MIGRATION OF THE CURLEW SANDPIPER *(CALIDRIS FERRUGINEA)* IN THE SOUTH-EAST OF THE HUNGARIAN PLAIN

Dr. István Sterbetz

Abstract

I. Sterbetz: Migration of the Curlew Sandpiper *(Calidris ferruginea)* in the South-East of the Hungarian Plain

Migration of the Curlew Sandpiper was studied in some important waterfowl habitats of South-East Hungary between 1941 and 1991. Chronology of migration, data on moult, habitat selection and food are tabulated. Since 1950 a rapid decline has taken place in the number of Curlew Sandpiper specimens recorded annually. Besides a possible shift in the migration routes, destroying the ecological conditions of the sodic ponds of the Carpathian Basin might have been responsible for this adverse phenomenon.

Introduction

The Central and East-Siberian areas frequented by the Curlew Sandpiper extend northwards to degree 72 of latitude from the Ob-Delta as far as the Tsukts peninsula. In 1962 its nesting was also evidenced in North-Alaska *(Portenko, 1959; Holmes and Pitelka, 1964; Glutz et al., 1975; Cramp and Simmons, 1983)*. Flocks migrating through Europe are scattered in the tropic and subtropic habitats southward of the Sahara as far as South-Africa. The European and African migration routes having been mapped by *Wilson et al. (1980)* indicate three main routes for the south-west migration of the population of the Yamal peninsula. The west route runs along the coastline of the Atlantic through Morocco–Mauritania–West-Africa as far as Cape Colony. The mid-route takes a direction towards the Black Sea-Balkan peninsula-Tunesia and the Ivory Coast. The eastern branch runs from the Caspian plain through East-Africa as far as Cape Colony. Migration through the Carpathian Basin has not been mentioned in this comprehensive work al though, Curlew Sandpiper occurs regularly in the region. It is therefore important to evaluate the conditions of its migration trough the South-East Plain which provides the most migratory records.

Material and method

Records comprising a total of 6171 Curlew Sandpipers observed and 41 specimens sampled in counties Csongrád and Békés on 128 occasions between 1941 and 1991 were analysed. The data originated from the Szeged Fehértó (46° 15'–20°10') and the Biharugra fish-ponds (46°58'–29°36'), the

rice fields surrounding Hódmezővásárhely (46°23'–20°26'), as well as from the natural sodic ponds of Kakasszék (46°33'–20°36'), Gyopárosfürdő (46°34'–20°40') and the Kardoskút Fehértó (46°30'–20°28').

Soil condition and water chemistry data are detailed by the *Stefanovits's* map *(1963)* and by *Szépfalusi* (in *Megyeri, 1963)*, respectively. The salt-tolerant vegetation of the sodic habitat has been described by *Felszeghy (1936)* and by *Bodrogközy (1966, 1980)*. Microvegetation of the natural salt ponds has been characterized by *Kiss (1959; 1965)*. Invertebrate aquatic and mud fauna have been published by *Megyeri (1959; 1965) and Ferencz (1966)* as well as by *Sterbetz's* reports on foods of littoral birds *(1964; 1985; 1988 in pr.a–b–c)*.

The data accumulated on the Curlew Sandpiper were analysed in respect of seasonal variation in migration, moult, habitat selection, feeding as well as population decline. Identification of stomach content samples has been performed with the kind contribution of *†Dr. Andor Horváth* and *Dr. Magdolna Ferencz* (József Attila University, Szeged) using reference samples from the study areas.

Results

Seasonal variation in the south-east migration of Curlew Sandpiper

Certain littoral birds nesting in the Central and East-Siberian tundra zone take some 15–16 000 km routes between their nesting range and wintering places in South-Africa, South-America, New-Zealand and Australia. The Curlew Sandpiper flocks flying from Africa, South-India and Oceania occupy their nesting sites emerged from snow in mid-June *(Portenko, 1959)*. After the elapse of the nesting period the adult specimens return in July whilst, the young birds migrate later depending upon their physical state. The specimens being omitted from nesting wander in summertime. For most part of the year members of this species are scattered over several continents due to the migration routes and short residence in the nesting range. The actual weather conditions may also contribute to the uncertainity of migration.

