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CHANGING OF WINTERING SITE OR RECOVERY PROVISION – AN ANALYSIS OF RINGING DATA OF HUNGARIAN LAPWINGS, *VANELLUS VANELLUS*

CSÖRGŐ, T.[1] and HALMOS, G.[2]

[1]*Eötvös Loránd University, Department of General Zoology*
H-1117 Budapest, Pázmány sétány 1/c, Hungary; e-mail: csorgo@cerberus.elte.hu
[2]*BirdLife Hungary, H-1121 Budapest, Költő u. 21, Hungary; e-mail: halmos.gergo@mme.hu*

Lapwing (*Vanellus vanellus*) is one of the commonest species of Charadriiformes with a wide distribution area in the Palaearcticum. The European breeding populations have two main wintering areas. The populations from Northern and Western Europe winter mainly on the Atlantic coast, Iberian Peninsula and northwestern Africa. The wintering area of the eastern breeding populations is mainly along the Mediterranean Sea basin. SCHENK's original postulate (1934), i.e. "the Hungarian breeding population winters in the western basin of the Mediterranean Sea" has been generally accepted. Recent recapture data has led us to reconsider this notion. Our study was carried out by analysing long distance recoveries of Lapwings ringed in Hungary over the last century. The data originated from the databank of the Birdlife Hungary Ringing Centre. Data were separated into four groups according to recapture sites – 1. Mediterranean Basin catchment area, 2. Atlantic Ocean catchment area – and according to the date of ringing – Period 1. 1909–32, Period 2. 1974–2005. According to our data the wintering site of this species has changed, recently more birds have been migrating to the Atlantic Ocean catchment area, rather than to the traditional west Mediterranean area. This observation can be explained as a true biological phenomenon and/or as a product of random sampling of data, as well. Either the composition of the Hungarian breeding population has changed or the representativeness of data provision of these two areas has changed asymmetrically.

Key words: lapwing, wintering site, ringing, data provision

INTRODUCTION

Lapwing (*Vanellus vanellus*) is one of the commonest species of Charadriiformes with wide distribution area in the Palearcticum. In spite of that the Lapwing is a monotypic species (CRAMP & SIMMONS 1983), the European breeding populations have two main wintering areas. The populations from Northern and Western Europe winter mainly on the Atlantic coast. The eastern breeding populations winter predominantly in the western Mediterraneum (IMBODEN 1974). Previously, the migratory pattern of European populations was analysed and summarized based on ringing data obtained before 1970 by IMBODEN (1974). As per SCHENK (1934) the Hungarian breeding population was believed to winter in the western basin of the Mediterranean Sea. This opinion has previously been generally accepted (BANKOVICS 1982, BANKOVICS & PRIKLONSZKIJ 1985, ALERSTAM 1993).

Recently this concept has been challenged as a result of recovery data since 1970. During the last few decades the ratio of birds recovered in Western Europe, in particular along the Atlantic coast has been significantly higher then prior to this period.

In this study all the recovery data of Hungarian Lapwings were re-analyzed. Two alternative explanations were considered to interpret this change. One of them has biological explication and the other is based on the problem of data provision.

MATERIALS AND METHODS

Our study was carried out utilizing long distance recovery data of Lapwings. The data originated from the Databank of the Hungarian Bird Ringing Center, BirdLife Hungary. Between 1909–2005 more then 6000 Lapwings were ringed in Hungary. Unfortunately the exact number of ringed birds from the interval between the two selected periods – 1909–32 and 1974–2005 –, is not available given the lack of publications or reports on yearly ringing results during this period of time. The original data was destroyed in 1944–45 and in 1956. There were 132 recovery data from wintering or migratory season in these periods. All of the recovered birds were banded during breeding season as nestlings in Hungary. There were data of 7 birds ringed abroad and recovered in Hungary (Great Britain 3, The Netherlands 1, Italy 1, Slovakia 1, Russia 1) and 1 bird were found on spring migration in Bulgaria. These data was not included in the analyses.

Data were separated into four groups:

According to recapture sites

- 1. Catchment area of the Mediterranean Sea,
- 2. Catchment area of the Atlantic Ocean.

