

## THE AUTUMN MIGRATION OF WADERS IN THE PUSZTA HORTOBAGYI

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Many papers in the Hungarian literature discuss the occurrence and the timing of migration of rare waders (e.g. Beretzk & Keve 1957, 1964a, 1964b). This paper, however, is concerned with the common species. It aims to demonstrate the great value of the Hortobagy area as a haunt for waders migrating through Central Europe. The paper presents also some preliminary results on the adult/juvenile ratio in waders during autumn. Information on adult/juvenile ratio is scarce for large areas of Central Europe (Glutz von Blotzheim et al. 1975, 1977, OAG Munster 1988).

### MATERIALS AND METHODS

The puszta Hortobagy (47° 37' N 21° 47' E) is one of the most outstanding nature sanctuaries in Central Europe. It extends to over 60 000 ha, of which about 43 500 ha are within the Hortobagy National Park (H.N.P.) (Figure 1). The canalisation of the river Tisza in the middle of the 19th century has caused the area to become a sodic dry grassland. The biotope has since become wetter, especially after World War II, through the construction of fish-ponds, goose farming, and the irrigation of rice fields. During the last decades, the ecological conditions of the pastures have again changed, because the practice of grazing cattle has lost its economic value and has been gradually abandoned. As a result, the vegetation has become taller and denser and has to be removed. Regular artificial floodings are now carried out, mainly for nature conservation purposes. These two transformations have greatly influenced both breeding and migrating birds, and enhanced their abundance and diversity (Sterbetz 1975, Kovacs 1964a). The actual state of the H.N.P. and its adjacent areas is excellently described by Mahunka (1981) and in papers by Kovacs (1984a, 1984b).

The migration of waders was studied in the H.N.P. and its surroundings during 7-14 September 1978, 19 August - 1 September 1979, 14-24 July 1982, 9-24 August 1984 and 7-19 August 1987. A part of the puszta Kunmadarasi was not visited owing to governmental restrictions but the large fish-ponds of Viragoskut 6 km north of the village of Balmazujvaros were included in the survey. No

substantial deviations from the long-term mean of the weather data were recorded during any of our stays. For each year the bird counts made on the individual wetlands were added up, corrected, and divided into half-month periods from 16 July to 15 September. Because of the large distances between the wetlands, the sudden habitat changes and hunting activities, a complete survey of the area was often complicated and proved almost impossible during the visit in 1987.

Observations were made from a car with a 50x50 telescope and in good weather conditions. Field determination of the plumages followed Prater et al. (1977). It was not possible to distinguish age-classes in several species (e.g. Snipe *Gallinago gallinago*, Redshank *Tringa totanus* and Green Sandpiper *T. ochropus*) and the numbers of Greenshank *T. nebularia* and Common Sandpiper *Actitis hypoleucos* examined were insufficient to reach useful conclusions.

### RESULTS AND DISCUSSION

Altogether 29 wader species were observed. Table 1 lists the range of numbers counted per half-month for the 17 most common species. Two local breeding species, the Little Ringed Plover *Charadrius dubius* and the Avocet *Recurvirostra avosetta* showed no migration movements and were excluded. Grey Plover *Pluvialis squatarola* and the Marsh Sandpiper *T. stagnatilis* were excluded because numbers were very small: no more than 6 and 4 birds respectively of these species were counted during each of the observation periods.

The Ruff was the most numerous migrant. Along with the Lapwing, the Black-tailed Godwit and the Spotted Redshank they constituted more than 75% of all waders observed. Only one bird of each of seven species were seen: Stone Curlew *Burhinus oedicephalus*, Collared Pratincole *Glareola pratincola*, Kentish Plover *Charadrius alexandrinus*, Broad-billed Sandpiper *Limicola falcinellus*, Great Snipe *Gallinago media*, Bar-tailed Godwit *Limosa lapponica* and Turnstone *Arenaria interpres*.

