

WINDMILL HILL FLATS: A GOOD VIEW OF MIGRATION ACROSS THE STRAITS OF GIBRALTAR.

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Resumen

Observaciones de passeriformes se llevaron a cabo en Windmill Hill Flats, por observadores del Strait of Gibraltar Bird Observatory, casi diariamente entre 1987 y 1989. Los resultados revelan interesante información sobre las épocas de paso y las costumbres de las aves y pueden ser utilizados como base para la especulación sobre aspectos más generales de la migración de aves.

Este trabajo muestra también cómo la labor de ornitólogos voluntarios puede constituir una contribución importante a los conocimientos científicos.

Abstract

Censuses of migratory passerines at Windmill Hill Flats were undertaken on an almost daily basis between 1987 and 1989 by the Strait of Gibraltar Observatory.

The results give interesting insights to passage periods and the habits of the birds in question and can be used to speculate on wider aspects of bird migration.

The paper shows how the work of volunteer ornithologists can make contributions to improving scientific knowledge.

INTRODUCTION

Much has been written about bird migration across the Straits of Gibraltar. Starting with the pioneering work of Irby (1895), and later works by Gibraltar-based ornithologists (Lathbury 1970, Cortes *et al.* 1980, Finlayson & Cortes 1987, Finlayson 1991, and numerous papers and systematic lists published by the Gibraltar Ornithological & Natural History Society in Alectoris, e.g. Holliday 1990, Perez 1995) and workers in Spain (e.g. Bernis 1980, Telleria 1981). These works have varied from annotated checklists to attempts at being definitive works on the subject.

Much has been written too about bird migration in general in the European-African bird migration system, not least by Moreau (1972), and the subject is still one undergoing active research in Europe and, increasingly, in Africa.

The aim of this paper is not to review all or any of these works. Instead the aim is to summarise the work of recorders of the Strait of Gibraltar Bird Observatory at Windmill Hill Flats, Gibraltar, between 1987 and 1990, highlighting the contribution that regular observations from specific well chosen points can make to the knowledge of bird migration, discussing some of these contributions and how such observations can be used to confirm the results of published work.

THE STRAIT OF GIBRALTAR BIRD OBSERVATORY

The Strait of Gibraltar Bird Observatory (SGBO) was set up in January 1987 as part of the Gibraltar Ornithological & Natural History Society (GONHS). It is the body responsible for collecting, collating and publishing ornithological records in Gibraltar and the surrounding area. This includes visual observations and bird ringing through the Gibraltar Ringing Group (a ringing group of the British Trust for Ornithology (BTO)).

Whereas since 1991 the most intensive work has been in bird ringing, between 1987 and 1990 priority was given to bird censusing in order to establish or confirm the passage periods of migrants through Gibraltar. This paper deals specifically with the observations at Windmill Hill Flats, Gibraltar. Details of the number of days when birds were counted during this study are given in Table 1.

Table 1. Windmill Hill Flats. Number of days censused.

month	1987	1988	1989	1990
January				1
February			9	15
March	22	25	11	14
April	18	24	23	17
May	17	24	14	11
June		10	9	4
July			17	5
August	13	12	24	15
September	14	18	15	17
October	17	7	16	3
November			3	
December				

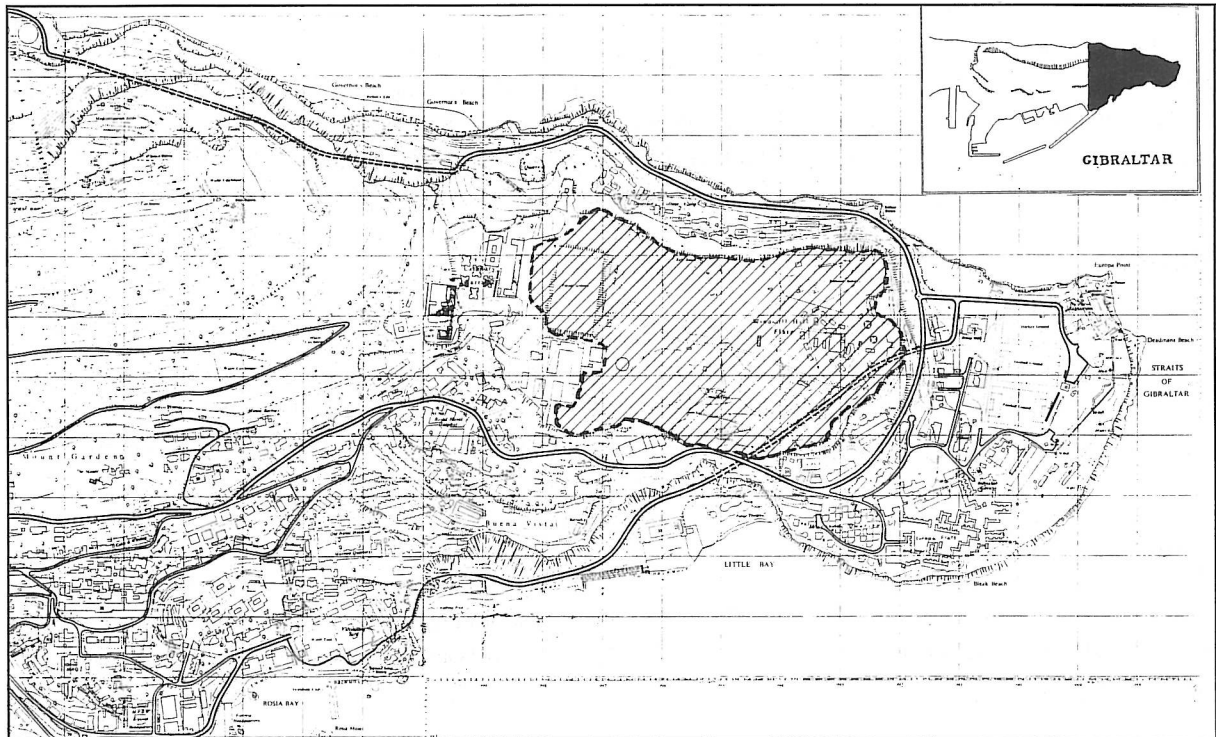


Fig. 1. Windmill Hill Flats. Gibraltar.

WINDMILL HILL FLATS

At about 100 metres above sea level, Windmill Hill Flats (figure 1) is a military training ground, covering an area of about 19 hectares. It is the largest of three stony terraces that descend to the Strait from the southernmost peak of the Rock of Gibraltar. The northernmost part of the Flats are built-up, leaving about 13 hectares of vegetated ground useful to birds.

The vegetation is largely open, with a central flat area of very sparse ground cover and peripheral areas with low scrub averaging about 0.75m and up to about 2m at its highest. Included in the site for census purposes is Jacob's Ladder, an additional area of scrub up to 3m high to the west.

Windmill Hill Flats are surrounded on the east, south and west by vertical cliffs. It is the only vegetated part of the southern promontory of Gibraltar and as such may well act as a focal point for birds coming over the Strait from the south or at sea to the east or west. It has traditionally been considered by Gibraltar-based birdwatchers as a good site for observing landed migrants.

For example, out of 28 species of mainly nocturnal transaharan migrants that occur regularly at the site, the percentage of first sightings that occurred at Windmill Hill in 1987, 1988 and 1989 were 35%, 50% and 25% respectively, while 57%, 64% and 43% were within seven days of the first sightings for the region (SGBO Reports). The Rock of Gibraltar as a whole claimed 64%, 71% and 86% of first sightings respectively.

