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AUTUMN MIGRATION OF THE WOOD SANDPIPER (*TRINGA GLAREOLA*) IN THE SOUTHERN BELARUS (PRIPYAT FLOODPLAIN)

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Осенняя миграция фифи (*Tringa glareola*) на юге Беларуси (пойма р.Припять). Пинчук П.В. Институт зоологии НАН Беларуси (Минск, Беларусь).

В статье представлен предварительный анализ осенней миграции фифи в пойме р.Припять на юге Беларуси в 1998-2001 гг. В 1998-2000 гг. проведено 103 маршрутных учета и учтено 1653 птицы в р-не с.Туров. На осеннем пролете в 1999-2001 гг. отловлено 125 молодых и 14 взрослых птиц. В наиболее полном объеме учеты были проведены в 2000 г.

Динамика осеннего пролета фифи в 2000 г. характеризуется наличием четырех миграционных пиков: первый - в конце июля, второй - в конце июля, третий - в середине августа и четвертый - в начале сентября. Первый пик вызван пролетом взрослых птиц, второй - совместным пролетом взрослых и молодых, что подтверждается результатами отловов. Третий и четвертый пики вызваны, возможно, пролетом молодых птиц из различных популяций. Значительная разница в количестве отловленных взрослых и молодых птиц (взрослые птицы составляют 11% от общего количества) не позволяет сравнивать морфометрические показатели двух возрастных групп, поэтому они приведены для морфометрических данных молодых птиц. Распределение всех показателей (кроме веса тела) нормальное. Не найдено статистически достоверных отличий в размерах и массе тела молодых птиц, отловленных на юге Беларуси в сравнении с данными, полученными в соседних странах (Украина, Польша). Получен один иностранный возврат - птица, окольцованная нами 8.08.2000 была отловлена 20.07.2001 г. в Литве.

The Wood Sandpiper (*Tringa glareola*) is a long-distance migrant. Its breeding range extends throughout the Palearctic, from Fenno-Scandia to Siberia. The

main winter quarters are located in tropical and subtropical Africa, across southern Asia to southern China, Philippines, and Indonesia, and in Australia (Cramp et al. 1982). It migrates in a broad front (Alerstam, 1990) and uses various places as stopover sites to rest on route (including river-beds and shores of fishponds, lakes and other water bodies).

At the territory of Belarus Wood Sandpiper migrates mainly along river valleys. In the south of Belarus this species is most numerous during migration among species from genus *Tringa* (Pinchuk, Mongin, 1999).

The present study analyses the dynamics of migration and biometry of Wood Sandpiper observed and captured during 1998-2001 autumn passages along the Pripyat river.

Study area

The studies on the Wood Sandpiper migration were conducted in the floodplain meadows of the Pripyat river in the vicinity of Turov village (Gomel Region, 52.05 N 27.45 E). This place is a very important feeding area for waders on migration.

The research area is a small island, about 1 km². The area was used as a pasture throughout the growing season. Large oscillations of water level in the Pripyat river in different years and seasons are characteristic features of the study area. As a result large muddy areas appear and disappear in the floodplain (Pinchuk, Mongin, 1999).

Material and methods

The material was collected by two methods - regular counts during autumn migration and catching. Counts at the standard routes were carried out in 1998-2000 from the middle of June till the first half of October. Counts were made once or more during a pentade, according to the standard pentad scheme accepted after Busse (2000). All the feeding and migrating birds seen along the 1.5 km (200 m wide) transect were recorded. In total, 103 counts were conducted and 1 653 Wood Sandpipers were counted. The terms and frequency of counts are presented in Tables 1 and 2.

Catches of waders were started in autumn 1999. Waders were trapped in "walk-in" traps which were controlled every three hours from dawn to dusk. In 1999, 10 traps were used, in 2000 - 9 and in 2001 - 4. Depending on the water level, the traps were moved if necessary. The terms of catching and numbers of caught birds per years are presented in Table 1.

All captured birds were ringed, weighed and measured, and their moult and plumage were described. Waders were weighed with an electronic balance to the nearest 0.1 gram. Some morphological measurements were also taken: the total head length (Green, 1980), bill length to feathering (Prater et al. 1977), bill length to nostril - the distance from the tip of bill to the edge of nostrils (Prater et al. 1977), tarsus length - method with bending toe back (Svensson, 1992), length of wing - maximum chord method (Evans, 1986). Wing length was measured with stopped



rule (accuracy of 0.5 mm), the rest of measurements have been taken with the use of callipers (accuracy of 0.1 mm). Retrapped birds were only weighed.

Table 1. Terms of wader studies and numbers of counted and caught Wood Sandpipers in the Pripyat floodplain during autumn migration 1998-2001.

Таблица 1. Сроки работ и количество учтенных и отловленных фифи на осеннем пролете 1998-2001 гг. в пойме р.Припять.