Table 1 presents the monthly distribution of occurrences and the specimens recorded. The data reveal a late-spring arrival, a rather vivid summering and an autumn migration through August–September. Before last days of April and after September the Curlew Sandpiper is rare in Hungary. The extreme occurrences recorded are as follows: Sumony 20.03.1977. *(Bod in: Haraszthy, 1988)*, Hortobágy 20.03.1976. *(Kovács, 1984)*, Almásneszmély, 16.09.1985. *(Bod in: Haraszthy, 1988)*, Tata, 29.12.1983. pers. observation).

Table 1. Monthly distribution of occurrence data
1. táblázat. Az előfordulási adatok havi megoszlása

Month Hónap	No. of occurrence Előfordulások száma	No. of specimens Példányszám
IV.	7	94
V.	20	756
VI.	24	523
VII.	25	485
VIII.	23	2611
IX.	28	1724
X.	1	29
	128	6212

Moult

Curlew Sandpiper occurs relatively frequently in the South-East-Plain. It shows a heavy migration here through June–July. Of a total of 6212 specimens 2483 birds have also been inspected for stage of moult. It is clear from the percental data given in Table 2, that the first flocks arrive in dormant plumage at late-April, except some colouring specimens. Birds in nuptial plumage hardly occurs. Later on nuptial plumage becomes predominant through May–June and it is nearly exclusive in July. From August touching up the colours commences abruptly and the majority of birds already exhibit autumn plumage in September. Some occurring in October bear autumn plumage.

The young birds appearing from late-summer have been omitted from the evaluation due to difficulties of distinguishing from the older ones. Of 14 specimens, shot between August and October, 7 were juvenile. Among them early signs of moult could be observed only on 1 specimen, but the sample was small.

The Curlew Sandpiper specimens brooding in the Taymir peninsula leave reportedly the nesting sites in nuptial plumage at mid-July *(Portenko, 1959).* Migrations have already been observed in several parts of North-Africa and in Central Tunesia near Kelbia in August and even in July, respectively *(Wilson et al., 1980).* Morocco has been the autumn moulting place, where young birds also mew their feathers from September. All these may indicate that migration of the Curlew Sandpiper is a rapid process and moult is taken place en route and on the wintering places.

That is beyond question that Curlew Sandpiper flocks assemble for moulting in the sodic puszta areas of Hungary, as well. According to literary data the phenomenon is traditional here *(Lakatos, 1891; Beretzk et al., 1973).* Origin of the specimens watched between late-July and early-August remained uncertain, however. They might have been summering birds or members of very early flocks.

Table 2. Moulting data on 2438 specimens
2. táblázat. Adatok 2438 példány vedlettségi állapotáról

Period Időszak	No. of specimens Példányszám	Dormant plumage % Nyugalmi tollazat %	Transient plumage % Átmeneti tollazat %	Breeding plumage % Nász tollazat %
IV.	62	65	26	9
V–VI.	420	3	17	80
VII.	380	–	2	98
VIII.	867	24	71	5
IX.	690	88	8	4
X.	19	100	–	–

Habitat selection

Curlew Sandpipers are most attracted by the sodic lacustrine environment. Approximately one-third of specimens have been observed on fishponds and only 5% in paddy-fields. This distribution can probably be related to the utility potential of the areas. Among the natural salt ponds the ones at Kakasszék and Gyopáros have permanent water even Kardoskút may also offer suitable mud-banks providing littoral birds with food during migration. Fishponds are mainly visited when birds can find muddy-fields in the pond units drained due to summer fishing. The paddy-fields abundant in foods can be used by the birds only for short periods of flood or drainage.

