Origin of Common Sandpipers *Actitis hypoleucos* captured in the Iberian peninsula during their autumn migration.

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82 recoveries of Common Sandpipers *Actitis hypoleucos* during autumn migration in the Iberian peninsula are analysed. Information on the origin of birds, phenology of recoveries and habitat used by birds is also given.

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INTRODUCTION

The Common Sandpiper *Actitis hypoleucos* is one of the most abundant breeding waders in central and western Europe (Piersma 1986). Its breeding biology in Europe is relatively well known (Lofaldi 1981; Holland *et al.* 1982a, 1982b; Cramp & Simmons 1983; Yalden 1984; 1986a, 1986b, 1992; Holland & Yalden 1991; Yalden & Holland 1992), but migration strategy and routes are poorly understood (Piersma *et al.* 1997).

Information on Common Sandpipers in Europe has only been gathered as part of wider studies (Piersma 1984; Piersma *et al.* 1987; OAG Münster 1987; Davidson & Piersma 1988; Smit & Piersma 1989). Details of body condition have been recorded in a small number of studies (Cramp & Simmons 1983; Hillman *et al.* 1986; Baccetti *et al.* 1992; Arcas in prep).

In the Iberian Peninsula, the populations of waders (including Common Sandpiper) are well known due to censuses developed through the decades (e.g. Araújo & García 1974; CEMPA 1981; Rufino 1989, 1990; Alberto & Purroy 1981, 1983; Alberto & Velasco 1986; Velasco & Alberto 1993). There have also been a number of studies of phenology which include data on Common Sandpiper (Rufino 1983; Rufino & Araújo 1987; Domínguez 1989; Galarza 1984a, 1984b; Martínez–Vilalta 1985; Domínguez & Maneiro 1988; Ramón 1989; Pérez–Hurtado & Hortas 1994; Velasco 1992). Some information on Common Sandpiper migration in the Iberian Peninsula is offered by Bernis (1966) and more recently by Díaz *et al.* (1996) but they are based on data from censuses and only a few recoveries.

In the present study, recoveries (reports of ringed birds) of foreign–ringed Common Sandpipers in the Iberian Peninsula during autumn migration are analysed. Information about origin, recovery phenology and the habitat frequented by recovered birds during this period is given.

METHODS

In the present study a total of 83 recovery cards of Common Sandpipers ringed abroad and recovered (recaptured, found dead, shot, etc.) in the Iberian Peninsula are analysed. Data of Common Sandpipers ringed in Iberia during autumn migration and recovered abroad were too scarce to obtain any conclusive result. All recovery data for Spain were provided by the Oficina de Anillamiento de la Dirección General de Conservación de la Naturaleza (74 cards from 1955 to 1995) and by CEMPA/ICN – Central Nacional de Anilhagem for Portugal (9 cards from 1957 to 1997).

All recoveries made in the Iberian Peninsula between July and October were considered to be during autumn migration (Cramp & Simmons 1983). Any recovery cards containing erroneous or doubtful data were rejected (n= 2).

For data analysis the following aspects were considered: 1) the country of origin (i.e. the country where the birds were ringed). Birds were divided into two different categories called "native" and "non–native birds" to take into account the date of ringing and the age of birds when ringed. Thus, we assumed that birds ringed as pulli, juveniles or as adults (EURING code 1, 3 or 4, 6 respectively) during their breeding season (during May and June, Cramp & Simmons (1983)) were native birds. Non–native birds were those both juveniles (EURING code 3) and adults (EURING code 2, 4, 6) ringed outside this period. Juveniles were included in this last group because these birds may already be on passage.

The finding location of each recovery was mapped. Recoveries further than 30 km from coastline were considered as inland recoveries.

