ARTICLES

RINGING RECOVERIES AND MIGRATION OF GREENSHANK BETWEEN EUROPE AND AFRICA

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INTRODUCTION

The Greenshank *Tringa nebularia* breeds in a broad, almost continuous zone from Scotland across to eastern Siberia and undertakes a post-breeding southward migration to non-breeding grounds encompassing western Europe, the Mediterranean basin, Africa and eastwards through India to south-east Asia and Australasia. Within Africa it is a widespread and fairly common non-breeding visitor to both coastal and inland localities - wherever suitable habitat exists. It is very catholic in its choice of habitat but in coastal areas has a preference for estuaries and lagoons. Inland it is found most commonly, albeit rather locally, on lowveld sand rivers and at shallow lakes, pans and dams with gently sloping margins. At these inland habitats preference is shown for receding bodies of water, so seasonal flooding and drying out of these varied aquatic sites gives rise to a large degree of nomadism during the Greenshanks' lengthy stay in Africa. Coastal habitats vary little throughout the year, hence populations utilising these habitats tend to be more stable. However, birds using coastal pans, where water levels are dependent on rainfall and may show considerable variation from season to season or even within a season, tend to be somewhat nomadic. Many young birds spend two seasons in Africa prior to returning to their breeding grounds.

In Europe most Greenshank ringing has been carried out in Britain, the Netherlands, West Germany, Denmark and Sweden. In Africa most ringing effort has been made in Kenya (without any resultant recoveries) and in the north-west and the southern parts of the continent. In the south, ringing has been confined mainly to Zimbabwe and the Cape Province of South Africa. Up to 1985 these ringing activities have yielded 28 recoveries involving inter-continental movement and, in 1987, one involving the length of Africa. A further recovery between India and European U.S.S.R. is dealt with in context. Recoveries affecting southern Africa were discussed by Tree (1985).

METHODS

Details of ringing recoveries were obtained manually from the Euring Data Bank with additional information provided by the Bird Ringing Centre of Sweden and the British Trust for Onithology. Southern African data is mainly my own with additional data from SAFRING.

RESULTS

Basic details concerning ringing and recovery of all Greenshank records dealt with are given in the Appendix (pp. 65,66), while recovery localities and months are shown in Figure 1 (opposite). There are 19 recorded movements from Europe to Africa, nine from Africa to Europe and one from the extreme south of Africa to Egypt. One from India to Europe (Ali & Ripley 1983) is also considered. Of the total of 29 recoveries, 12 were aged on ringing as being in their first year, two in their second year, nine as adults and six as full-grown. No further details are available for the Indian-ringed bird.

Table 1 (page 56) shows the numbers of birds recovered in the same, or subsequent, seasons of birds ringed in Europe and Africa. Table 2 (page 56) shows the same, or subsequent, season recoveries of birds ringed in the different age categories. It is likely that many of these ringed as 'full-grown' are actually in their first year. A season is regarded as running from 1 July to 30 June.

The method of recovery may be sub-divided broadly into the following categories: (a) those killed by man whether accidentally or by design (14); (b) those found dead or where recovery details are too vague to assume any other conclusions (10); (c) those captured and released unharmed (3), together with one bird identified in the field by colour ring combination; and (d) two birds for which no details whatsoever are available. Table 3 (page 57) shows this generalised form of mortality or recapture on a national basis.

DISCUSSION

POPULATION MOVEMENTS

It is likely that a proportion of Greenshank winter fairly directly south of their natal areas with a small degree of easting or westing in their movements to ensure avoidance of less hospitable intervening areas such as extensive stretches of estuary-free coastline or large areas of unsuitable inland habitat (deserts, forests or mountainous regions). However,