Year Год	Terms of counts Сроки учетов	Numbers of counted birds Кол-во учтенных птиц	Terms of catching Сроки отловов	Numbers of caught birds Кол-во отловленных птиц
1998	30.07 – 14.10	877	No catching Нет отловов	-
1999	23.06 – 2.10	477	28.08 – 2.10	16
2000	27.06 – 9.10	299	10.07 – 25.09	101
2001	No counts Нет учетов	-	21.07 – 15.09	22

Table 2. Frequency of counts of migrating Wood Sandpipers.

Таблица 2. Частота учетов мигрирующих фифи.

Year Год	Number of counts by pentads Количество учетов в пентаде																						
	June Июнь			July Июль			August Август			September Сентябрь			October Октябрь										
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
1998	-	-	-	-	-	-	-	-	4	4	-	2	4	2	1	3	3	2	2	2	1	2	1
1999	2	-	1	-	1	-	-	-	2	1	4	2	2	4	1	1	2	5	1	3	1	-	-
2000	-	2	1	-	1	2	2	-	1	2	2	5	2	2	3	1	1	1	3	3	1	1	1

Note: 35-57 - pentad numbers (Busse, 2000).

Примечание: 35-54 - порядковые номера пентад (Busse, 2000).

Two age classes were distinguished among caught birds: hatched in the year of ringing (juvenile) and those two or more years old (adult). The age of the captured birds was defined on the basis of plumage (Prater et al. 1977).

In total, 14 adult and 125 juvenile Wood Sandpipers were caught.

For the purposes of analysis, all data were grouped in standard 5-days periods (pentads). Fitting the normal distribution was checked using the Kolmogorov-Smirnov test.

Results

Migration dynamics

The autumn migration of Wood Sandpiper in Southern Belarus started in the second half of June (first record - 23 June 1999, 16 birds; 27 June 2000, 1 bird), the last migrating birds were recorded in early October (last record - 7 October 1998, 1 bird; 2 October 1999, 1 bird).

The analysis of the passage dynamics allowed to identify different patterns of passage dynamics during each study year (Fig. 1, 2, 3).

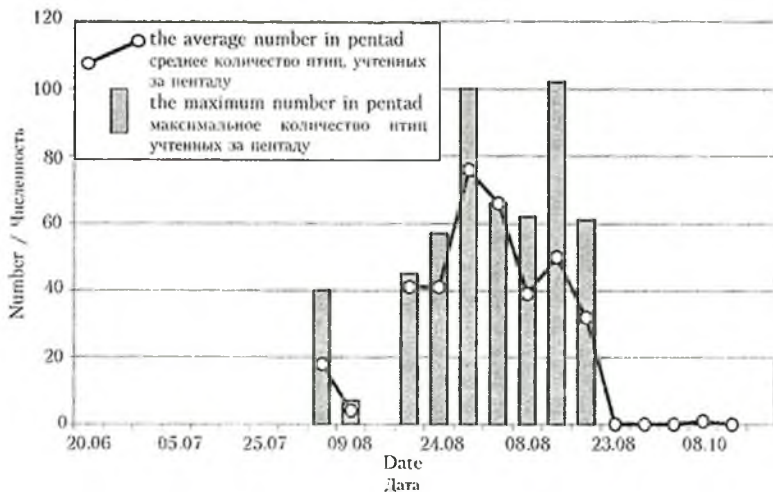


Fig. 1. Migration dynamics of Wood Sandpiper during autumn 1998.

Рис. 1. Динамика миграции фифи осенью 1998 г.

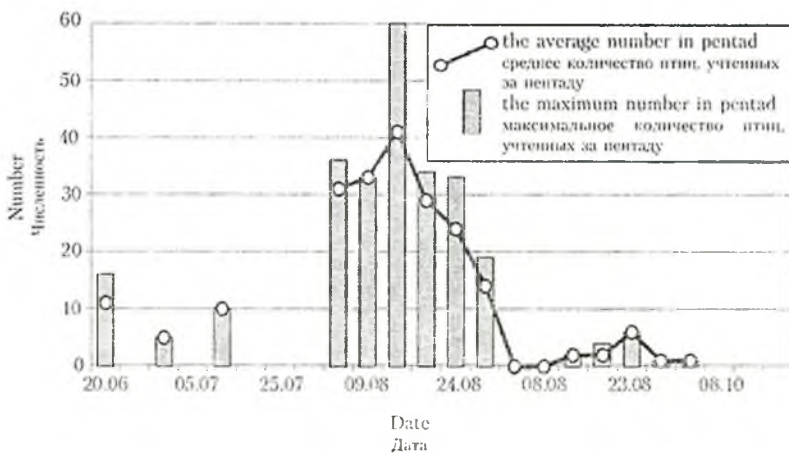


Fig. 2. Migration dynamics of Wood Sandpiper during autumn 1999.