When possible, the habitat where the bird was recovered was noted. With the aim of studying age differences in coast/

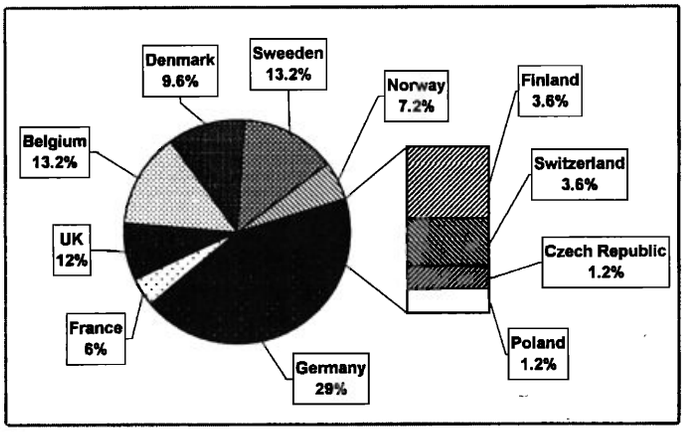

Figure 1. Origin countries of Common Sandpipers recaptured in the Iberian peninsula during autumn migration.

inland use by Common Sandpipers during autumn migration in the Iberian Peninsula, we considered adults (i.e. aged as 4, 6) and juveniles (aged as 3). Unknown age birds (EURING code 2) were counted separately because this kind of code includes both unidentified juveniles and adults (fully–grown birds). Spring or winter recoveries of Common Sandpipers were not analysed, because they were too scarce.

RESULTS

Origin of Common Sandpipers recovered in Iberia

Figure 1 shows the countries of origin of Common Sandpipers recovered in Spain and Portugal on autumn migration. 50.6% of recoveries were adults, 19.2% juveniles and 28.9% fully–grown birds (of unknown age). Most of the recoveries came from northern and western Europe, e.g. Germany (29 %), Belgium (13.2%), Sweden (13.2%) and United Kingdom (12%). A small number of recoveries came from Poland (1.2%). These figures are not unexpected considering that it is in these countries that most Common Sandpipers are caught and ringed (see Table 1). A smaller proportion came from Denmark (9.6%), Norway (7.2%) and France (6%). Most of the recovered birds are non–native birds in the country where they were originally ringed (84.3%) and therefore it is possible that they came from other countries in more northerly latitudes. Although fewer in number (26.4%), birds ringed in the Scandinavian Peninsula (Finland, Norway and Sweden) were also recovered. These countries represent the northern limit of its distribution area in Europe (Hayman *et al.* 1986) and thus 40% of birds ringed in this region were identified as native birds. All the remaining recoveries came from southern Europe such as France (6%) and Switzerland (3.6%). Only 1.2% of recoveries came from eastern Europe (the Czech Republic).

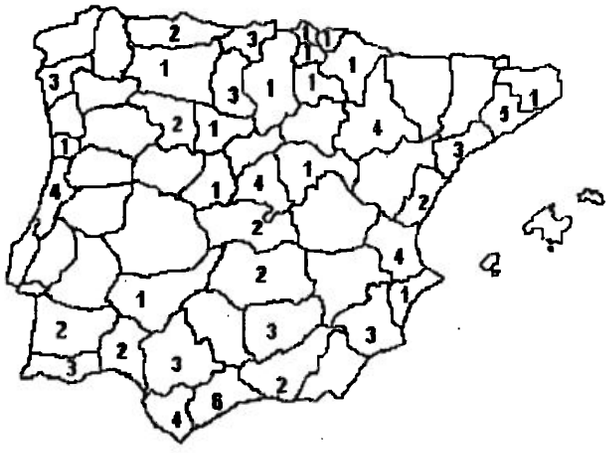

Figure 2. Location and number of recoveries of Common Sandpipers in the Iberian peninsula during autumn migration.

Location of recoveries

Figure 2 shows the location and number of recoveries made of Common Sandpipers in the Iberian Peninsula during autumn migration. 51.8% of recoveries were at inland sites, whereas 48.2% were on the coast. From the first group, 39.5% were in fresh water habitats such as reservoirs, lakes and rivers. There was no significant difference in the abundance Common Sandpipers at the coastal and inland sites ($x^2 = 1.1$; $p > 0.05$). Adults were significantly more abundant than juveniles at both coastal sites ($x^2 = 4.84$; $p < 0.05$) and a highly significant difference between the number of adults and juveniles using inland locations when migrating ($x^2 = 6.8$; $p < 0.01$).