Comunicaciones

The resident bird community of Windmill Hill consists of Barbary Partridge *Alectoris barbara*, Yellow-legged Gull *Larus cachinnans* (along the perimeter atop the cliffs) Blue Rock Thrush *Monticola solitarius*, Blackbird *Turdus merula*, Sardinian Warbler *Sylvia melanocephala*, Wren *Troglodytes troglodytes* and Spotless Starling *Sturnus unicolor*. Peregrine *Falco peregrinus*, Kestrel *F. tinnunculus* and Little Owl *Athene noctua* nest on adjacent cliffs. Nearby habitats hold nesting Blackcaps *Sylvia atricapilla* and Blue Tits *Parus caeruleus* which only occasionally stray onto the Flats.

METHODS

A transect route approximately 2.4 km in length was chosen, covering all the habitats in the area. This was walked slowly by the observers within two hours of sunrise and all birds seen or heard were recorded. While the intention was to census birds every day this did not prove practicable although the site was visited at least twice a week during much of the study period (see Table 1). Different observers contributed records, but these all knew the site well and were all of comparable experience.

RESULTS

The results of the daily censuses at Windmill Hill Flats are published by the Gibraltar Ornithological & Natural History Society (SGBO Monthly/Quarterly Bird Reports 1987-1990). These results are not reproduced here but form the basis of the data analysed.

For this study the total number of birds of each migrant species (see Appendix 6) seen each day was converted to a mean number of birds for equivalent seven-day periods for the northward passage in 1987 and 1988 and for the southward passage in 1987. Data was pooled for longer periods for the northward passage in 1989 and the southward passage in 1988 and 1989. Sufficient data were not gathered subsequently to allow treatment in this way.

Great caution is called for in considering these data. There can be variation in numbers of birds seen according to weather conditions (the site can be very windswept at times). Using data from several years will tend to reduce this problem. Density data (birds per transect or their conversion to birds per hectare as in Finlayson 1991) must be treated with considerable reservation. For this reason these data have been used only to indicate main times of passage and more use has been made of presence and absence of species. This also has inherent problems (e.g. particularly late or early individuals, wandering non-breeding or young birds), but local knowledge can greatly account for these possible errors.

In particular the impoverished breeding community of Windmill Hill Flats makes the site ideal for locating migrants which are not masked (except in a few cases) by resident birds.

DISCUSSION

General

The passage periods as reflected in the results in general do not differ markedly from the passage periods given in Cortes *et al.* (1980), although these were based on less systematic observations over a number of years. Although it is not made clear

in his work, Finlayson (1991) largely used the same 1987 data as treated here to determine passage periods (although not the 1988 to 1990 data) and therefore not surprisingly his conclusions coincide largely with these.

It is well known as a general rule for European-African migration of passerines and near-passerines, and specifically for the Strait of Gibraltar, that species that winter south of the Sahara arrive later in the spring and depart later in the «autumn» than species that winter north of the Sahara (Telleria 1981, Finlayson & Cortés 1990). Figures 3 and 4 show the number of species in each category according to one week periods.

Northward Passage

Figure 3 shows a small increase in February of Mediterranean-wintering species at Windmill Hill Flats. This is due to the arrival on migration of some species which did not winter in this particular site in 1988 (*Sylvia undata*, *Emberiza calandra*). Mediterranean-wintering species decreased gradually towards the end of April, with a slight increase in May due mainly to the occurrence of *Emberiza calandra* and *Sylvia atricapilla*. In the latter case this was probably as a result of dispersal of young birds from nearby in the case of *S. atricapilla*. The departure of the Mediterranean-wintering species takes place in a gradual manner. *Motacilla alba* and *M. cinerea* departed by mid March, *Erithacus rubecula* by mid to late March, *Turdus philomelos* and *Saxicola rubetra* by late March, and *Sylvia atricapilla* by mid to late April. The marked two stage arrival in the autumn is not mirrored in the spring. One inconsistency was *Phylloscopus collybita* which was gone by mid March in 1988 but occurred until late April in 1987.

The increase in the number of species of trans-Saharan migrants occurred in two stages. The first increase occurred during the first week in March, largely accounted for by the wheatears *Oenanthe* spp. and some *Sylvia* warblers, with a second influx starting at the end of March and increasing sharply until the first week in May after which passage dropped again sharply. The small increase in late May was largely due to dispersing immature *Lanius senator* and *Hippolais* spp., which are both late spring migrants and very early autumn migrants.

Southward Passage

Hippolais polyglotta and *Lanius senator* (immature birds) were the two trans-Saharan species that occurred first together with *Oenanthe hispanica*, another early migrant. *Cisticola juncidis* and *Sylvia undata*, both of which nest in the area (*C. juncidis* was confirmed nesting in Gibraltar in 1994 and is also known to be an early migrant (Finlayson & Cortés 1977)) were the only Mediterranean-wintering species present in August. *Emberiza calandra* was noticeably absent.

Trans-Saharan migrants built up in number of species in late August (with the almost simultaneous addition of, e.g. *Anthus campestris*, *Cercotrichas galactotes*, *P. phoenicurus*, *O. oenanthe*, and some *Sylvia* spp.) and dropped off in mid September (with the loss of *Upupa epops*, *Calandrella cinerea*, *C. galactotes* and *Acrocephalus scirpaceus*) and again in mid October with the departure of the remaining species.

There appeared to be two main arrivals of Mediterranean-wintering species, the first in mid September consisting of *M. cinerea*, *Saxicola rubetra* and *Phylloscopus collybita*, and then in early to mid October with the arrival of *Motacilla alba*, *Sylvia atricapilla*, *Erithacus rubecula*, *Galerida cristata* and finally a third smaller one a week later with *Phoenicurus ochruros* and *Turdus philomelos*.



Fig. 2. Windmill Hill Flats. Gibraltar

The months with least number of migrant species using Windmill Hill Flats were July and August. The maximum number of species recorded at the site on any one week during each passage period was 22 for the southward passage (week commencing 22 October 1987) and 23 for the northward passage (week commencing 26 April 1987).

Species groups

The differences in passage periods between trans-Saharan and Mediterranean-wintering species can be illustrated by particular groups of similar (usually closely related) species.

Larks *Galeridae*

The Short-toed Lark *Calandrella cinerea* is an uncommon trans-Saharan migrant that occurred in late April/early May and again late August/mid September. Both Crested Lark *Galerida cristata* and Skylark *Alauda arvensis* are Mediterranean-wintering species that arrive in October. Neither species winters at Windmill Hill every year although one or the other does so in most years. Crested Lark wintered in 1987/1988 and Skylark was present during most of the 1986/87 winter. Northward Skylark passage was evidenced mainly between the end of February and end of March 1987. In the years when it did not winter, Crested Lark passage was not observed, the implication being that birds on Windmill Hill in other years are probably wintering individuals prior to departure, whereas there could be true passage of Skylarks.

Pipits *Anthus* spp.

Meadow Pipits *Anthus pratensis* winter on Windmill Hill. They arrive in mid October and decrease in numbers from early March, disappearing by mid April. Tawny pipits *A. campestris* and Tree Pipits *A. trivialis* are passage migrants. In the present study the Tawny Pipit preceded the Tree Pipit in autumn but followed the Tree Pipit in the spring. The Meadow Pipit overlapped the Tree Pipit for several weeks at the site, but there was very little overlap with the Tawny Pipit at either season.