Рис. 2. Динамика миграции фифи осенью 1999 г.

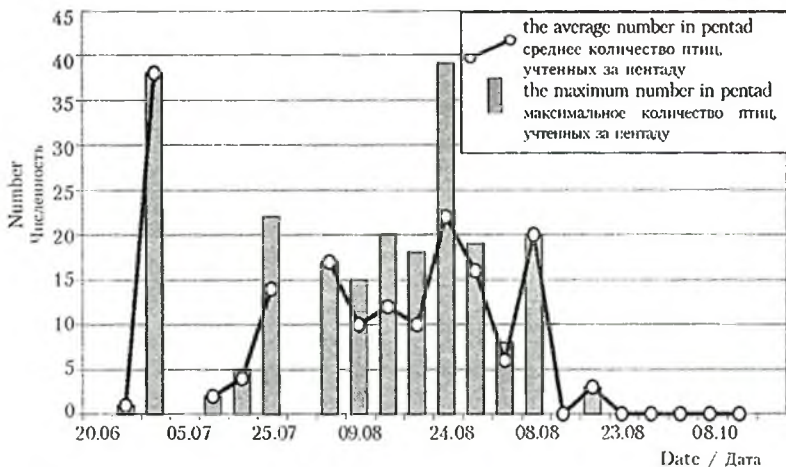


Fig. 3. Migration dynamics of Wood Sandpiper during autumn 2000.

Рис. 3. Динамика миграции фифи осенью 2000 г.

Autumn migration 1998 and 1999 is characterised by the presence of one peak of the passage. In 1998 it was recorded in the second half of August - beginning of September, in 1999 - in the beginning of August. However, because of the late beginning of regular counts during these years we cannot speak about a complete picture of Wood Sandpiper autumn migration in that period. The most full data on the autumn migration were obtained in 2000. Dynamics of passage in this year is characterised by two migration peaks: first - in the end of June, second - from the end of July to the beginning of September. We suggest the first peak caused by passage of adult birds. In the beginning of the second migration peak adult and juvenile birds migrate and from mid-August migrate only young birds. It is confirmed also by catching data (Fig. 4): from 20 till 25 July 7 adult and 5 young birds were caught, whereas for all consequent catching period only one adult bird was caught.

The maximum numbers of Wood Sandpiper observed during autumn migration in a count reach 102 ind. (12 September 1998) and 100 ind. (24.08.1998).

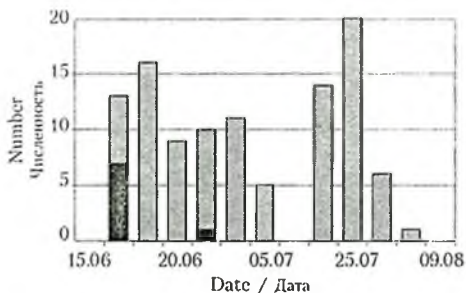


Fig. 4. Dynamics of catching adult (dark bars) and juvenile (light bars) Wood Sandpipers during July-August 2000.

Рис. 4. Динамика отловов взрослых (темные столбцы) и молодых (светлые столбцы) фифи в июле-августе 2000 г.



Biometrics

The basic biometrics data are summarised in Table 3. Considerable difference in numbers of captured adults and juveniles (11% adults out off the total number of captured birds) cannot permit to compare morphometric parameters of these two age groups.

Table 3. *Biometry of the Wood Sandpiper trapped in the Pripyat floodplain.*

Таблица 3. *Биометрические показатели фифи, отловленных в пойме р.Припять.*

Measurements Показатели	Adults / Взрослые				Juveniles / Молодые			
	N	Mean Среднее	Range Лимиты	SD	N	Mean Среднее	Range Лимиты	SD
Wing length (mm) Длина крыла (мм)	13	128.5	125.0-132.0	2.5	109	127.3	120.0-138.5	3.2
Tarsus length (mm) Длина цевки (мм)	14	37.9	35.0-41.7	1.8	125	37.4	32.1-41.3	1.7
Bill to nostril (mm) Длина клюва до ноздри (мм)	14	22.4	20.2-24.5	1.2	125	22.2	19.3-24.6	1.1
Bill to feathering (mm) Длина клюва до оперения (мм)	14	28.9	26.2-31.1	1.5	109	27.8	24.6-31.3	1.3
Total head length (mm) Длина головы (мм)	14	56.3	53.3-58.1	1.5	109	55.6	51.5-59.9	1.6
Body mass (g) Масса (г)	14	66.1	54.1-91.0	12.3	127	60.7	44.0-86.2	9.1

Table 4. *Correlation coefficients (r) between some analysed biometric parameters in the young Wood Sandpipers.*