Hydrological conditions of salt ponds and fishponds established on sodic soils in the Hungarian Plain are comparable to those of the Central-Asian salt lakes and the European seashores *(Megyeri, 1959).* That is why the

Table 3. Habitat selection by specimens examined
3. táblázat. Az értékelt példányok élőhelyválasztása

Habitat Élőhely	No. of occurence Előfordulási eset	% %	No. of specimens Példányszám	% %
Salt-pond Szikestó	85	66	3812	61
Fish-pond shoal Halastavi zátony	38	30	2120	34
Paddy-field Rizsföld	5	4	280	5
	128	100	6212	100

northern littoral birds have used traditionally the migration routes and assembling places in the domestic sodic Puszta areas. Salt lakes of considerable bird traffic have therefore been included as international natural values in the List of the Ramsar Convention, too.

Food

Keve (1955) studying the shell item in the food of the Curlew Sandpiper identified *Valvata* sp. and shell fragments on 8 and 2 occasions, respectively. Composition of 15 stomach content samples analysed previously at Szeged–Fehértó, Kardoskút and Biharugra *(Sterbetz, 1964; 1985; 1988, in pr. a, b)* is also given among the 41 samples presented in Table 6.

Food of *Calidris sp.* are rather similar in items, especially in case of Curlew Sandpiper and Dunlin *(Calidris alpina)*. Stomach samples of 80 Dunlins and 41 Curlews originating from the same areas have shown approximately the same food items *(Sterbetz, 1988, in pr. c)*, consistent with the literary data *(Glutz et al., 1975; Cramp and Simmons, 1983)*. According to Lange's laboratory studies (1968) the two species are identical in feeding habit: they

Table 4. Sites used for collecting stomach content samples
4. táblázat. A gyomortartalmak gyűjtőhelyeinek megoszlása

Collecting site Gyűjtőhely	Salt pond Szikestó	Fish-pond Halastó	Paddy-field Rizsföld	Total Összesen
Szeged–Fehértó	–	1	–	1
Hódmezővásárhely	–	–	1	1
Kakasszék	20	–	–	20
Gyopárosfürdő	6	–	–	6
Kardoskút	11	–	–	11
Biharugra	–	2	–	2
	37	3	1	41

Table 5. Monthly distribution of stomach content samples
5. táblázat. A gyomortartalmak havi megoszlása

Collecting site Gyűjtőhely	IV.	V.	VI.	VII.	VIII.	IX.	Total Összesen
Szeged–Fehértó	–	–	–	–	–	1	1
Hódmezővásárhely	–	–	–	–	–	1	1
Kakasszék	3	6	2	5	3	1	20
Gyopárosfürdő	–	–	–	6	–	–	6
Kardoskút	–	4	–	–	6	2	12
Biharugra	–	–	1	–	–	–	1
	3	10	3	11	9	5	41

Table 6. Composition of 41 stomach content samples
6. táblázat. 41 példány gyomortartalma

Food item a táplálék neme Animal food állati táplálék:	Occurence Előfordulása	No. Darabszám
Mollusca sp. fragments – törmelék	16	x
Branchinecta orientalis	14	166+x
Chytin fragments – kitintörmelék	11	x
Corixa sp.	6	12
Lestes virens	5	8
Chironomus sp. larva	4	24+x
Sigara sp.	4	14
Berosus spinosus	3	7
Diptera sp. larva	3	7
Haliplus sp. larva	2	3
Dytiscidae sp. larva	2	2
Rotatoria sp.	2	x
Crustacea sp.	2	x
Heterocerus sp.	1	16
Anthomyidae sp. larva	1	5
Ochthebius sp.	1	2
Culicoides salinaria	1	1
Odonata sp. larva	1	1
Ephydrydae sp. larva	1	1
Hydrophylidae sp.	1	1
Naucoris cimicoides	1	1
Laccobius sp.	1	1
Ostracoda sp.	1	x
Seed – magvak:		
Suaeda maritima	3	66
Atriplex sp.	2	6
Carex sp.	2	3
Polygonum sp.	1	4
Sand and stone – homok és kavics	21	x

prey mainly by palpation, eyesight is of less importance. Stomach content weights of 0.2–0.9 cm^3, including sand, also correspond to those obtained for the Dunlin. At Kardoskút and Kakasszék beak prints of Curlews 1–3 cm deep into the mud could be found.