Table 2 presents the percentages of juveniles for four of the commonest species. During every

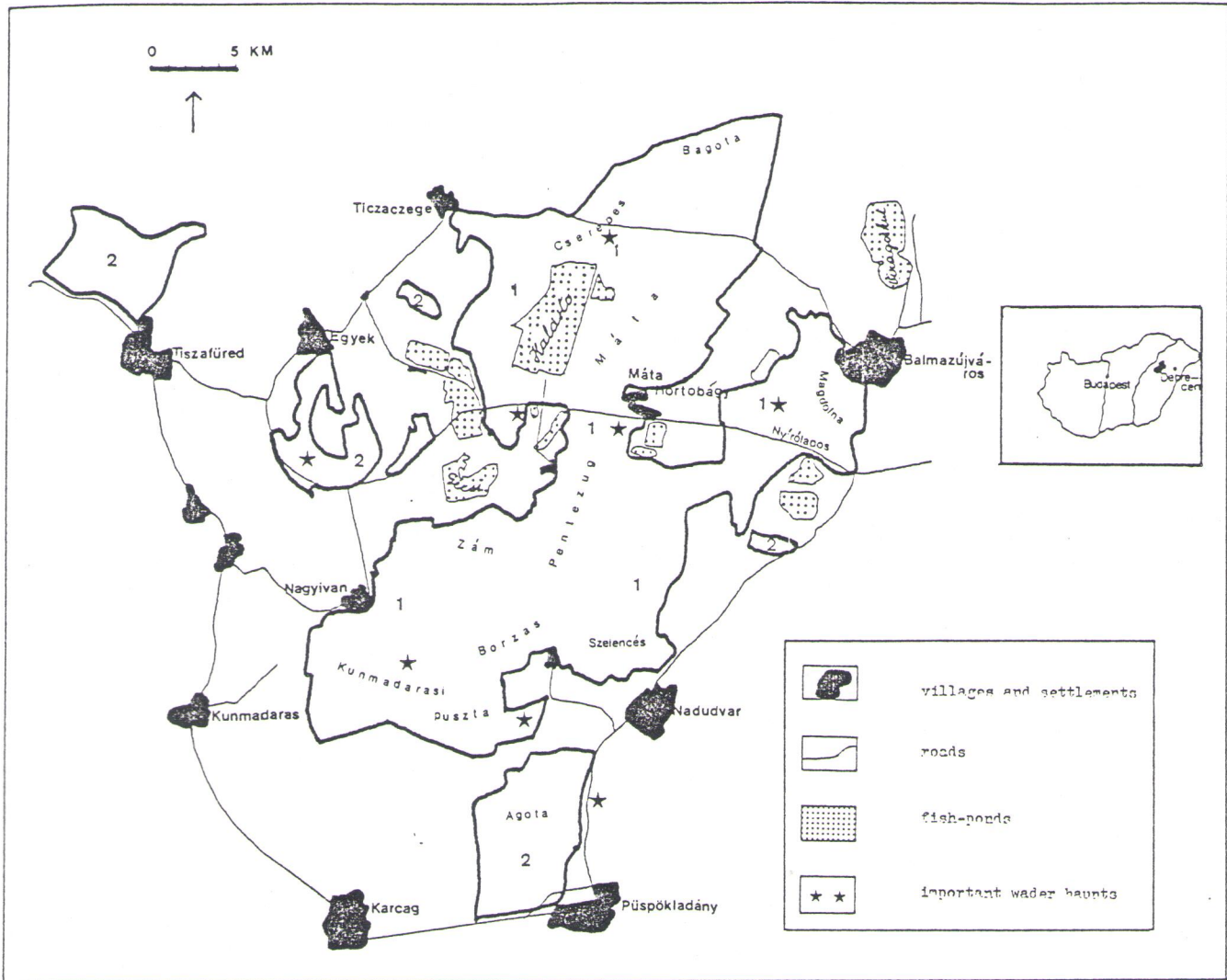


Figure 1. The Hortobagy National Park (1) and adjacent nature conservation areas (2) in eastern Hungary.

