment-free eyes (van Grouw 2006). Until now, no real albino woodcock specimen was reported. In the specimens with white feathers mentioned in the literature, the eyes, skin and unfeathered horny formations were always pigmented. Therefore, these partially pigment-deficient individuals are not albinos in the correct terminology, but leucistic mutations, which means white, with some pigmentation in some places. The common terminology for these "white-varicoloured" birds is "partial albinism", which is by definition not interpretable. Individuals lacking colour to varying degrees are not partial albinos, but so-called leucistic birds (Anonymus 2018b). Leucism is characterized by the presence of the tyrosinase enzyme, so that these birds produce melanin, and the colouring deficiency occurs only in feathers. The developing plumage is partially or completely white, but the eyes are always dark and the beak, legs and claws are also pigmented (van Grouw 2006).
Process of pigmentation may be disturbed due to dysfunctions in genetic and physiological

processes. Any disturbance in the formation of melanin or other pigments, as well as in the transport and incorporation of pigment granules, can potentially affect the bird's colour. According to international and Hungarian literature, a lack of pigmentation in most bird species, including Woodcock, usually affects the wings, especially the flight feathers (Figure 1; László *et al.* 2013, Bende & László 2017a,b, 2018a,b, 2019).

Any part of the body can develop this deficiency, which often shows bilateral symmetry. The reason for this is due to the early stages of embryonic development, because most often affected by leucism is the plumage of body parts furthermost of the vertebral canal. These processes can lead to lower or fully missing pigmentation in some feathers.

Leucistic Woodcock records in Hungary

Occurrences of white specimens within the recent borders of the country were reported in Transdanubia (Zala, Győr-Moson-Sopron, Veszprém Counties), in Danube-Tisza region (Pest, Bács-Kiskun Counties), and in the region of Northern Hungary (Szabolcs-Szatmár-Bereg County). In the counties of Tiszántúl region, there are data known only from Csongrád County because of the low forest cover and, consequently, the small hunting bag.

There are some records on partly white-feathered Woodcock specimen without exact location data. On March 1921, a "multi-coloured Woodcock" was shot, which had two white flight feathers on both wings, two white coverts on the left and under pigmented alula on the right (Szakáll 1921). In the same report, Szakáll mentions another unpublished white Woodcock. On April 8, 1921, a forester Ernő Fridli, informs in the journal Hunting about an "albino Woodcock" with pigment deficiency in the first three flight feathers and the alula of the left wing and in the first flight feather of the right wing. The bird was shot by Count József Majláth near Révleányvár (Fridli 1921).

After the First World War, news of unique coloured woodcocks became rare in professional journals, except for a few, but interesting records. Karakosevic shot a unique specimen on the courtship flight on March 13, 1927. The wingtip and the alulae on both sides were snow-white (Karakosevic 1927).

After the Second World War, news of unique coloured Woodcock are hardly known. The frequency of colour deficiencies may not have decreased, but the reason why publication of appearance of these birds was no longer considered important is unknown.

Figure 1: Wing pattern of a woodcock with white first primary (photo by BENDE ATTILA).

After 1943, the next record is from 1994. That year, on March 19, Miklós Janisch, a zoologist, shot an abnormally coloured woodcock near Tiszakerecseny (Szabolcs-Szatmár-Bereg County), which had two white primaries and white alulae on both wings (Szakács 1994).

On March 20, 2002, Gyula Radics shot a woodcock with white primaries in Csöde, Zala County, the partial pigment lack extended also to primary coverts (Iváncsics 2002).

On March 2004, a very similar specimen was shot near Himod during the morning flight (Győr-Moson-Sopron County), with two snow-white primaries and alulae on both wings (Márok 2004).

Among the 13 729 wing samples that we have received at our institute, as part of Woodcock Bag Monitoring, only four partially pigment-deficient curiosities occurred. Two specimens were recorded with a single pigment deficient feather: one of the secondary coverts had a white tip and a patternless vane, one in 2010 from Bács-Kiskun County (László *et al.* 2013, Bende & László 2017a,b, 2018a,b), and the other in 2019 from Csongrád County. Among the samples collected in 2012 from Pest County there was a specimen with white primaries (László *et al.* 2013); another prepared wing from 2019 had only one partially white coloured feather.