Phenology of recoveries

Most recoveries occurred during August (52.7%) and September (27%) (Figure 3) these being the months when autumn migration of Common Sandpipers reaches its two consecutive peaks (Domínguez 1997). 27.4% of recoveries were birds caught and released by a ringer, August being the month when most ringing effort occurs, at least in Spain (Cantos & Fernández 1994). The proportion of recoveries in other months was 10.8% and 9.5% in July and October respectively. Owing to the small size of the dataset, it is not clear whether there are differences in the duration of juvenile and adult autumn migration periods (Figure 3).

DISCUSSION

Most of the Common Sandpipers that use the Iberian Peninsula as a migratory pathway to the African continent come from western (France, Belgium, U.K.) and northern (Germany, Denmark and Scandinavia) Europe. Individuals come by one route from western Europe (France, Belgium, United Kingdom) and by another from northern countries (Germany, Denmark and Scandinavian countries). The low number of recoveries of birds ringed in eastern Europe (one bird from the Czech Republic), confirms the idea that birds follow different migratory pathways to Africa depending on their origin. Cramp & Simmons (1983) suggest that birds ringed in Finland, east German regions and the Czech Republic are recovered mainly in Italy, whereas birds ringed in northwest Europe are from France, the Iberian peninsula (Spain and Portugal) and Morocco. Bernis (1966) notes a very similar behaviour in Wood Sandpipers *Tringa glareola* that cross Europe during autumn migration, and called these routes the "Italian way" and the "France–Iberia–Morocco way" respectively.

Phenology of recoveries is coincident with that of other species in the Iberian peninsula during post–nuptial migration,

Table 1. Common Sandpipers inged in some European countries and recovered in the Iberian Peninsula,

Country	Period	Ringed Birds
Czech Republic	1934-1980	7454
Denmark	1928-1997	6448
Finland	1913-1997	10324
France	1911-1990	11515
Germany	1909-1996	12612
U.K.	1909-1991	16426
Norway	1914-1982	4510
Portugal	1976-1983	57
Spain	1973-1996	4413
Sweden	1960-1983	13935
Switzerland	1924-1997	1946

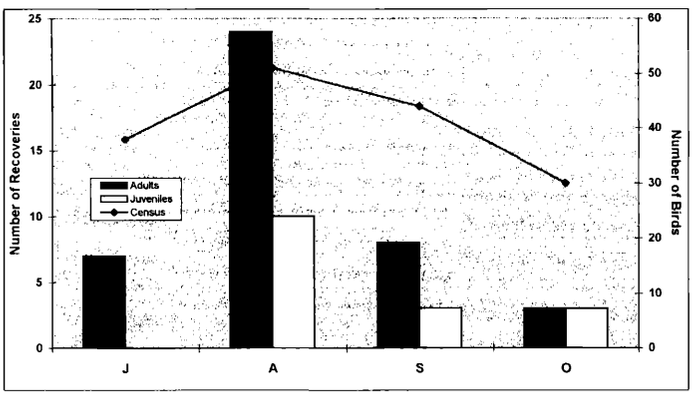

Figure 3. Phenology of recoveries of Common Sandpipers in Spain. Census data from NW Spain (author´s unpublished data).

August being the month when highest numbers of counted birds occur (Rufino 1984; Martínez–Vilalta 1985; Domínguez & Maneiro 1988; Hernández & Velasco 1990; Galarza 1984a, 1984b; Díaz *et al.* 1996). Some studies (e.g. Münster 1987) have shown that juveniles tend to be found inland and adults tend to be found on the coast. Such segregation has to do with the use of coastal locations by adults and inland ones (lakes, reservoirs, rivers, etc.) by juveniles. Further studies of age differences during migration and an increase in ringing effort of this species in Iberia would be of interest for a better understanding of this species migratory behaviour.

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