Таблица 4. *Коэффициент корреляции (r) между некоторыми биометрическими показателями у молодых фифи.*

Length Длина	Length / Длина				Body mass Масса птицы
	Head Головы	Bill to nostril Клюва до ноздри	Bill to feathering Клюва до оперения	Tarsus Цевки	
Wing Крыла	0.38	0.28	0.29	0.42	0.17
Head Головы		0.84	0.82	0.55	0.16
Bill to nostril Клюва до ноздри			0.86	0.34	0.19
Bill to feathering Клюва до оперения				0.44	0.23
Tarsus Цевки					0.02

All morphometric parameters (except body mass) in young birds fit the normal distribution (wing length $K-Sd=0.07$, $p>0.2$, head length $K-Sd=0.06$, $p>0.2$, bill length to nostrils $K-Sd=0.06$, $p>0.2$, bill length to feathering $K-Sd=0.07$, $p>0.2$, length of tarsus $K-Sd=0.04$, $p>0.2$). The distribution of body mass was not normal ($K-Sd=0.17$, $p<0.01$).

Wing length positively correlated (statistically significant) with all the remaining parameters except body mass. Also wing length, head length, bill length to nostrils, bill length to feathering and tarsus length correlated on a statistically significant level

(Table 4). The highest r value of mean head length was noted for the correlation with bill length to nostrils and bill length to feathering, which are naturally the elements



of the so-called "total head length". Body mass positively correlated only with bill length to feathering and lowest r value was obtained for the correlation between body mass and length of tarsus.

Only one Wood Sandpiper was caught more than once. The term of its stay at the roost was 13 days. For this period the bird was recaptured 3 times. The body mass of this bird changed from 55 g (27 July) to 61.1 g (1 August), 66.4 g (7 August) and 61 g (8 August).

Recoveries

Only one foreign recovery was received from Lithuania. An adult bird ringed 8 August 2000 was controlled (trapped) 20 July 2001 in Zemaitiskes Pievos, Svencionys (55.16 N 26.07 E). In Belarus Bird Ringing Centre there are two recoveries from Wood Sandpipers ringed in Sweden. The bird ringed 2 August 1967 in Sundsvall, Alno, Stornaset (62. 28 N 17. 29 E) was shot 22 August 1967 near Cherven, Minsk Region (53. 44 N 28. 28 E). Thus the distance of 1162 km was overcome during 20 days. The bird ringed 2 August 1969 in Norrbyas, Kvismaren (59. 11 N 15.24E) was found in the middle of July 1970 in Brest Region (52. 08 N 23. 40 E).

Discussion

The results of the study showed significant differences in the numbers of migrating Wood Sandpipers within different years (Table 1). The reason of it is not clear. One of the possible reasons should be the various water levels during migration period per study years. But very low numbers of counted birds during autumn 2000 may be caused by unfavourable conditions at the breeding grounds.

Table 5. Mean values of measurements of young Wood Sandpipers caught in Turou compared with the measurement of birds caught in neighbouring countries.

Табл. 5. Сравнение средних значений биометрических показателей молодых фифи с аналогичными показателями птиц, отловленных в соседних странах.

Measurements Показатели	S.Belarus Южная Беларусь	W.Ukraine* Западная Украина*	N.Poland** Северная Польша**	W.Poland*** Западная Польша***
Wing length Длина крыла	127.3	128.6	128.4	129.3
Total head length Длина головы	55.6	55.7	55.1	55.0
Bill to nostril Длина клюва до ноздри	22.2	-	22.2	-
Bill to feathering Длина клюва до оперения	27.8	28.0	28.0	27.8
Tarsus length Длина цевки	37.4	37.6	-	37.9
Body mass Масса птицы	60.7	64.7	59.8	59.2

Notes: Szydlowski, Lysaczuk, 1998; ** - Meissner 1997; *** - Mitrus et al. 1998.

Примечание: * - Шидловский, Лысачук, 1998; ** - Meissner, 1997; *** - Mitrus et al., 1998.



Comparing the dynamics of migration through the Pripyat valley with other parts of Eastern Europe it was found that the terms of the autumn migration in Southern Belarus are similar to terms of Wood Sandpiper migration in Western Ukraine (Szydlowski, Lysaczuk, 1998) and in Estonia (Elts, 1998). According to the data from Eastern Poland - the Bug valley (Mitrus et al. 1998) and Northern Poland - Gulf of Gdansk (Meissner, 1997) terms and peaks of migrations were about 5-10 days earlier than in Southern Belarus.

Resulting mean values of the measurements and body mass of juvenile birds caught in Southern Belarus are practically the same as in young Wood Sandpipers caught in Western Ukraine (Szydlowski, Lysaczuk, 1998), Northern Poland (Meissner, 1997) and Eastern Poland (Mitrus et al. 1998) (Table 5).

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