half-month period these were only very low percentages of juvenile Black-tailed Godwits and Spotted Redshanks present. For each of these species, the percentage of juveniles slightly increased during the autumn although in no case did it exceed 6%. In contrast 38% of Wood Sandpipers present as early as the first half of August were juveniles. No observations were made after 15 September. The median autumn migration date, calculated for this region by OAG Munster (1988) is earlier than this (Table 2), suggesting that most juvenile Ruffs and Black-tailed Godwits will have passed the Hortobagy by 15 September. For both species it appears to be mostly adults that use the area during the whole autumn migration period. The median migration date of the Spotted Redshank is later - this was established to be as late as 21 September (OAG Munster 1988), so it is possible that most juveniles had not yet passed through when the counts of the Hortobagy ceased. Total numbers present were, however, already decreasing by the end of August and the proportion of juveniles was still low in mid September. It seems probable therefore that few juvenile Spotted Redshanks use the Hortobagy, even later in the autumn, and that the median migration date is earlier than elsewhere in this region.

Several authors (e.g. OAG Munster 1988) have suggested that inland water habitats, because of their ecological instability in comparison with coastal ones, are used mostly by inexperienced, juvenile birds. Juveniles are believed to form the majority of the migrating flocks. The Hortobagy differs from this pattern, since adults outnumbered juveniles in at least two common species. The puszta Hortobagy is a striking example of an unpredictable water haunt. Short-legged species, such as *Calidris* sandpipers, are the least affected by the frequent and rapid drying-up of lakes during late summer and autumn, because they can still feed on the natron muds. Long-legged species may, however, have to leave these drying habitats much sooner.

More inland counts are needed to confirm the extent of the preponderance of adults. There is little doubt, however, that the north-eastern Hungarian puszta is an important moulting area for many adult waders; an area where they undergo body moult and probably also primary moult. It is likely that waders use the Hortobagy as a moulting area because of its large size, diversity of habitats, and the short distances between feeding and resting places.

Table 1. Numbers of waders in the puszta Hortobagyi area during five autumn periods. Where two figures are given these are maximum and minimum counts.

	July II <sup>1</sup> 1982	August I 1984	August II 1984	August II 1979	September I 1978
Ringed Plover <i>Charadrius hiaticula</i>		5 - 10	30 - 40	40 - 50	70 - 90
Lapwing <i>Vanellus vanellus</i>	2 300 - 2 500	1 460 - 1 550	1 700 - 1 750	1 500 - 1 600	2 800 - 2 900
Little Stint <i>Calidris minuta</i>			25 - 30	20 - 25	190 - 210
Temminck's Stint <i>C. temminckii</i>		2	10 - 15	15 - 20	20 - 25
Curlew Sandpiper <i>C. ferruginea</i>			5 - 10	30 - 35	65 - 75
Dunlin <i>C. alpina</i>		3	35	60 - 65	140 - 150
Ruff <i>Philomachus pugnax</i>	3 300 - 3 600	1 700 - 1 800	2 300 - 2 500	2 800 - 2 900	1 740 - 1 850
Snipe <i>Gallinago gallinago</i>	4	20 - 25	80 - 110	360 - 380	450 - 500
Black-tailed Godwit <i>Limosa limosa</i>	620 - 680	730 - 830	2 700 - 2 900	2 000 - 2 200	2 200 - 2 300
Whimbrel <i>Numenius phaeopus</i>	50 - 60	20 - 30	5 - 10	20 - 30	
Curlew <i>N. arquata</i>	150	720	590	1 750 - 1 900	800
Spotted Redshank <i>Tringa erythropus</i>	660 - 700	600 - 700	950 - 1 100	1 300 - 1 450	750 - 850
Redshank <i>T. totanus</i>	110 - 130	80 - 90	130 - 140	190 - 200	100 - 110
Greenshank <i>T. nebularia</i>	45 - 55	40 - 45	40 - 45	55 - 65	35 - 40
Green Sandpiper <i>T. ochropus</i>	30 - 40	45 - 55	45 - 60	40 - 50	50 - 55
Wood Sandpiper <i>T. glareola</i>	900 - 950	300 - 320	320 - 340	320 - 340	360 - 380
Common Sandpiper <i>Actitis hypoleucos</i>	40 - 45	50 - 55	35 - 45	30 - 40	20 - 25