Wagtails *Motacilla* spp.

Yellow Wagtails *Motacilla flava*, trans-Saharan migrants, occurred from early September to mid October in 1987. However in 1988 notable numbers were seen into early November. Return passage was from early April to mid May in 1987, with few records in 1988. Early Yellow Wagtails (February) of the Spanish race *M. f. iberiae* also occur at the site but were not recorded in these years. This species is erratic in its occurrence at Windmill Hill and individuals seldom linger for more than a day. Grey Wagtails *M. cinerea* and White Wagtails *M. alba* are both Mediterranean-wintering. The Grey preceded the White in arriving in both 1987 and 1988 by about five weeks. Departure was closer together, about early March. In the years when neither species was regular in the winter (1986-87 and 1988-89) some passage of both was noted in March to May, (but no Grey Wagtails were recorded in spring 1989). Yellow Wagtails did not overlap at all with the other two species in the spring of 1987, while there was strong overlap with White in 1989 and particularly with Grey in both autumns (1987 and 1988).

Robin *Erithacus rubecula* & Nightingale *Luscinia megarhynchos*

The Robin is perhaps the typical Mediterranean-wintering species. It was first recorded in early to mid October with numbers still fluctuating at the end of November. In the spring slight increases in numbers from mid February to March may indicate passage, although this was not very noticeable in the field. The last Robins were seen in mid-April 1987, but this is late. It does not nest on Windmill Hill and has only become established as a rare nester on Gibraltar much more recently (breeding confirmed in 1995).

In contrast the Nightingale is a typical trans-Saharan migrant passing south between the end of August and the middle of October (exceptionally later) and moving north between early March and mid April. These two species, which use similar habitats when on migration virtually do not overlap at all during passage.

Comunicaciones

Redstarts *Phoenicurus* spp.

The Black Redstart *Phoenicurus ochruros* is the latest wintering species to arrive at Windmill Hill, doing so in numbers in the second half of October. Numbers stabilise by the middle of November. Large numbers are also seen in the spring, with the largest number at the end of February and the first week of March.

The Redstart *Phoenicurus phoenicurus* passed between the middle of September and the first half of October and again mainly between the second half of March and the middle of May. The two *Phoenicurus* species overlapped only during two weeks in the spring and one week in the autumn, and their peaks were well separated.

Chats *Saxicola* spp.

The Stonechat *Saxicola torquata*, although a very common resident in similar habitat near Gibraltar does not nest on the Rock and dispersing young do not occur during the summer. The Whinchat *Saxicola rubetra*, a trans-Saharan migrant thus occurred before the Stonechat during southward passage, appearing in early September and occurring until early October (one late October record in 1987). The Stonechat arrived in mid September, with numbers increasing until mid October and levelling off (wintering population) by mid November.

In spring Stonechat numbers build up between the end of February and the beginning of March (by which time local birds in neighbouring Spain will have raised their first brood). All have left in mid March when the Whinchat arrives, peaking around early May.

There is therefore a three week overlap between the two species at Windmill Hill in autumn but virtually none in spring. The Spanish Stonechats are clearly very averse to moving even in the local area. No young appear to disperse to Gibraltar in summer and nesting in spring is very early. In addition, in contrast to other Mediterranean-wintering species of similar open habitat, like Fan-tailed Warbler, Dartford Warbler and Corn Bunting, Stonechats have not been known to attempt to nest in Windmill Hill, an attempt which would more likely be made by dispersing local birds than by migrants from further north.

Warblers *Sylvia* spp.

Two of the *Sylvia* warblers, the Dartford Warbler *S. undata* and the Blackcap *S. atricapilla* are Mediterranean-wintering, while the Spectacled Warbler *S. conspicillata*, Subalpine Warbler *S. cantillans*, Whitethroat *Sylvia communis* and Garden Warbler *S. borin* are trans-Saharan migrants.

The Dartford Warbler occurred through most of August 1987. Some of these birds may have been dispersing young from nearby populations, and the species regularly attempts to breed on the site. Early September and mid October showed higher numbers in 1987, but there was little variation in 1988 and in view of the fact that the species also winters irregularly, inferences as regards passage cannot be made from this study. Irregular occurrence, probably due also to local movements, also masks any northward passage, but the evidence from these data suggests the possibility of passage between mid February and mid March.

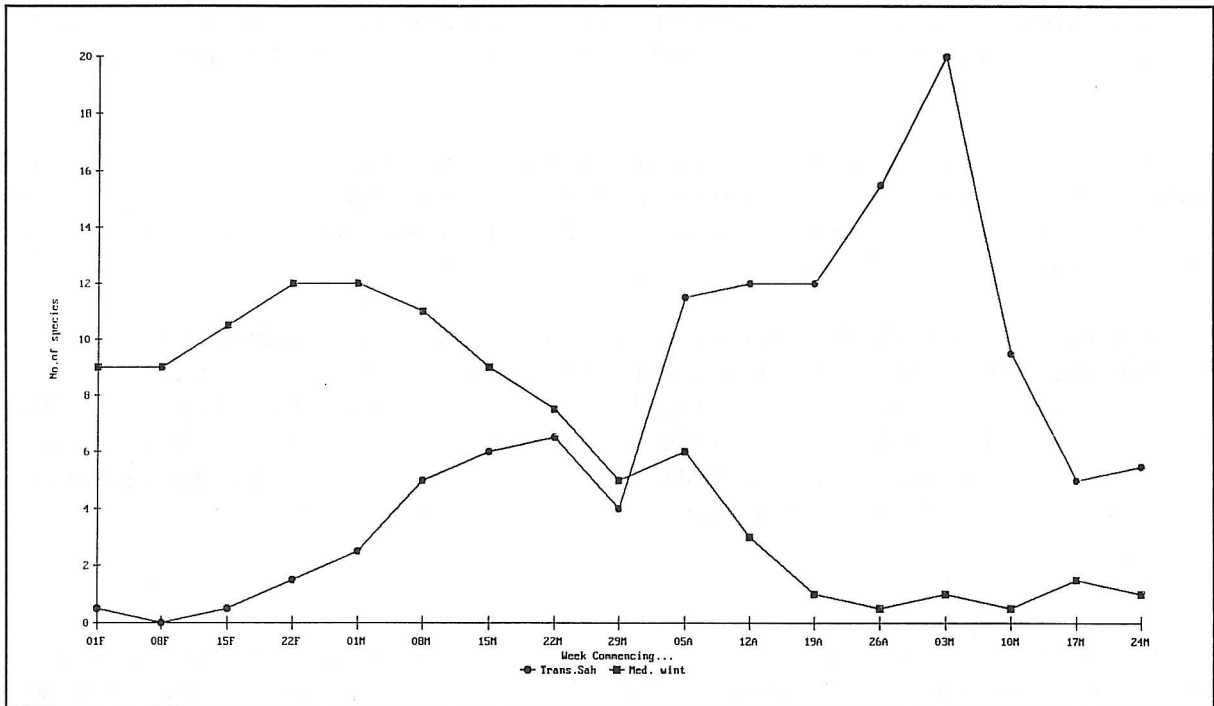


Fig. 3. Northward Passage 1987-1988. Windmill Hill Flats.