According to the time period

- Period 1.: 1909–1932,
- Period 2: 1974–2005.

The percentages of recaptures were calculated for the two periods and according to wintering sites per period. The differences were tested with Log-linear analyses with recapture area and time period as factors. We have calculated centers of gravity and their standard deviation of recoveries for both time periods.

RESULTS

From 3274 Lapwings that were ringed between 1909–32 in Hungary, 132 birds (3.4%) were recovered abroad outside the breeding season, while only 37 (1.3%) from the 2765 birds that were ringed between 1974–2005 were recovered (Table 1).

In the second period the number of recovered birds declined in both areas. The degree of decline was more substantial in the catchment area of the Mediterranean Sea (75%) than in the catchment area of the Atlantic Ocean (29%). The recov-

Table 1. Numbers of birds ringed in Hungary and birds recovered in the two wintering areas in the different periods (recovery rates in parentheses).

Period	Ringed	Recovered		
		Atlantic	Mediterranean	Total
1909–1932	3274	21 (0.64%)	89 (2.72%)	110 (3.36%)
1974–2005	2765	15 (0.54%)	22 (0.80%)	37 (1.34%)
Total	6039	36 (0.59%)	111 (1.84%)	146 (2.43%)

ery ratio was nearly stable in the Atlantic group (0.64% and 0.54%), but dropped by 70% from 2.72% to 0.8% in the Mediterranean group (Figs 1 & 2).

During the second period the proportion of recaptured birds was higher in the catchment area of the Atlantic Ocean ($Chi^2 = 6.89$, $p<0.01$) than in the first period. It was 19.3% (n = 21) between 1909–32, and 40.5% (n = 15) between 1974–2005.

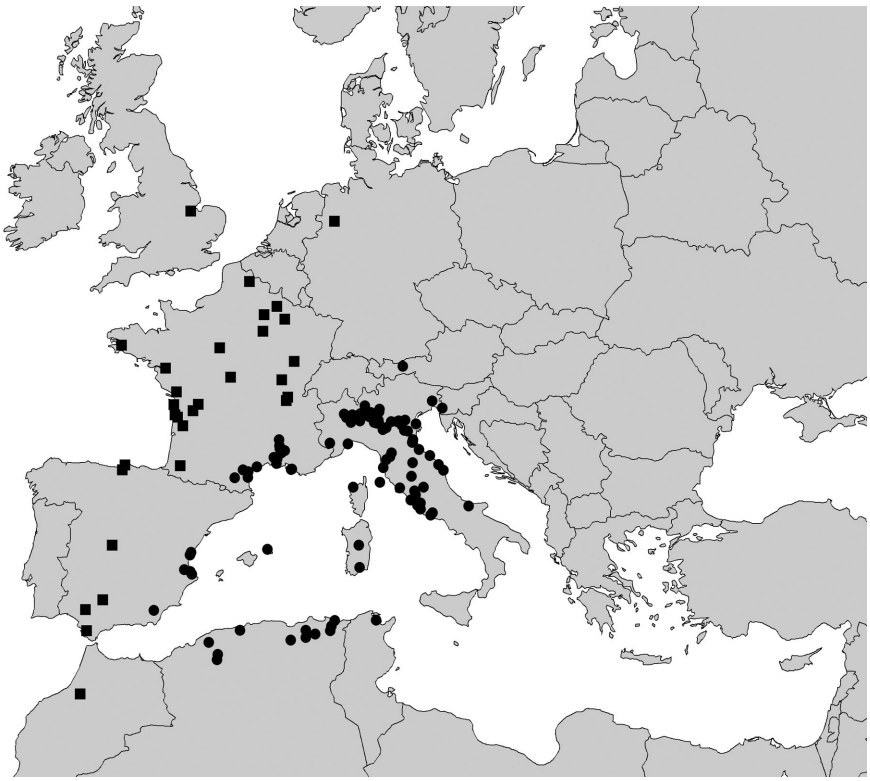

Fig. 1. Recoveries of Lapwings ringed in Hungary between 1909–1932 and recovered in the Mediterranean area (dots) or in the Atlantic region (squares)

The log-linear analyses showed the same differences (Pearson $Chi^2 = 41.05$, df=2, $p < 0.01$).