A comparison between the coastline feeding sites and the sodic habitats of the Hungarian Plain reveals that solontsac shoals of the domestic sodic areas may offer a food choice similar to that of the mud-fields arising in the edge of the sea at tide. Littoral birds with their abundantly innerved beak search for prey in the soft mud in both areas. The primary is food availability whilst, food selection is determined by prey size.

In the last century a description of the avian fauna of the Szeged–Fehértó, *Károly Lakatos* characterized the Curlew Sandpiper as "one of the most common and most abundant" species. He also reported on mass migrations and "paprika-sneff" as people called the bird in nuptial plumage, indicating the popularity of the species. As early as in the years of the 30es and 40es *Beretzk* could frequently watch flocks of several hundred specimens. *Sterbetz* could observe colonies of over hundred specimens on some occasions between 1951 and 1953 *(Beretzk and Sterbetz in: Beretzk et al., 1973)*. Since 1954 the flocks migrating through Hungary have abruptly declined, however. Since then Curlew Sandpiper has been kept in evidence as a less frequent littoral bird.

Reasons for this decline are still unclear. According to *Portenko's* hypothesis *(1959)* migration of the Curlew Sandpiper may be taking place on various routes. He also emphasized uncertainity of breeding succes of the species under the rigorous conditions of the arctic region. However, the ringing data have failed to prove a shift in the migration routes. Occurrence of unsuccessful breedings over consecutive decades seems unprobable, alike. Destruction of the domestic ecosystems has become a fact, however. These last 20 years other aquatic birds have also declined in abundance at Kardoskút due to excessive drainage of the sodic puszta areas *(Sterbetz, 1977)*. Discussion of these suppositions in details would require additional hydrobiological studies.

The changes having taken place in the composition of the micro-world and the related avifauna of the salt water environment of the South-East Plain may serve as susceptible indices for the ecosystem and also as warnings for environment conservancy focused on humans.

References – Irodalom

Beretzk, P.–Keve A.–Sterbetz, I. (1973): Der Sichelstrandläufer in Ungarn. – Bonner Zool. Beitr. 24.: 325–330.

Bod, P. (1988): A sarlós partfutó in: Magyarország madárvendégei. *Haraszthy, L.* szerk. Budapest, Natura Kiadó, pp. 96–97.

Bodrogközy, Gy. (1966): Ecology of the halophilic vegetation on the Pannonicum. – Acta Biol. Akad. Sci. Hung. 12. 9–26.

Bodrogközy, Gy. (1980): Szikespuszták és növénytakarójuk. – A Békés megyei Múzeumok Közl. 6.: 29–49.

Cramp, S.–Simmons, K. E. L. (1985): Handbook of the Birds of Europe, the Middle-East and North Afrika III. – Oxford, Univ. Pr. pp. 339–345.

Felszeghy, E. (1936): A Szegedi–Fehértó növényzete. – Debreceni Szemle 10.: 129–133.

Ferencz, M. (1966): Beiträge zur Zoobenthos des Weissen Teiches bei Kardoskut. – Acta Biol. Szeged, XI. 265–269.

Glutz U.v.B.–Bauer, K.–Bezzel, E. (1975): Handbuch der Vögel Mitteleuropas. – Akad. Verl. Wiesbaden, 6 Bd. pp. 666–693.