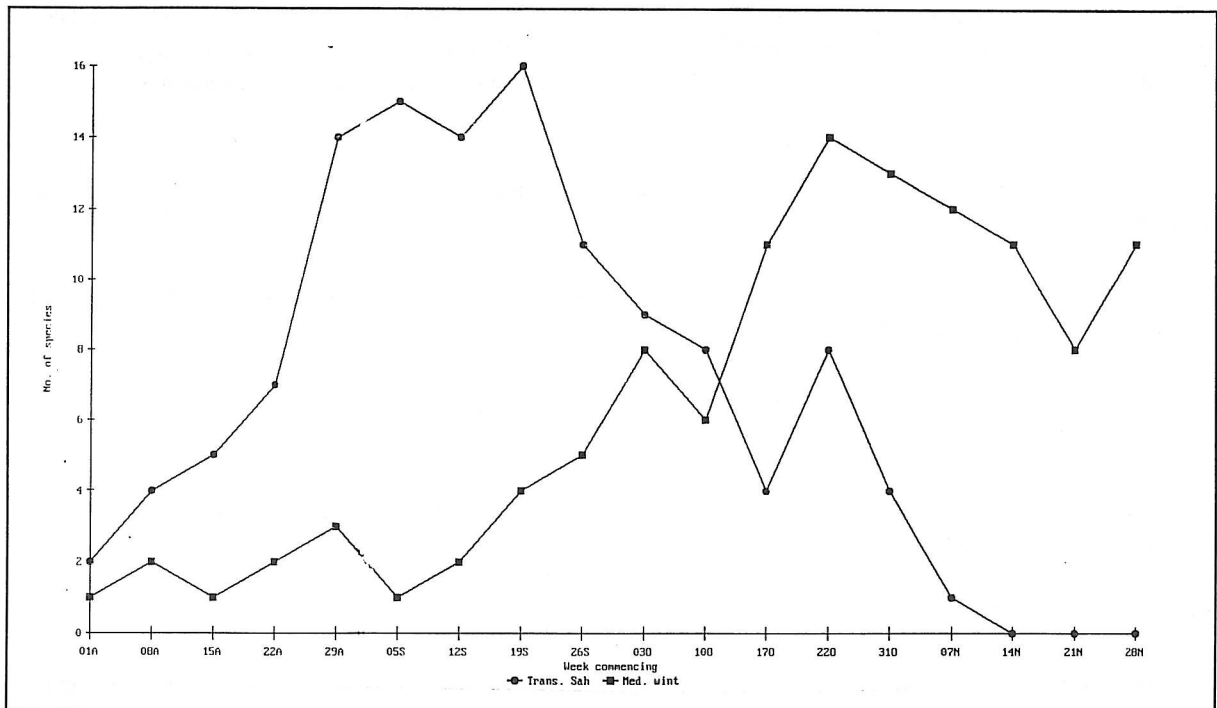


Fig. 4. Southward Passage 1987. Windmill Hill Flats.

Comunicaciones

Most Blackcap southward passage was seen to occur in October. Although the species winters near Windmill Hill, the habitat is such that it is not regular there at that time. Northward movement was most obvious in February (1987) and March (1987, 1988 and 1989).

The Garden Warbler is less regular on Windmill Hill than the other trans-Saharan *Sylvia*, probably due to different habitat requirements. Records in 1987 showed passage between late April and early May and between early September and mid October. Autumn passage was tapering off by the time the Blackcap peak occurs while in spring the majority of the migrant blackcaps had left by the time Garden Warblers appeared in any numbers.

Subalpine Warbler, Spectacled Warbler and Whitethroat occurred at similar times, with the Spectacled being first seen slightly later and the Subalpine slightly earlier than the others in the spring (March). This trend was reversed in autumn 1988, but more or less maintained in autumn 1987. Spring migration ended in early May (Spectacled and Subalpine) and mid May in the Whitethroat. In autumn 1987 all three species were first seen in August while in 1988 Subalpine and Whitethroat did not occur until September. The Whitethroat occurred until October while Spectacled and Subalpine had completed their passage, as seen on Windmill Hill in September (with one October record for Subalpine).

Warblers *Phylloscopus* spp.

The Chiffchaff *Phylloscopus collybita* is another typical Mediterranean-wintering species. Chiffchaffs do not nest in Gibraltar, and the first birds were noted on Windmill Hill in the second half of September (1987: later in 1988) with considerable numbers remaining throughout the winter and decreasing gradually towards the middle-end of March. Willow Warblers *Phylloscopus trochilus* occurred from the end of August (1987) with most of the passage over by mid October. In the spring they did not arrive until middle to late March, after the bulk of the Chiffchaffs had left. Most passage was in April and early May, while late birds still occurred in late May. Maximum counts in this species varied in actual date from year to year.

In 1987 there were seven weeks of overlap in the autumn and six in the spring (none in 1988) while passage peaks clearly do not coincide.

Bonelli's Warbler *Phylloscopus bonelli* was only noted regularly in 1987. Birds were noted between mid April and early May and again in August and early September,

Migrants or Residents?

The status as migrants of a number of species that occur at Gibraltar is still not clear. Relevant observations in this study are considered here in respect of four species.

Blue Rock Thrush *Monticola solitarius*

The Blue Rock Thrush is resident in Gibraltar and several pairs nest on the cliffs surrounding Windmill Hill and are observed on the Flats either feeding or singing. Small numbers winter in tropical West Africa (Moreau 1972). Finlayson

(1991) states that the only evidence of passage in the Strait is a slight influx in late September to October noted by Telleria (1981). The SGBO data however suggest an influx between late March and late April, with there being little doubt of the presence of migrants illustrated for example on 29 March 1988 when nine males were seen singing and fighting within a small area of Windmill Hill.

In autumn the increase in numbers appeared to be in early October in 1987 and 1988. It was most notable in 1988. Taking the increases in spring and autumn in combination, they would seem to correspond more to a population wintering south of the Sahara than in the Mediterranean.

Blackbird *Turdus merula*

Cortes *et al.* (1980) refer to the possibility of passage of Blackbirds in February, March, October and November. Telleria (1981) supports this possibility.

The data here are inconclusive in view of the presence of local birds. The numbers are first highest in February, then appear to drop and build up again in March and April. In the latter case this could be due to the presence of first brood fledgelings which are about from mid March (and could account for the increases in Cortes *et al.* (1980). A small increase was also noted in mid October in 1987 and 1988, which could be indicative of passage. In both seasons suspected Blackbird passage coincides with passage for the Song Thrush *Turdus philomelos*, a species which migrates at similar times to the Blackbird in northern latitudes.

Fan-tailed Warbler *Cisticola juncidis*

Movement of Fan-tailed Warblers has been the subject of considerable controversy (Elkins 1976, Finlayson & Cortes 1977, Finlayson 1979, Finlayson 1991). Some individuals winter in Gibraltar, and breeding is at least attempted in most years (confirmed in 1994), although it was not attempted in Windmill Hill in the years under consideration. SGBO data suggest northward passage from mid February, being largely over by the end of March, with some birds still seen in the first two weeks of April. Return passage is early (Elkins 1976, Finlayson & Cortes 1977) and was already in progress by the time censusing began in August in 1987 and 1988. The presence of dispersing young also must not be discarded.

Records in 1987 only suggest a drop in numbers in September with a new influx in October, with numbers settling from November onwards. There are insufficient data to confirm the impression that there may be a second peak of migration (perhaps from a separate population).