The center of gravity of recoveries in the two study periods is shifted to the northeast but close to each other. The are covered by the standard deviation of the centers of gravity is SW–NE oriented in the first period and NW–SE oriented in the second period, which is caused mainly by the small number of North African and Spanish recoveries in the second period (Fig. 3).

DISCUSSION

Populations of Lapwing breeding in Northern and Western Europe migrate along the Atlantic coast. The wintering sites of them are in the catchment area of the Atlantic Ocean (IMBODEN 1974, BAK & ETTRUP 1982, ALERSTAM 1993,

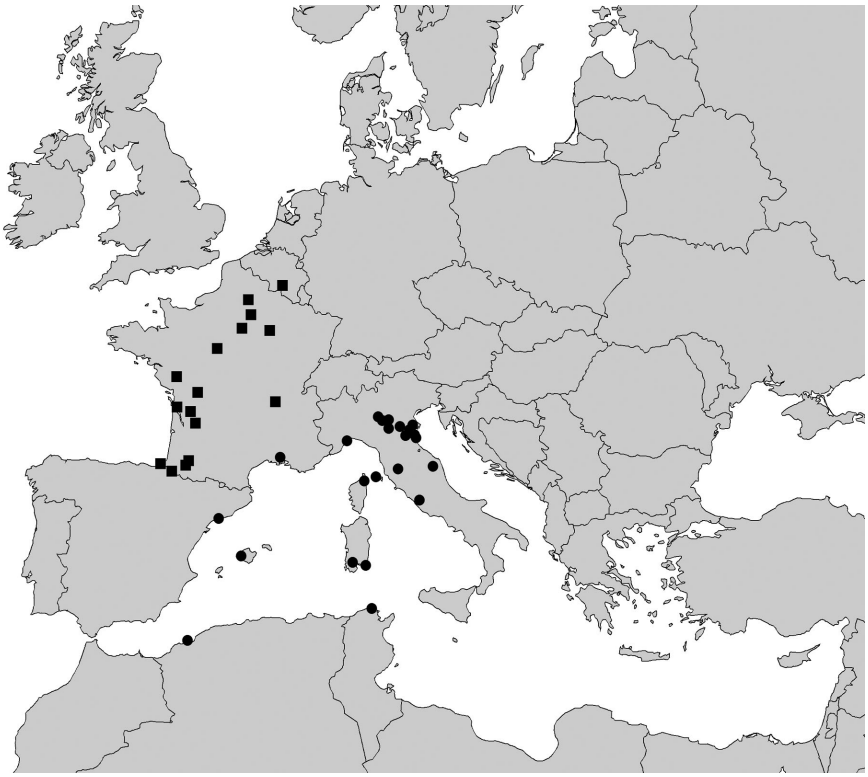

Fig. 2. Recoveries of Lapwings ringed in Hungary between 1974–2005 and recovered in the Mediterranean area (dots) or in the Atlantic region (squares)

WERNHAM *et al.* 2002, BONLOKKE *et al.* 2006, FRANSSON *et al.* 2008). Populations breeding in the central and eastern part of Europe are believed to winter in the basin of the Mediterranean Sea (SCHENK 1934, FORMANEK 1959, IMBODEN 1974, BANKOVICS 1982, BANKOVICS & PRIKLONSZKIJ 1985, ALERSTAM 1993). There is observable separation on a lower geographical scale as well, as for example the breeding populations of the northern parts of the Czech Republic migrate mainly to the Atlantic and the birds from the Morva Basin and Slovakia migrate principally to the basin of the Mediterranean Sea (CEPÁK *et al.* 2008).

The Hungarian breeding population has been clustered with the Lapwings breeding in Slovakia, Poland, Ukraine in the second group. Indeed, in the first half of the century significantly more Hungarian Lapwings migrated to the west Mediterranean, than to the Atlantic coast but recently the ratio appears more balanced according to the recovery data as presented here.