<sup>1</sup> I and II are the first and second half of the month respectively.

Table 2. Percentages of juveniles in some waders in the puszta Hortobagyi area during autumn migration.

	Median date of autumn migration <sup>1</sup>	July II		August I		August II		September I	
		n	%	n	%	n	%	n	%
<i>Philomachus pugnax</i>	27 August	872	0.3	404	1.0	1 289	3.2	312	4.8
<i>Limosa limosa</i>	12 August	46	3.4	525	2.8	1 294	4.7	413	5.7
<i>Tringa erythropus</i>	21 September	76	0.0	608	1.0	311	1.3	61	4.7
<i>T. glareola</i>	17 August	38	0.0	102	38.2	72	59.7	27	98.6

<sup>1</sup> calculated from OAG Munster (1988).

#### NOTES ON SELECTED SPECIES

Little Stint. A total of 59 (92.1%) of the 64 birds observed in the field during the second half of August were juveniles. All 208 birds had the juvenile plumage in September.

Broad-billed Sandpiper *Limicola falcinellus*. Seen once: a juvenile present from 15-18 August at the Csecsi fish-pond. Kovacs (1964a) notes that this species has been recorded previously only twice in the area. Its rarity here is surprising since regular occurrences of small flocks were reported in the south of Hungary (Beretz & Sterbetz 1870, Sterbetz 1973/74).

Ruff. A predominance of males occurred between mid July and the end of August (July 11: 71.3% (n=1 237); August I: 76.7% (n=515); August II: 77.4% n=2 173)). During August progress of

moult of the wing-coverts in males was checked. In August I, 55 of 494 birds (11.1%) had unmoulted or mainly unmoulted upperwing coverts. In August II, 186 of 1 111 birds (16.7%) were still in this category. The persistence of unmoulted upperwing coverts in the Hungarian migrants differs from the moult timing in Schleswig Holstein (Drenckhahn 1968) and elsewhere (Cramp & Simmons 1983) where the breeding plumage has largely disappeared by late July - early August. This difference in the timing of the body moult pattern suggests that the Hungarian Ruffs may be from a different population than the others.

Curlew. During August 1979, we could clearly observe Curlews roosting at the Halasto fish-pond. Of 675 birds closely examined in the field, 20% showed the characters of *arquata/orientalis* and 45-50% were determined as the

*orientalis* subspecies. Keve & Sterbetz (1968) found a similar proportion of *orientalis* amongst 24 skins, and suggested that a more westerly migration route could explain this recent increase of *orientalis* in Hungary.

Spotted Redshank. A total of 517 adults were examined for the progress of body moult. On a scale of score 4 for birds with full breeding plumage and score 0 for birds with non-breeding plumage, the periods 13-16 August (n=340) and 23-26 August (n=172) scored respectively 15.9% and 8.2% of the maximal value of birds with full breeding plumage. Like Spotted Redshanks in the Dutch Wadden Sea (Boere 1977), the Hungarian birds also complete body moult by the end of August.

Marsh Sandpiper. Only single birds visited the Hortobagy during the observation periods, whereas Sterbetz (1965, 1973/74) reported important influxes in the southern Hungarian plains during summer and autumn. The reason for the difference between the two regions is as yet unclear.

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