Holmes, R.–Pitelka, A. (1964): Breeding behavior and taxonomic relations of the Curlew Sandpiper. – Auk, 81.: 362–379.

Keve, A. (1955): A madarak csigatápláléka IV. – Aquila, 59–62.: 71.
Kiss, I. (1959): A Kardoskúti–Fehértó mikrovegetációja. – Ped. Főisk. Évk. Szeged, 3–38.
Kiss, I. (1965): Néhány dél-alföldi szikestó dinamikus egyensúlyának eltolódása az elsődleges termelés irányába. – Tanárképző Főisk. Tud. Közl. Szeged, 25–58.
Kovács, G. (1984): A hortobágyi halastavak madárvilága 10 év megfigyelései alapján. – Aquila, 91.: 38.
Lakatos, K. (1891): Vadászati és madarászati emlékeimből. – Szeged, pp. 77.
Lange, G. (1958): Über Nahrung, Nahrungsaufnahme und Verdau-ungstrakt mitteleuropäischen Limicolen. – Beitr. zur Vogelk. 13.: 225–334.
Megyeri, J. (1959): Vergleichende hydrofaunistische Untersuchungen der Natrongewässer der Ung. Tiefebene. – A Szegedi Ped. Főisk. Tud. Közl. 91–170.
Megyeri, J. (1963): Vergleichende hydrofaunistische Untersuchungen an zwei Natrongewässern. – Acta Biol. Szeged, IX.: 207–218.
Portenko, L. A. (1959): Studien an einigen seltenen Limicolen aus dem nördlichen Sibirien II. Der Sichelstrandläufer. – Journal f. Orn. 100.: 145.
Stefanovits, P. (1963): Magyarország talajai – Budapest
Sterbetz, I. (1964): A magyarországi rizstermesztés madártani problémái. – Doktori ért. manuscr.
Sterbetz, I. (1977): Einfluss der Veränderung der Agrarumwelt des Naturschutzgebietes Kardoskut. – Aquila, 84.: 65–81.
Sterbetz, I. (1985): Subfossilis Mollusca maradványok Dk-Magyarország szikestavain vizsgált vízimadarak gyomortartalmában. – Puszta, 21.: 91–96.
Sterbetz, I. (1988): Partimadarak táplálkozásvizsgálata a Kardoskúti-Természetvédelmi Területen. – Aquila, 95.: 155–157.
Sterbetz, I. (-a): Táplálkozásvizsgálatok Szeged–fehértavi vízimadarakon. – Móra Ferenc Múzeum, Szeged Évk. in pr.
Sterbetz, I. (-b): A biharugrai halastavak madárvilága. – A Békés megyei Múzeumok Közleményei, Békéscsaba, in pr.
Sterbetz, I. (-c): Foods of Dunlin *(Calidris alpina)* in Hungary – Aquila, 99.: 49–57.
Wilson, J. R.–Czajkowsky, M. (1980): The migration of Curlew Sandpiper. – Wildfowl, 31.: 107–122.

Author's address:
Dr. István Sterbetz
Budapest
Fivér u. 4/a.
H–1131

A sarlós partfutó *(Calidris ferruginea)* vonulása a Délkelet-Alföldön

Dr. Sterbetz István

A szerző Délkelet-Magyarország jelentősebb vízimadár élőhelyein 1941–1991 időközében vizsgálta a sarlós partfutó vonulását. Annak időbeni alakulásáról, a vedlésről, az élőhelyválasztásról és a táplálkozásról kapott eredményeket a közölt táblázatok ismertetik. A tárgyalt területeken 1950 után feltűnően csökkent az évente számbavett sarlós partfutók mennyisége. A tanulmány bár nem zárja ki a vonulási utak eddig nem bizonyított eltolódásának a lehetőségét, a kedvezőtlen jelenséget a kárpát-medencei szikestavak ökológiai adottságainak romlásával magyarázza.