Finlayson (1991) tries to attribute the pattern of early southward passage to «aquatic or semi-aquatic» habits, comparing this to movement of White Storks *Ciconia ciconia* and Black Kites *Milvus migrans*. Fan-tailed Warblers in the area of Gibraltar however are largely birds of dry open habitats, a fact supported by Cramp & Brooks (1992) and their early passage is best compared to that of birds of similar habitat notably Black-eared Wheatear *Oenanthe hispanica* (see below) whose return passage is relatively early (early March to April) for a trans-Saharan migrant. The earlier movement of the Fan-tailed Warbler is more in keeping with pre-Saharan winter quarters and comparable to the passage period of Stonechat, Robin, Dartford Warbler and Chiffchaff.

Comunicaciones

Other species

A number of other species occurred in numbers that were too small or too infrequently to be considered here in more detail. However the following merit comment:

Hoopoe *Upupa epops*

The Hoopoe is mainly a trans-Saharan migrant, although individuals winter in the Mediterranean region. None nest nor winter in Gibraltar where it is usually one of the first of the migrants to be seen in the autumn (as early as July) and spring (January). In this study the first observation during the northward passage was in early February 1987 and passage continued until May, with the greatest numbers in March. In autumn they occurred from August to mid September.

Wheatears *Oenanthe* spp.

Both the Wheatear *O. oenanthe* and the Black-eared Wheatear *O. hispanica* are trans-Saharan migrants, and their passage periods overlap greatly. The Black-eared Wheatear tends to occur earlier in the southward passage (early August in this study is typical) and to complete its passage generally by mid September. This may be due to its occupying dry open habitats that become inhospitable soon after the onset of the annual drought in late May. The Wheatear appeared later in August or very early September and prolonged into November (mainly Greenland Wheatears *O. o. leucorrhoa*). Black-eared Wheatear peak was earlier (end of August/beginning of September) than the Wheatear's (second half of September/beginning of October).

In spring the Wheatear tends to arrive a little earlier but passage lasts longer into the second half of May. Peak passage of Wheatear was in April/May but except for 1989, Black-eared Wheatear peaked in March/April.

Melodious Warbler *Hippolais polyglotta*

The Melodious Warbler is a late migrant arriving in late April with the largest numbers passing in early May and passage continuing, almost merging with northward passage which starts early and peaks at the end of August and the beginning of September.

Flycatchers *Muscicapidae*

Both the Pied Flycatcher *Ficedula hypoleuca* and the Spotted Flycatcher *Muscicapa striata* are trans-Saharan migrants. Their passage periods overlap considerably. In 1987 and 1989 Pied flycatchers arrived a week earlier in mid April while both species coincided with first records later in April in 1988. Pied Flycatcher passage finished earlier (first week in May in all three years), while Spotted Flycatchers still occurred toward the end of May.

For the southward passage only 1987 data are useful. Spotted Flycatchers arrived a week earlier in late August (possible dispersing young cannot be excluded as the species is a common breeder in neighbouring Spanish habitats). Passage of both species continued into October with Spotted Flycatcher being seen a week later than the last Pied.

Woodchat Shrike *Lanius senator*

This trans-Saharan migrant was first seen in the spring in mid March, with greatest numbers towards the end of April/beginning of May and some, generally juveniles lingering on, and appearing through the summer. Autumn passage was almost unrecorded in 1988 but in 1987 continued until mid September.

Corn Bunting *Emberiza calandra*

The Corn Bunting is a Mediterranean-wintering species that occurs in most winters on Windmill Hill Flats, although it apparently did not winter in 1987/88. This allowed spring records to reveal passage in 1987 between late February and late March. Autumn passage seemed to occur between mid September and early November, although November birds could include birds wintering in the area lingering on. There was a consistent increase in occurrence of the species at Windmill Hill in May. This has been attributed by Finlayson (1991) to possible nesting attempts (which have occurred several times in Gibraltar) or dispersal of young birds from Spain. The consistency of these May records however cannot totally exclude the possibility of small scale late passage possibly of a separate population or age group.

CONCLUSIONS

Systematic observations by the members of the Strait of Gibraltar Bird Observatory have been used in this study to indicate aspects of the passage of passerine birds in the area of the Strait of Gibraltar. The contribution of such data to discussions on bird migration cannot be over-stressed. Acknowledgement of this will serve as an encouragement to these and other birdwatchers and amateur ornithologists who will appreciate that their many hours of observation contribute significantly to the scientific understanding of major problems.

One important inference concerns the timing of migration of the different species. The timing of migration of related species may have evolved in order to avoid competition during migration (Abramsky & Zafriel 1980). In species such as Blackcap and Garden Warbler competition exists within their breeding ranges (Garcia 1983), and an attempt to reduce this at the stressful time of passage is not surprising. Such species as Redstart and Black Redstart will not generally occur together at breeding or wintering grounds, but habitat selection may not be altogether possible on migration and thus temporal separation would presumably be of advantage.

It may (or may not) be too much to suggest that Mediterranean wintering versus sub-Saharan wintering have evolved purely in order to avoid competition on passage, but it would be hard to discard it as a factor, at least during that time that the populations occur over Mediterranean latitudes in their constant movements generally interpreted as migration. Overlap-avoidance of transaharan and pre-saharan species raises other issues to do with the ecology of migrants and can be thrown into the discussion of the competitive (Pienkowski & Evans 1985) versus non-competitive manner of selection of wintering grounds.

Jordano (1985) and others have shown that food is certainly not limiting in the extreme south of Iberia in winter for frugivorous species, but it might be in certain important habitats during passage. Three things emerge: firstly the fruit crops are unpredictable (and may crash in years of extreme drought); secondly the fruiting of most species of shrub dominating the scrub and woodland is in any case over by March when the bulk of the Transaharans start arriving; and thirdly and perhaps

Comunicaciones

therefore most of the transaharan species are not frugivorous when they arrive in Europe. Thus the Mediterranean-wintering species which retain their predominant frugivory as long as fruits last are able to make an early start to the northward movement before fruiting is over and/or before their transaharan «partners» arrive.

It may well be that while food is not limiting in winter, it is in spring as fruiting bushes diminish in abundance. Later as insect food becomes more abundant the number of migrant species will increase, decreasing again as the summer drought approaches and insect food decreases once more (Finlayson 1981, Cortés 1984). The reverse is true in the autumn with numbers occurring peaking at the time of the expected onset of the first rains. Always the height of the drought is the least productive period when least migrants are seen, except in the more productive habitats (*e.g.* woodland) where this seasonal difference is not as marked, and in specific habitat patches, usually near water, such as reeds, figs *Ficus carica* and blackberry *Rubus* spp. At these times in summer transaharan migrants on their way south through Iberia can most definitely be frugivorous (pers. obs.)

Competition in late winter/early spring until invertebrate food becomes more widely available may be the reason why, with few exceptions (specifically the Stonechat) nesting of local species is later than would otherwise be expected (pers. obs.). The Stonechat in this region nests exceptionally early and may be avoiding competition by advancing, rather than delaying nesting.

It is possible that aspects of the ecology of the pairs or trios of species considered above have evolved to avoid competition throughout the year. In winter they are separated latitudinally, during passage periods temporally and during their nesting seasons either altitudinally, by occupying different ranges or habitats, or by a combination of these. The oversimplified implication is that over the range of situations occurring over a whole year Palearctic habitats do not hold more than one species of each characteristic.

Conversely we can say that the difference in passage periods is merely another expression of the fact that there are intense interactions between migrants (and migrants and residents) which in turn produce selective pressures that result in their avoiding as much as possible their coinciding in time and space. Where they do coincide interspecific interactions including aggression and interspecific territoriality are commonplace.

