

## RESULTS OF FIELDWORK OF WADER RESEARCH STATIONS WORKING IN POLAND IN 2004-2005

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### DESCRIPTION OF RINGING STATIONS

In 2004-2005 five wader research stations operated in Poland. All of them worked in the autumn season, but only two (Kwiecewo and Turawa) operated during the period of spring migration. Their locations are shown in Figure 1. Some characteristics of each station was provided in earlier papers (Bargiel and Włodarczyk 1998, Ściborski *et al.* 2005, Wojciechowski and Hebda 2005).

#### **Kwiecewo (KW)**

Studies were conducted in spring in periods: 24 April – 11 May 2004 and 27 April – 16 May 2005 and during autumn migration in the period 26 June – 15 August 2004. The ringing site was located in the vicinity of village Kwiecewo (53°56'N, 20°19'E, ca 20 km from Olsztyn, NE Poland), on the bank of a small and shallow water reservoir (about 60 ha), which aroused after flooding of meadows among arable fields. Sides of this lake were partly covered by reed- and rush-beds, and at its edge there were wet meadows attractive for waders. Waders were caught in 10-15 walk-in traps and 3-6 mist-nets (occasionally with tape luring) placed along



Fig. 1. Location of Polish wader research stations operating in 2004-2005: LI – Lisewo, KW – Kwieciewo, JE – Jeziorsko, PA – Pawlowice, TU – Turawa

the banks. The main aim of these studies was trapping of Wood Sandpipers (*Tringa glareola*) to study sex differences in their migration strategy. Hence, this species was the most numerous among ringed waders. Daily counts of waders were conducted along the shores of the lake.

#### Lisewo (LI)

In 2004 and 2005 studies were carried out during the season of autumn migration of waders – in the period from 1 July to 13 September. Ringing station was located at the eastern bank of the lower Vistula near village Lisewo (54°06'N, 18°50'E, near the town of Tczew, N Poland), on a grazed pasture. Waders were trapped in 21 walk-in traps placed along the sandy river bank. During the period of low water level birds were also caught on temporally emerging sandy islets. During very high water level, when meadows were partly flooded, walk-in traps were placed on the meadow. Usually three mist-nets for night catching were put irregularly on the sandy islets or on the meadows. Tape lures with voices of selected wader species were used to attract birds into the nets. Daily counts of waders were made along a 1.5 km long section of the river bank. Fieldworks at Lisewo were focused on studies of migration strategy realized by the Common Sandpiper (*Actitis hypoleucos*) and the ecology of the Pied Wagtail (*Motacilla alba*) and the Yellow Wagtail (*M. flava*) in the post-breeding period.

### Pawłowice (PA)

The ringing station was located on the eastern bank of the middle Vistula near village Pawłowice (51°36'N, 21°38'E, near Dęblin, central Poland). In 2004 field studies were carried out between 1 July and 28 August and consisted of regular (three times a day) counts of waders along a 2.5 km section of the river bank. Waders were trapped, but only in periods 26-30 July and 18-23 August with 4 walk-in traps. In 2005 field studies took place between 3 July and 31 August. Waders were caught with 15-19 walk-in traps and 3-7 mist-nets (with tape-luring at nights), placed on sandy banks and islets. Birds were also counted according to the scheme applied in the previous year. The main aims of the fieldwork at Pawłowice were: gathering data on migration dynamics of the most numerous waders, and collecting biometric data on the Wood Sandpiper and the Common Sandpiper, which were the key species in two projects concerning migration strategies of waders migrating through the Polish inland.

### Jeziorsko (JE)

Data were collected at the ringing site situated by the Jeziorsko reservoir (54°39'N, 19°40'E, near village Glinno, central Poland). During field studies 22 walk-in traps were used. Birds were caught in periods: 4 July – 23 September 2004 and 26 June – 23 September 2005. The number of ringed birds at this place depends very strongly on two factors: the water level in the reservoir and expanding natural succession of willow within the reservoir. Increasing area covered with new willow thickets, up to 1 m high, shortened the period of effective catching of waders. Wader ringing was not possible until the edge of water left the line of willows on the shore. On the other hand, willow succession allowed to ring significant numbers of rails and crakes which prefer such habitat.

Year 2004 was typical for the water regime in the reservoir. Jeziorsko was emptied from the end of June onwards. Muddy areas suitable for waders appeared in the middle of July. Year 2005 was unusual. Water level was not changed till beginning of August due to some bridge constructions below the reservoir. First open areas appeared after 15 August. This affected strongly the number of ringed waders, mainly of Wood Sandpipers, as all adult birds and the main part of juveniles had already finished its autumn migration through the reservoir. In both seasons the Wood Sandpiper and the Common Snipe (*Gallinago gallinago*), were the most numerous ringed species. Also high numbers of birds from *Calidris* genus were caught in both years, what did not occur in the former seasons.