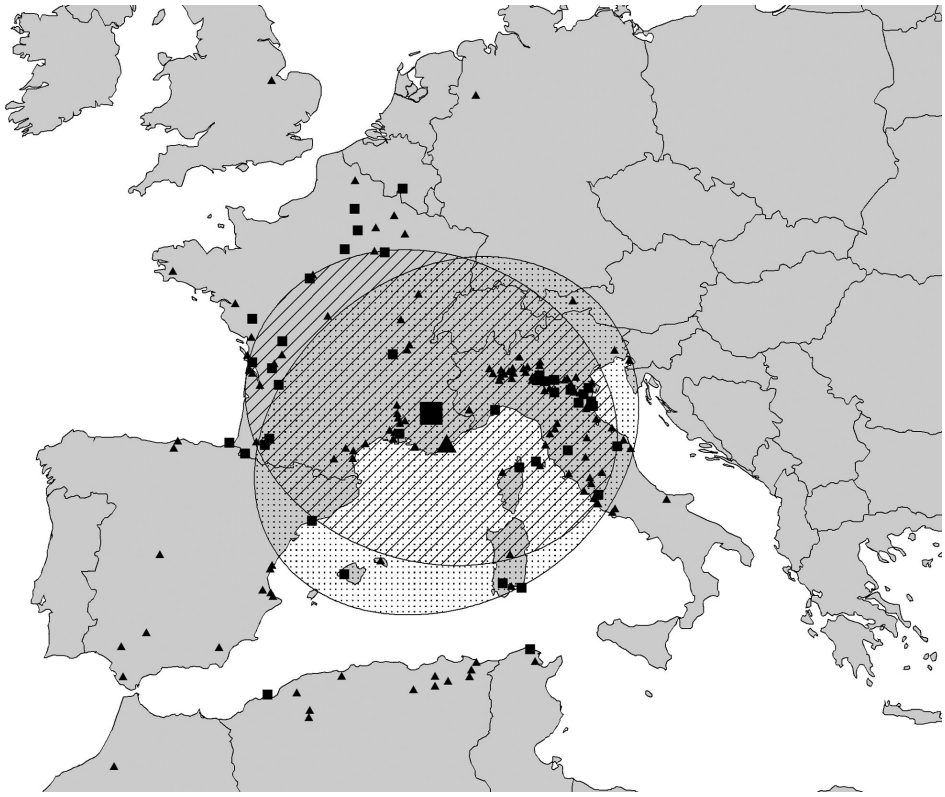

Fig. 3. Centers of gravity and standard deviation of recoveries in the to study periods (1909–1932 – triangles and dotted area for SD, 1974–2005 – squares and hatched area for SD)

According to the available recovery information, still the larger proportion of the Hungarian breeding population follows the traditional south–west direction of migration, across the north Italian lowland migrating to the western basin of the Mediterranean Sea. Nevertheless, a considerable proportion uses the north west route flying to the Atlantic coast, analogous to their northern/western European counterparts.

The wintering population of the Lapwing along the Atlantic coast comprises of approximately 800,000 individuals while about 100,000 birds winter in the western Mediterraneum. In both wintering areas, the numbers have been increasing over the last several decades with wide yearly fluctuations (EUROPEAN COMMISSION 2006). Based on hunting bag statistics in France an estimated 435,000, in Spain 47,000 and in Italy about 34,000 Lapwings are shot yearly. Because the French and Spanish data is not separated by catchment area (Mediterranean or Atlantic coast), the differences in percentages of shot birds by area of recapture is unknown (HIRSCHFELD & HEYD 2005).

What may the reason be of the changing of ratio?

1. Wintering site changing theory

The observed change in the proportion of brids wintering in these two areas is due to a shift in the composition of the breeding population.