Evolution of the Mediterranean as a wintering-ground must have been recent, probably more recent than migration into Europe. The benefits of wintering close to the breeding ground will for these species be outweighing the benefits of moving to the tropics. One species of each of the groups has been able to do it so far. Either that or they never migrated to the tropics in the first place. Long-distance migrants which have been strongly selected for very specific migration patterns may not be as flexible as middle-distance migrants (Berthold 1991, 1995), but evidence from non-passerines with increasing presence in Iberia in winter (*e.g.* White Stork, Booted Eagle, *Hieraaetus pennatus*, Short-toed Eagle *Circaetus gallicus*, Hoopoe) suggest that there may be material advantages for selecting shorter migration journeys even for these.

We must not forget that migration is still evolving (*e.g.* Berthold 1995). Many factors will be determining the migratory strategies of individuals, populations and species. If other factors allow, similar species that share similar habitat during migration and whose main (peak) migration occurs at non-overlapping times would tend to shift their migration in order to reduce this overlap further. This may not be so possible in species (*e.g.* the Flycatchers) which overlap so much. Clearly factors acting against such divergence of peak passage will be many, and the fact that different populations migrate at

somewhat different times must not be forgotten. Indeed the principle would apply in isolated populations of the same species, which would tend towards the spreading out of passage period for species with more isolated or extensive populations. The Willow Warbler, with its large population, extensive range and prolonged migratory period would fit into this pattern.

If changes are to be undergone (or indeed are being undergone already) as a response to changing conditions as a result of global warming (Berthold 1991), locations in this region can be of use in identifying some of these changes which may indeed be reflected not just in the numbers of birds passing (which will be hard to monitor from studies such as these), but also in the timing of migration, particularly of arrival and departure of Mediterranean-wintering species, and of presence and absence of species over the years.

The drought experienced in parts of Iberia over the past four years will be exerting selection pressures on populations and we must be observant and aware of the possibility that monitoring at observatories may indicate just what these responses are. Similarly we must not dismiss small indicators, such as the slight increase in Corn Bunting numbers in May, which may be reflecting real changes in strategies and not just conforming to long-held views.

In order to contribute to the answers to these and other problems a good deal more work is required. Observations should now concentrate on obtaining more data on most of the species in different habitats and extending the work by means of ringing studies. This is currently being done by the SGB0 which is contributing to the European Science Foundation project to delve further into the problems of European-African bird movements.

Conservation of Windmill Hill

If we turn the emphasis from the observations and the observers to the site we must make an appeal for the conservation, and improvement of Windmill Hill Flats as a natural habitat. Its attraction to migratory birds has long been known, and old residents of the former temporary housing on the north of the site used before the 1939-45 World War recall the large number of birds that occurred there on «dull misty mornings in the spring» (Alfredo Traverso pers. comm.).

The building of Lathbury Barracks and its parade ground in the early 1960s already greatly reduced the extent of vegetated land on this natural terrace. This was followed in the 1970s by the construction of a NATO communications centre, which not only reduced vegetated ground further, but also introduced two dangerous invasive plants, the Hottentot Fig *Carpobrotus edulis* and the grass *Pennisetum clandestinum*. Both these species are endangering native vegetation on the site.

The fact that Windmill Hill remained and remains still a military training area has meant that it has retained its importance for birds (and other wildlife). However, it has also meant that in recent years as the MOD estate has decreased in extent more and more work has been concentrated there. This has resulted in unnecessary dumping of construction waste. It has also meant that work carried out during the breeding season has disrupted the nesting of some of the resident species and prevented others from attempting to do so.

Over the past three years the MOD Conservation Group has resulted in greater co-ordination, but the GONHS continues to monitor the situation in order to minimise negative impact. In 1991 GONHS with the help of MOD and commercial sponsors constructed an artificial lagoon in order to provide an additional habitat and Gibraltar's only standing water. GONHS also landscaped the surrounding banks and supervises the water levels. However much work needs still to be done

in order to remove accretions and a considerable amount of vegetation management should also be carried out in order to improve habitats for birds. Windmill Hill and the associated Jacob's Ladder also need to have legal safeguards against development in place.

If allowed to do so the Windmill Hill Flats complex, one of the most southerly field research sites in Europe, on the very shores of the Strait, will continue to furnish important information on bird migration between Europe and Africa

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Appendix 1. SOUTHWARD PASSAGE 1987.

Species	1/8/87	8/8/87	15/8/87	22/8/87	29/8/87	5/9/87	12/9/87	19/9/87	26/9/87	30/9/87	10/10/87	17/10/87	22/10/87	31/10/87	7/11/87	14/11/87	21/11/87	28/11/87
T. merula	1.86	4.29	1.2	2	2.4	3	3.5	1.8	1.57	4.15	4	5.8	4.14	2.75	3.5	2.2	2.75	2.67
S. turtur						0.33	0	0.8	0.14	0	0	0.2						
U. epops	0	0.57	0.6	0	0.2	0.5	0.75	0.2										
C. cinerea					0.2	0	0	2.2										
G. cristata															1.67	1.6	2.25	3
A. arvensis					0.6	0	0.25	1.4	0	0	0.75	0	0.24	0.5	3.67	0.4	0	0.33
A. campestris							0.25	0.2	0.43	0.5	0.25	0	15.86	9.25	1.33	19	31.75	32.3
A. trivialis							0.25	0.2				3.4	0.14					
A. pratensis						0.33	0.25	5.4	0.43	0.5	0	0	0.14					
M. flava							0.25	0.2		0.25	0.25	0.2	1.29	0	0.17	1	0	0.67
M. cinerea							0.25	0.8	3.43	2.25	2	0	0.25	0				
M. alba					0.2	0.33	0	0	0.14	0.25	0	0.2	3	5.25	3.83	2.4	0.5	4.67
C. galactotes							0	0		0.25	0	0	0.25					
E. rubecula			0	0.4	0.83	0.75	0.8	0	0.25	0	0	2.4	15	27.25	15.33	21.8	11.75	11.67
L. megarhynchos		0.2																
P. ochruros				0.2	0.17	0	0	0.29	0.5	0.2	0.14	0	0.14					
P. phoenicurus								1.6	1	0.75	0	0	10.86	9	6.83	9.8	6.75	7
S. rubetra						0.5	1	0.8	0.86	4.25	9.75	5.8	1	0.25				
S. torquata					0.6	1.5	1.5	2.2	2.14	2	0.75	0.4						
O. oenanthe								1										
O. hispanica		0.14	0.2	0.86				1										
M. solitar	1.29	1.14	1	2	1.4	3	3.5	1.3	2	1.75	3.5	1.8	0.86	1	0.67	1.8	1.5	1.67
T. merula	1.86	4.29	1.2	2	2.4	3	3.5	1.8	1.57	4.15	4	5.8	4.14	2.75	3.5	2.2	2.75	2.67
T. philomelos												0.4	3.57	7	1.33	0.2	1.5	1
C. juncidis	1.43	3.71	2.6	4.86	2	0	0	0	0.43	0.75	2	0.6	2.71	2.75	0.67	1.4		
A. scirpaceus						0.17			0.43									
H. pallida																		
H. polyglo	0.43	1	0.6		0.8	1.67	0.5	1.2	0.14									
S. undata			0	0.29	0.8	1.67	0.5	0.4	0.14	0.25	0	0.2	1.14	0.25	0	0	0	0.33
S. conspiciata					0.4	0	0.25											
S. cantillans													0.14					
S. communis					0	0.5	0	0.2	0	0.5	0.25							
S. borin						1.17	0	0.4	0.57	0.25	1	0	0.14					
S. atricapilla										0.25	0	0	1.57	1.25	0	0	0	0.33
P. collybita								0.2	0.86	2	3	5	12.86	13.25	6.33	9.8	7	16
P. irochilus					5.4	2.5	2	3.8	5.86	0.75	1.75	1	0.14	0.25				
F. hypoleuca					0.4	1.17	0.75	0	0	0	0.25	0	0.14	0.25				
M. striata						0.83	0.5	0	0	0	0.25	0						
L. senator	0.71	0.29	0.43	0.8	0.5	0	0.2	0.14	0.14									
E. hortulana					0.4	0	0	0.4	0.14									
E. calandra					0.2	0	0	0.4	0.14	0.5	0.5	0	5	1	0.33	0.2		

Figures show mean number of birds seen per visit.