In spring 2018, a white Woodcock was shot as part of the sampling monitoring. This ornithological rarity is almost completely pigment-free (Figures 2 and 3). Pigmented spots were only found on the back, on the tail feathers and partly on their coverts.

Figure 2: White Woodcock with partly pigmented and patternless plumage, shot in Hungary (Veszprém County) in 2018 (photo by BENDE ATTILA).

Figure 3: Pattern lack on the wing- and tail feathers (photo by: BENDE ATTILA).

This immature white woodcock was shot on March 26, 2018, by Zsolt Marton near Noszlop (Veszprém County) on a reedy, bushy terrain close to an alder forest. According to the hunter, the bird was flying late, lonely at the end of the courtship flight.

Summary

The existing literature on the colour- and pattern variability of Woodcock is scarce in both national and international contexts, which was expected, as birds of extraordinary colour are rare among individuals of this species.

The most common colour deficiency, as in other wild bird species, is the pigment deficient mutation, which results in white plumage. If birds that exhibit white-varicoloured plumage are commonly mentioned as "albino", "partial albino" or "showing notes of albinism", partially pigment-deficient individuals are, in fact, leucistic birds.

Findings regarding the Ino mutation (strong qualitative reduction of both melanins; van Grouw 2006) in Woodcock have been published in French literature, but, to date, no reliable occurrence of this mutation is known.

The size of the hunting bag is not negligible in terms of curiosity occurrence. An overview of the Hungarian statistics on Woodcock hunting bag data, available from 1875 to the present, shows that it makes less than 0.1% of the total bag in Europe. In light of this small amount of data, the occurrence of a single leucistic Woodcock provides extremely valuable information. The occurrences of these rare birds are concentrated in areas of considerable hunting bags (Figure 4), linked to the three major migratory pathways of the species, considering both royal and present-day Hungary.

Over the past 150 years, hunting of about twenty pigment-deficient Woodcock has been published by dedicated hunters of the species.