Recently, some species have been reported to change their migratory patterns. Some of them have become resident, or have developed a stronger propensity for migration, other ones have changed the timing, the distance or the direction of migration (BERTHOLD & TERRILL 1988, BUSSE 1992, BERTHOLD 1995, 1996). The reasons may be different, and might include the global climate change, urbanization, the ongoing creation of artificial, man-made habitats, the availability of extra food supply for the birds etc. (ADRIAENSEN 1993, MAYNARD-SMITH 1993, SCHWABL 1983, WINKEL 1993).

Changes in migratory route and consequently a switch of wintering site is not unprecedented. Recently, similar observations were published on the migratory behavior of White-fronted goose (*Anser albifrons*), Brant Goose (*Branta bernicla*), Bewick's Swan (*Cygnus bewicki*), Lesser Black-backed Gull (*Larus fuscus*) Common Buzzard (*Buteo buteo*), Penduline Tit (*Remiz pendulinus*) (MARTIN 1983, ERSKINE 1988, JOHNSON & HERTEL 1990, ALERSTAM 1993, FRANZ 1993). The underlying reasons for such trends are mostly speculative, but might be hypothesized to be the result of the recent change of the climate and food supply.

In our case these explanations are also possible, e.g. the wintering conditions for the birds could have shifted to less favorable in the Mediterraneum than on the

Atlantic coast, but in the absence of direct proof or data, this is speculative. Lapwing are very sensitive to the weather conditions as well (PEACH *et al.* 1994). A significant shift in the composition of the breeding population could possibly have taken place precipitously since in 1976 the very cold spring weather eradicated a considerable proportion of the Hungarian breeding population. If a larger fraction of the birds reoccupying the vacated area originated from the north and west, the ratio of the birds choosing the western route could have become larger in the new generations. The Lapwing usually display strong site fidelity and the majority return to breed to their natal area, but on occasion they can settle elsewhere covering enormous distances (ALERSTAM 1993, VARGA & CSÖRGŐ 1998).

2. Deficient data provision theory

There was no actual change in the composition of the breeding population, the difference derives only from changes in data provision habits.

Shooting migrating birds is a traditional habit in the Mediterraneum, mainly in the western part of it (MAGNIN 1991). Early in the 20th century, many recaptures of Lapwing originated from hunters (VARGA & CSÖRGŐ 1996). Unfortunately, the popularity of this hobby has not declined at all lately, despite a significant drop off in the willingness of providing data on recaptures (CATCHPOLE *et al.* 1999). It is a general tendency – the proportion of Lapwing recoveries originating from the catchment area of the Atlantic Ocean also decreased –, but the trend is more pronounced in Italy than elsewhere (MCCULLOGH *et al.* 1992, BEZZEL 1995, SCHLENKER 1995). This area is traditionally the most important wintering quarter of the Hungarian Lapwing, consequently the declining ratio of birds wintering at the traditional site could be affected greatly by this issue.

The standardization of long-term ringing-recovery data collection is very difficult or practically impossible. As a consequence the exact, unambiguos interpretation of data is biased by the quality of data.

*

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Amphistomes of the World
A check-list of the amphistomes of vertebrates

O. Sey

The amphistomes are one of the rare groups of digenetic trematodes which have a broad spectra of the definitive hosts together with a wide geographical distribution, forming a continuous evolutional lineage from fishes to mammals. At the same time, some species of them are causative agents of devastating disease of domestic and wild animals, mainly ruminants. Therefore, amphistomes may have professional and practical interests for research and thus a great number of information has been accumulated on their classification and biology. The intention of this check-list is to bring together a comprehensive list of the amphistomes, presently known and sources of references of their hosts and geographic distribution (87 pages). This list consists of three main parts. In the first "Parasite/host check-list" (137 pages), parasites were listed under their scientific names, followed by the synonyms, then the name of the authorship as well as the name of the countries from which they were reported. In the second "General host/parasites check-list" (31 pages), host were listed systematically under their scientific names from fishes to mammals, followed by amphistomes described in them in alphabetical order. In the third "Host/parasites check-list by countries" (63 pages), countries were listed alphabetically, hosts systematically and their parasites alphabetically. When it seemed to be necessary some comments were given and they are found in Chapter 7 "Notes" (5 pages). Three indexes (parasite, host and countries) are added to the list (29 pages).

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