Appendix 2. SOUTHWARD PASSAGE 1988. PERIOD COVERED						
Species	29/8-11/9	12/9-18/9	19/9-02/10	3/10-09/10	10/10-16/11	17/10-06/11
S. turtur						
U. epops	0.33					
C. cinerea	0.33					
G. cristata					0.33	1.4
A. arvensis				0.33		1.8
A. campestris			0.2	0.33		
A. trivialis		0.25		0.67		
A. pratensis					7.67	27.8
M. flava	0.33	1		0.33	2.67	3.6
M. cinerea			0.2		1	1
M. alba					16	1
C. galactotes						
E. rubecula				0.67	0.67	13.8
L. megarhy	1		1.5			
P. ochruros					3	16.6
P. phoenicurus		1.25	0.4	0.67	0.33	
S. rubetra	1.33	1.5	0.4	0.33		
S. torquata		2.25	3	10	7	8.8
O. oenanth	3	8.25	1.2		4.33	8.8
O. hispani	0.33	2			0.33	0.2
M. solitarius		0.25	1.2	1	2.67	1.6
T. merula			1.4	1	3.33	4.6
T. philomelos						5.6
C. juncidi	1.67	1	1.2	1	1.33	2
A. scirpaceus						
H. pallida						
H. polyglotta						
S. undata				0.33	1	1
S. conspic	0.33	0.75				
S. cantillans		0.5				
S. communis			0.4			
S. borin						
S. atricapilla				0.33		
P. collybita			0.2	1.33	0.67	6.8
P. trochilus		10.25	1.2			
F. hypoleuca		1.5				
M. striata			0.4			
L. senator		0.5				
E. hortulana		0.25				
E. calandra					0.33	3

Appendix 3. NORTHWARD PASSAGE 1987.

Species	1/2/87	8/2/87	15/2/87	22/2/87	1/3/87	8/3/87	15/3/87	22/3/87	29/3/87	5/4/87	12/4/87	19/4/87	26/4/87	3/5/87	10/5/87	17/5/87	24/5/87
C. juncidi	1.2	1.14	0.53	2	2.2	1.33	0.33	1	1	0.29	0.29		1.86	2.29	1.33		0.17
S. turtur													0.14	0.71			0.17
U. epops	0.14			2.43	0.4	1.83	1.5	0.14		0.3	0.71	0.14					
C. cinerea																	
G. cristata																	
A. arvensis	0.8		1.17	2		0.33	0.33				0.29	0.17		0.57			0.17
A. campestris									0.25	0.43	2.14	3	3.14	2.14			
A. trivialis									0.14	0.25	0.43						
A. pratens	6	3.43	5.17	7.86	4.2	7.33	3.5	1.86		0.29	0.17		2.43	5	0.67		
M. flava					0.2		0.17										
M. cinerea				0.29													
M. alba																	
C. galactotes														0.14			
E. rubecul	4.4	2.6	1.5	4.3	2.6	1.5	3.67	1.29		1		0.14		0.14			
L. megarhynchos																	
P. ochruro	10.6	9.86	8.5	16.14	10.6	9	9	4.29	0.75	0.57	1	1.33	1.5	0.29	0.29	0.33	
P. phoenicurus							0.17	0.14		0.14	0.14	0.67	2.14	4.14	2	0.2	
S. rubetra	4.4	3.57	3.17	12	4.8	0.83	0.33	1							0.67		0.14
S. torquat				0.14	0.6	0.5	1.33	0.29		1.57	6.86	3	1.57	0.14			
O. oenanthe						0.83	1	0.29		0.43	0.59	0.17	0.57	0.14			
O. hispanica																	
M. solitar	0.6	0.71	0.5	1.14	1.4	1	1	1.57	2.25	2	2	1.5	2	1.14	0.67	0.6	0.83
T. merula	5.4	2.14	3.17	5.57	4.4	4.17	5.33	3.29	3.75	4	5.43	4.67	4.57	3.86	5.17	7.8	7.17
T. philome	0.4	0.14	0.33	2	0.4	0.33	0.75	0.29									
C. juncidi	1.2	1.14	0.53	2	2.2	1.33	0.33	1	1	0.29	0.29		0.14	0.29			
A. scirpaceus																	
H. pallida											0.14	0.67	1.43	4.14	1	0	0.17
H. polyglotta																	
S. undata				0.14	0.4						0.14			0.14			
S. conspicillata						0.17	0.33			0.29	0.43		0.29	0.14			
S. cantillans				0.14	1	1.17	3.5	0.14		1	0.29	0.67	0.29	0.29			
S. communis					0.2	0.83	0.5	0.43		0.29	0.14	1	2	1.43	0.5		0.29
S. borin													0.29	0.29	1.17		
S. auricap	1.4	0.14		1.14	0.8	2	3.67		0.5	0.57	0.43	0.33	0.14				0.17
P. collybi	6.8	4.57	5.5	11.57	6.2	7.83	6.5	1.57	0.5	1.4	5.86	3.33	19.57	16.86	2.83		0.17
P. trochilus							0.83	0	0.25	1	0.43			0.29			
P. bonelli										0.14							
F. hypoleuca												0.17	1.14	0.57	0.14		
M. striata													0.43	1.43	1.67	0.2	0.5
L. senator													1.71	7.71	0.67	0.6	0.83
E. hortulana													0.29	1.57	0.17		
E. calandr	0.6	2.14	1	3.43	2.6	2.33	4.83	0.86		0.29	1.71	0.17	0.57	1.57	0.17	0.2	0.17

Figures show mean number of birds recorded per visit.