In Jeziorsko during years 2004-2005 special attention was paid to the Common Snipe. For this species some additional data were collected: age and sex differences in plumage coloration, intra-specific diversity of plumage pattern within underwing coverts and description of postnuptial and postbreeding moult. Moreover, in year 2005 blood samples from adult birds were collected in order to sex birds using molecular methods.

### Turawa (TU)

Field studies at the Turawa reservoir (50°27'N, 18°11'E, near Ozimek, SW Poland) were conducted in 2004 between 28 June and 28 August and in 2005 between 24 April and 5 May. Waders were caught in the eastern part of the reservoir using 40 walk-in traps (Wojciechowski and Hebda 2005).

### RESULTS OF RINGING AT ALL STATIONS

In both years the most numerous species ringed in all Polish stations were: Wood Sandpiper, Common Snipe, Common Sandpiper, Ruff (*Philomachus pugnax*) and Dunlin (*Calidris alpina*) (Table 1 and 2). Similar species composition of dominants were obtained in 2002-2003 (Ściborski *et al.* 2005). However, the proportions

Table 1  
Number of waders ringed in Poland in 2004 at five wader ringing stations.  
Stations abbreviations as in the text and in Figure 1.

	Spring	Autumn					Total
	KW	KW	LI	PA	JE	TU	
<i>Actitis hypoleucos</i>		4	150	11	35	99	<b>299</b>
<i>Arenaria interpres</i>			2		2	1	<b>5</b>
<i>Calidris alba</i>			5				<b>5</b>
<i>Calidris alpina</i>		3	126		32	9	<b>170</b>
<i>Calidris canutus</i>			3				<b>3</b>
<i>Calidris ferruginea</i>		1	65	1	2	2	<b>71</b>
<i>Calidris minuta</i>			30		51	2	<b>83</b>
<i>Calidris temminckii</i>			37	2	4	18	<b>61</b>
<i>Charadrius dubius</i>			59	4	11	83	<b>157</b>
<i>Charadrius hiaticula</i>		1	49	1	12	4	<b>67</b>
<i>Gallinago gallinago</i>		85	172	3	654	606	<b>1520</b>
<i>Haematopus ostralegus</i>			2				<b>2</b>
<i>Limicola falcinellus</i>			4			1	<b>5</b>
<i>Limosa lapponica</i>			1				<b>1</b>
<i>Numenius arquata</i>		3	36		1		<b>40</b>
<i>Philomachus pugnax</i>		15	103		100	21	<b>239</b>
<i>Pluvialis apricaria</i>			1				<b>1</b>
<i>Pluvialis squatarola</i>			1				<b>1</b>
<i>Tringa erythropus</i>			5		6	2	<b>13</b>
<i>Tringa glareola</i>	63	196	134	5	934	609	<b>1941</b>
<i>Tringa nebularia</i>		6	6		6	8	<b>26</b>
<i>Tringa ochropus</i>		2	10		7	18	<b>37</b>
<i>Tringa totanus</i>			26	3	10	2	<b>41</b>
<i>Vanellus vanellus</i>			1		45	15	<b>61</b>
<b>Total</b>	<b>63</b>	<b>316</b>	<b>1028</b>	<b>30</b>	<b>1912</b>	<b>1500</b>	<b>4849</b>

Table 2  
Numbers of waders ringed in Poland in 2005 at four wader ringing stations.  
Stations abbreviations as in the text and in Figure 1

	Spring		Autumn			Total
	TU	KW	LI	PA	JE	
<i>Actitis hypoleucos</i>	1		218	320	6	<b>545</b>
<i>Arenaria interpres</i>			2	2	1	<b>5</b>
<i>Calidris alba</i>			2			<b>2</b>
<i>Calidris alpina</i>		2	142	20	173	<b>337</b>
<i>Calidris canutus</i>			3			<b>3</b>
<i>Calidris ferruginea</i>			37	7	3	<b>47</b>
<i>Calidris minuta</i>			17	17	9	<b>43</b>
<i>Calidris temminckii</i>			35	12	4	<b>51</b>
<i>Charadrius dubius</i>	1		85	28	3	<b>117</b>
<i>Charadrius hiaticula</i>			86	2	10	<b>98</b>
<i>Gallinago gallinago</i>	1		65	72	418	<b>556</b>
<i>Limicola falcinellus</i>			4	2		<b>6</b>
<i>Limosa lapponica</i>			1			<b>1</b>
<i>Limosa limosa</i>			1	1		<b>2</b>
<i>Lymnocyrtus minimus</i>					2	<b>2</b>
<i>Numenius arquata</i>			44			<b>44</b>
<i>Phalaropus lobatus</i>				1		<b>1</b>
<i>Philomachus pugnax</i>	4	7	35	28	45	<b>119</b>
<i>Pluvialis squatarola</i>			3			<b>3</b>
<i>Tringa erythropus</i>			3		2	<b>5</b>
<i>Tringa glareola</i>	90	130	56	136	180	<b>592</b>
<i>Tringa nebularia</i>			2	2	4	<b>8</b>
<i>Tringa ochropus</i>	2		7	15	2	<b>26</b>
<i>Tringa stagnatilis</i>				2		<b>2</b>
<i>Tringa totanus</i>			19	10	1	<b>30</b>
<i>Vanellus vanellus</i>			1	1	5	<b>7</b>
<b>Total</b>	<b>99</b>	<b>139</b>	<b>868</b>	<b>678</b>	<b>868</b>	<b>2652</b>