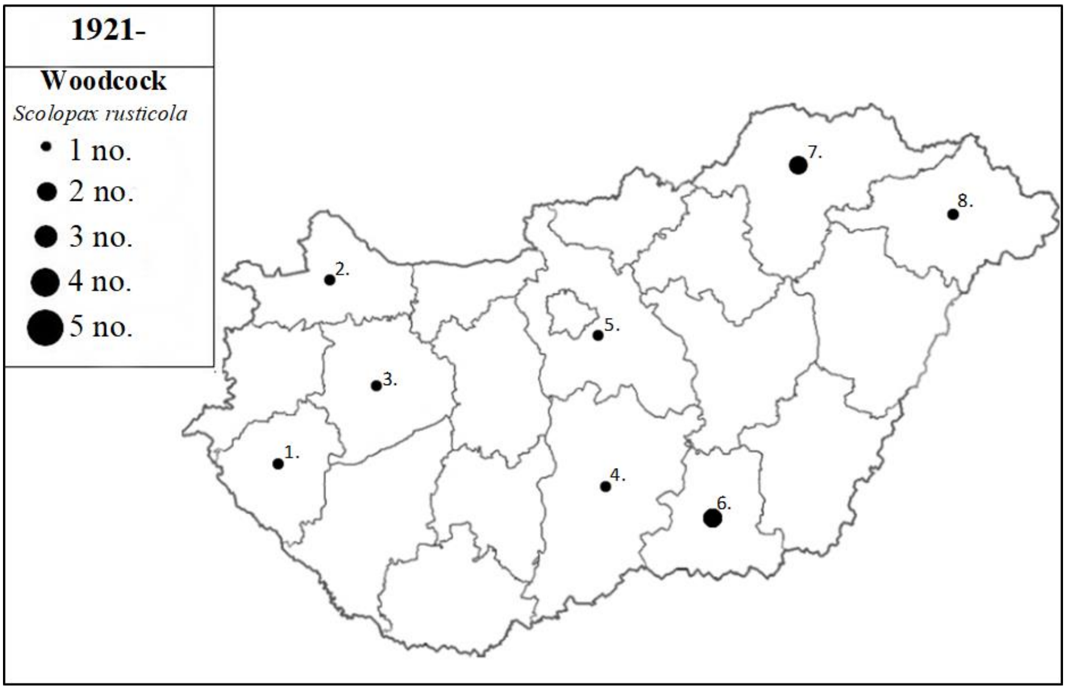

*Figure 4.: Literature records of unique white coloured Woodcock specimens between 1921 and 2019 in Hungary. **1. Zala County:** 2002 – Csöde (Iváncsics 2002); **2. Győr-Moson-Sopron County:** 2004 – Himod (Márok 2004); **3. Veszprém County:** 2018 – Noszlop; **4. Bács-Kiskun County:** 2010 - Exact location unknown. (László et al. 2013, Bende & László 2017b); **5. Pest County:** 2012 - Exact location unknown (László et al. 2013); **6. Csongrád County:** 2019 – Two specimens with unknown location; **7. Borsod-Abaúj-Zemplén County:** Heves–Borsodi-Hills (Szakáll 1921), Révleányvár (Fridli 1921); **8. Szabolcs-Szatmár-Bereg County:** 1994 – Tiszakerecseny (Szakács 1994).*

Our examination of wing samples confirms the rarity of pigment-deficient specimens, with only four leucistic individuals (out of a total of 13,729 samples), which represents only 0.03% of the Hungarian hunting bag.

Even in French or Italian hunting bags, which are much larger than our local sampling, leucistic specimens are very rare. The occurrence of almost entirely white individuals is a really rare event.

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Snipe Conservation Alliance, Ireland

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The Snipe Conservation Alliance (SCA) was launched in January 2018 at the Shamrock Lodge Hotel in Athlone, Co. Westmeath, Ireland. The SCA is primarily the initiative of the hunting groups in Ireland and specifically the falconry and field trialling community. Snipe breed in every county in Ireland although in relatively small and declining numbers. Come winter, there is a large influx of both common and jack snipe that become widely dispersed throughout the country. The greatest threat to our native and wintering snipe in Ireland is through loss of habitat.

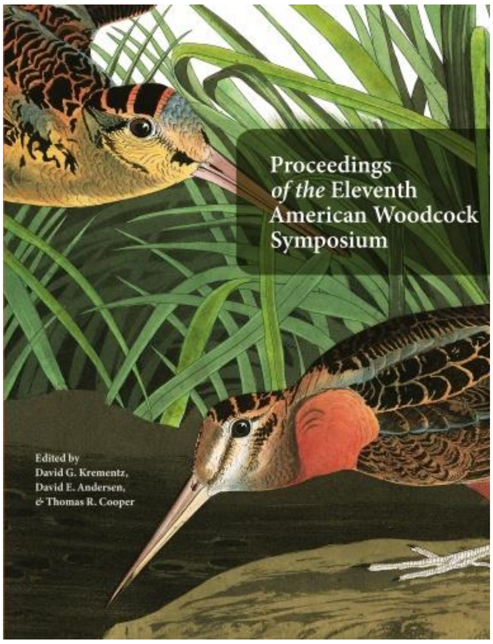
The Snipe Conservation Alliance are a network of enthusiasts (both scientists and non-scientists) interested in the conservation of the Common and Jack Snipe. The aim of the group is to provide a resource to help understand the ecology and to share that information with other like-minded groups to ultimately ensure its conservation. As it becomes established, it is intended that the SCA will offer support to any group or person wishing to become actively involved in the welfare, improvement and maintenance of snipe habitat. It will be a partnership process and the objectives can only be achieved through active engagement with government departments, local communities and landowners who wish to see snipe remain on our bogs and moors on both uplands and lowlands for future generations.

To date, the SCA have initiated breeding censuses over the 2018 and 2019 seasons. Unfortunately, returns have been poor by volunteers to assess any meaningful information but we intend to persevere and hopefully over time a more significant trend will occur. We are also inspired by the snipe satellite tagging project that occurred in France by the Office National de la Chasse et de la Faune Sauvage (ONCFS) and Club International des Chasseurs de Bécassines poor to inform the knowledge on the breeding origin and the migration characteristics of snipe wintering in France. We are investigating the possibility to use this technology to monitor the wintering ecology of snipe on their arrival in Ireland until their departure. We hope this information will inform the ideal habitat requirement that used by snipe during their stay in varying weather conditions.

The SCA are delighted to be a member of the WSSG to learn from various like-minded organisations throughout the world and we will endeavour to keep the WSSG informed of all our future projects and findings.

SNIPE CONSERVATION
ALLIANCE

Recent Woodcock and Snipe publications



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