Appendix 4. NORTHWARD PASSAGE 1988,

Species	1/2/88	8/2/88	15/2/88	22/2/88	1/3/88	8/3/88	15/3/88	22/3/88	29/3/88	5/4/88	12/4/88	19/4/88	26/4/88	3/5/88	10/5/88	17/5/88	24/5/88
<i>S. turtur</i>																	
<i>U. epops</i>				0.17	1.25	2.5	0.5	0.25	0.33	0.6	0.17	0.25	0.66	2	1	1.5	
<i>C. cinerea</i>																	
<i>G. cristat</i>	2.25	3.5	3	1.5	3	2.5	3.5	0.75						0.5			
<i>A. arvensis</i>				2													
<i>A. campestris</i>										0.2	1			1.75	0.5	1	
<i>A. trivialis</i>										1	0	0	3	3.5			
<i>A. pratens</i>	17.25	18	18.25	15	18.25	13	0.25	0.67		0.6	0		0				
<i>M. flava</i>	0.25		0.25	0.33	0.25	0.5	11.5	1.75	1.67	0.4							
<i>M. cinerea</i>	0.25	0.25	0.5	0.33	0.25	0.5			0.33								
<i>M. alba</i>		0.25	0.75	0.33	0.25	0.5											
<i>C. galactotes</i>																	
<i>E. rubecul</i>	1.25	1	1.5	1.17	2.3	3.5	0	0.33	1	0	0.25	0.33					
<i>L. megarhynchos</i>																	
<i>P. ocliruro</i>	7.75	6.5	7	6.33	12	6	1	1.75	0.67								
<i>P. phoenicurus</i>																	
<i>S. rubetra</i>	4.5	6.5	6	15.67	9.25	4.25	0.5	0.25		0.4	0.17	0	0.33	1.5	0	0	0.33
<i>S. torquat</i>																	
<i>O. oenanthe</i>							1.5	0.25	0	3.4	2.33	1	4.33	5.25	2		
<i>O. hispanica</i>							1	0	1.67	3.6	1.67	0.5	0	0.5			
<i>M. solitar</i>	0.25	1	0.25	0.67	1	1	0.5	0.5	0.67	2	1	1	1.67	0.25	0.5	0.5	0.67
<i>T. merula</i>	3.5	4.25	5.5	3.33	4.25	3.25	2.5	2.5	5	5.2	3.33	4.5	4	4	4	4.5	3.33
<i>T. philomelos</i>																	
<i>C. juncidi</i>	2	1.5	1.75	2.33	2	3.25	3.5	2.25	0.33	0.6							
<i>A. scirpaceus</i>																	
<i>H. pallida</i>																	
<i>H. polyglotta</i>																	
<i>S. undata</i>																	
<i>S. conspicillata</i>																	
<i>S. cantillans</i>																	
<i>S. communis</i>									0.33		1		0.33	0.25	1.5		
<i>S. borin</i>																	
<i>S. atricapilla</i>																	
<i>P. collybi</i>	12	7.75	7.75	12.5	0.75	0.75	2.5	0.25	0.33	0.6	0.33	0.25	0.67	4.5	0.5	0.5	
<i>P. trochilus</i>					5.67	1.2											
<i>P. bonelli</i>																	
<i>F. hypoleuca</i>																	
<i>M. striata</i>																	
<i>L. senator</i>																	
<i>E. hortulana</i>																	
<i>E. calandra</i>																	

Figures show mean number of birds recorded per visit.

Appendix 5. NORTHWARD PASSAGE 1989. PERIOD COVERED								
Species	1/2-28/2	1/3-14/3	15/3-28/3	29/3-11/4	12/4-2/5	3/5-23/5	24/5-4/6	
S. turtur								
U. epops		1.2	1.5	2.5				
C. cinerea			0.13					
G. cristat	0.4	0.5	0.13					
A. arvensis								
A. campestris			0.13		0.2	0.4		
A. trivialis					0.2	0.4		
A. pratens	8.75	8.6	6	1				
M. flava			0.4	0.25				
M. cinerea								
M. alba		1.2	0.25	7.75	0.25			
C. galactotes							0.2	
E. rubecul	4	6.2	2	0.5				
L. megarhynchos			0.25					
P. ochruro	7.25	8	3.75	3.5				
P. phoenicurus			0.13	2.5		0.4	0.2	
S. rubetra				0.25	1.25	2		
S. torquat	5.5	17.2	0.13					
O. oenanthe		0.8	1.13	11	0.75	0.6		
O. hispanica			0.5	6	1.25			
M. solitar	0.5	2	1.88	1.5	0.75	1	0.2	
T. merula	3	6.2	4.75	10.5	2	1.4	0.8	
T. philomelos								
C. juncidi	0.25	0.2	0.13					
A. scirpaceus								
H. pallida								
H. polyglotta						1.4	0.2	
S. undata	0.25	0.2		0.25				
S. conspicillata			0.13	0.25				
S. cantillans		0.2	0.38	1.5				
S. communis		0.4	0.13	2	0.25			
S. borin				0.5				
S. atricapilla			0.13	0.75				
P. collybita		1	5.8	2.25	0.75			
P. trochilus			0.38		5	0.5	0.6	0.8
P. bonelli			0.13		0.25	0.2		
F. hypoleuca					0.5	0.25	0.4	
M. striata						0.25	4.2	0.8
L. senator		0.13	6		2	0.8	1.4	
E. hortulana					0.5			
E. calandra	5.4	0.75	0.75		0.6	0.4		

Figures are mean number of birds recorded per visit.

Comunicaciones

Appendix 6. LIST OF SPECIES CONSIDERED IN THIS PAPER.

Key:

TS: Trans-Saharan migrant
 MW: Mediterranean-wintering migrant
 R: Resident

Turtle Dove <i>Streptopelia turtur</i>	TS	Blackbird <i>Turdus merula</i>	R(?MW)
Hoopoe <i>Upupa epops</i>	TS	Song Thrush <i>Turdus philomelos</i>	MW
Short-toed Lark <i>Calandrella cinerea</i>	TS	Fan-tailed Warbler <i>Cisticola juncidis</i>	MW(?R)
Crested Lark <i>Galerida cristata</i>	MW	Reed Warbler <i>Acrocephalus scirpaceus</i>	TS
Skylark <i>Alauda arvensis</i>	MW	Olivaceous Warbler <i>Hippolais pallida</i>	TS
Tawny Pipit <i>Anthus campestris</i>	TS	Melodious Warbler <i>Hippolais polyglotta</i>	TS
Tree Pipit <i>Anthus trivialis</i>	TS	Dartford Warbler <i>Sylvia undata</i>	MW
Meadow Pipit <i>Anthus pratensis</i>	MW	Spectacled Warbler <i>Sylvia conspicillata</i>	TS
Yellow Wagtail <i>Motacilla flava</i>	TS	Subalpine Warbler <i>Sylvia cantillans</i>	TS
Grey Wagtail <i>Motacilla cinerea</i>	MW	Whitethroat <i>Sylvia communis</i>	TS
White Wagtail <i>Motacilla alba</i>	MW	Garden Warbler <i>Sylvia borin</i>	TS
Rufous Bushchat <i>Cercotrichas galactotes</i>	TS	Blackcap <i>Sylvia atricapilla</i>	MW
Robin <i>Erithacus rubecula</i>	MW	Chiffchaff <i>Phylloscopus collybita</i>	MW
Nightingale <i>Luscinia megarhynchos</i>	TS	Willow Warbler <i>Phylloscopus trochilus</i>	TS
Black Redstart <i>Phoenicurus ochruros</i>	MW	Bonelli's Warbler <i>Phylloscopus bonelli</i>	TS
Redstart <i>Phoenicurus phoenicurus</i>	TS	Spotted Flycatcher <i>Muscicapa striata</i>	TS
Whinchat <i>Saxicola rubetra</i>	TS	Pied Flycatcher <i>Ficedula hypoleuca</i>	TS
Stonechat <i>Saxicola torquata</i>	MW	Woodchat Shrike <i>Lanius senator</i>	TS
Wheatear <i>Oenanthe oenanthe</i>	TS	Ortolan Bunting <i>Emberiza hortulana</i>	TS
Black-eared Wheatear <i>Oenanthe hispanica</i>	TS	Corn Bunting <i>Emberiza calandra</i>	MW
Blue Rock Thrush <i>Monticola solitarius</i>	R(?TS)		