of five most abundant species differed significantly between 2004 and 2005 ( $G$ -test,  $G = 606.1$ ,  $p < 0.001$ ; Fig. 2). In 2004 more Wood Sandpipers and Common Snipes were ringed than in the next season. This difference was caused by much higher catching success in Jeziorsko, especially with respect to the Wood Sandpiper, in the first season (Table 1 and 2). The very high number of Common Sandpipers ringed in 2005 was a result of an intensified catching effort in Pawłowice, where many suitable habitats for this species occurred. Moreover, the effectiveness of catching in the Vistula valley and on both dam reservoirs depended strongly on the water level. In 2004 trapping of waders was interrupted for 5 days in the second week of August in Lisewo and on the turn of July for two weeks in Pawłowice, due to high flood

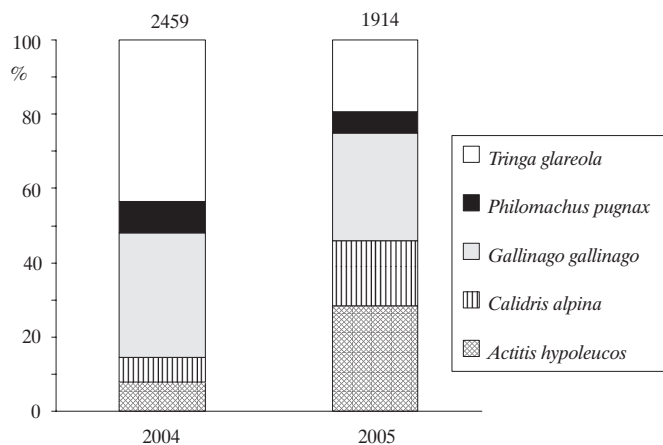


Fig. 2. Comparison of proportions of the five most numerous wader species ringed in autumns 2004 and 2005 at Lisewo, Jeziorsko and Pawlowice. Numbers above bars indicate sample sizes.

of the Vistula. On the other hand, after the flood the water remained in pits on the meadows and attracted many waders. Thus, in this period the numbers of ringed Wood Sandpipers, Ruffs and Common Snipes were higher than usual (Fig. 3). The catching efficiency of waders at the Jeziorsko reservoir was also very variable between seasons and depended on the water level. In 2004 good conditions resulted in exceptionally high number of caught waders. On the contrary, in 2005 there was no suitable site for catching waders until the end of August, what led to much lower ringing results.

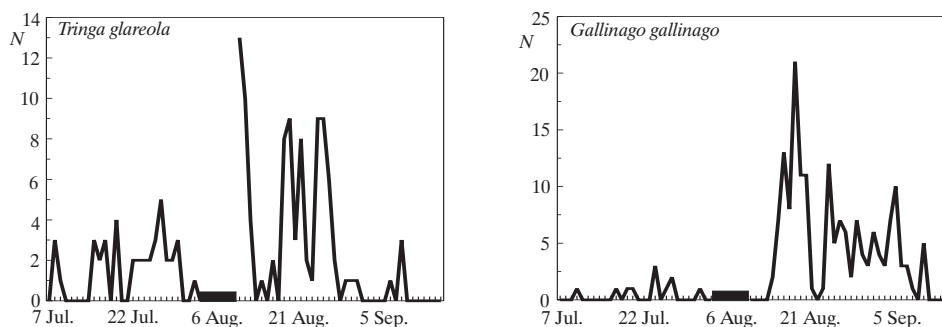


Fig. 3. Catching dynamics of the Wood Sandpiper (left panel) and the Common Snipe (right panel) at Lisewo in 2004. Period of flood indicated by black rectangle.

The total number of migrating waders ringed in Poland during last four years (2002-2005) varied between 3.6 and 4.8 thousand (Ściborski *et al.* 2005, this report), being much smaller than in the 1980s and in the 1990s, when over 4-5 thousands of waders were ringed every year at two ringing sites on the Gulf of Gdańsk coast (Gromadzka 1998, Meissner and Remisiewicz 1998). However, in those years the

Dunlin constituted 63-72% of all waders trapped in the Baltic coast (Gromadzka 1998, Meissner and Remisiewicz 1998).

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