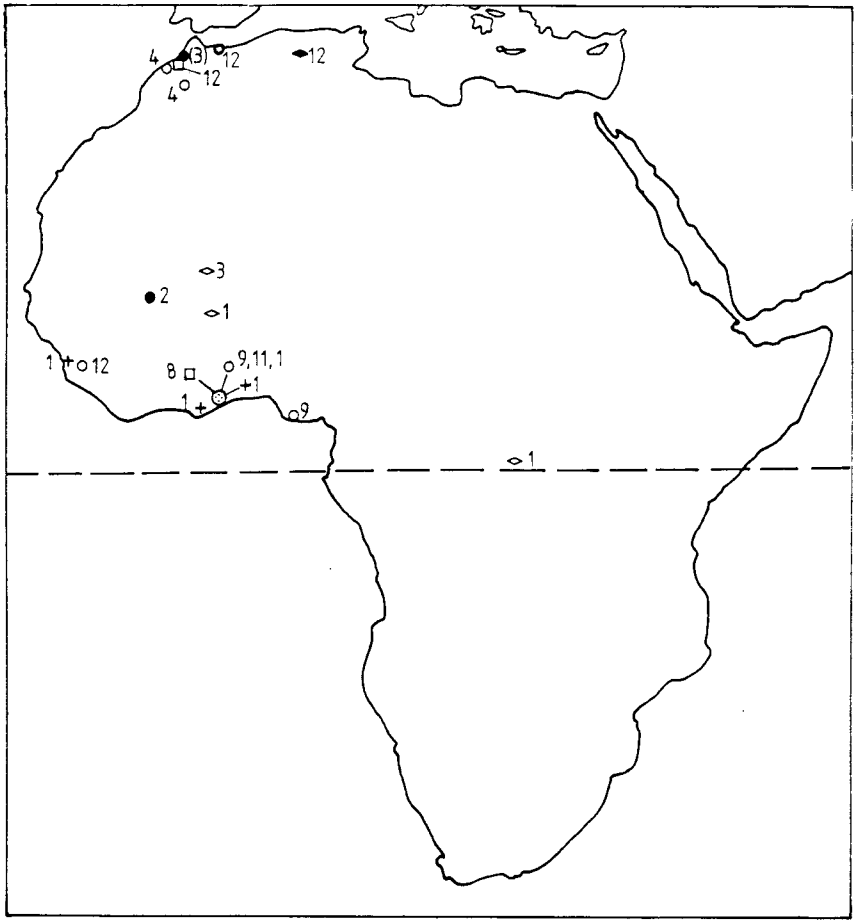

FIGURE 1

RECOVERIES IN AFRICA OF EUROPEAN-RINGED GREENSHANK *TRINGA NEBULARIA* SHOWING MONTH OF RECOVERY (BRACKETS INDICATE MONTH OF REPORT AND NOT NECESSARILY MONTH OF RECOVERY). CODING : (●) RINGED IN BRITAIN, (O) NETHERLANDS, (◇) DENMARK, (□) SWEDEN, (+) FEDERAL REPUBLIC OF GERMANY, (◆) SWITZERLAND

some populations or portions of populations increase the degree of easting or westing quite considerably for reasons that are not always clear. In the case of Fenno-Scandian birds, the amount of westing may be as much as 40° or more of longitude to reach suitable off-season resorts in west Africa. The necessity for this considerable divergence from a more direct north-south migration route is apparent when one studies the map of Africa but much less obvious is the reason for the almost 30° of easting undertaken by the Indian-ringed bird subsequently recovered in European U.S.S.R. very close to a population known, from ringing recoveries, to migrate almost due south to non-breeding grounds in southern Africa. It is possible that these birds belong to differing genetic sub-populations, isolated from each other during a Pleistocene ice-age and subsequently meeting again and integrating. Individuals from currently overlapping breeding populations may thus choose to migrate to different non-breeding quarters. Such migratory divides have been shown for species such as the Redshank *Tringa totanus* (Hale 1980) and Common Tern *Sterna hirundo* (e.g. Morant *et al.*1983).

Within Africa there appear to be two fairly isolated non-breeding populations: that of west Africa and that of east and southern Africa. These are largely separated by the equatorial and tropical forests of the Congo basin and the arid regions to the east of Lake Chad in the interior. Movement is almost certainly broad front into these two regions with zones of concentration along the coast, major river valleys such as the Nile, and rift valley lake systems. It is not known if there is any movement of coastal birds around the Bight of Biafra and southwards down the west coast to south of the equator. Further southward movement here is unlikely and birds utilising this extensive stretch of coastline are probably from more easterly breeding populations.

The Fenno/U.S.S.R. border region probably forms the migratory divide with birds to the west moving south-westwards to southwards to reach non-breeding quarters in west Africa. Birds from adjacent European U.S.S.R. (a few of which appear to wander westwards on migration south), move southwards into eastern/southern Africa or even south-eastwards into India although the likelihood of another migratory divide to the east of the White Sea is considerable (Table 4 on page 57). The apparent westward wandering of some Russian birds is shown by the recovery in Russia in July of a bird ringed in Sweden in the previous August (Figure 2 opposite). In addition, an August-ringed Danish bird found in eastern Zaire in January (Figure 1) was equally likely to have originated in the U.S.S.R. as another Greenshank ringed in Zaire was subsequently recovered in the U.S.S.R. (Figure 2). This category might also include the Zimbabwean bird ringed as an adult and recorded in central France in August six years later (Tree 1985). To date there is no evidence that Greenshank from the U.S.S.R. visit west Africa. There are no recoveries of Australian-ringed birds to indicate their origins.

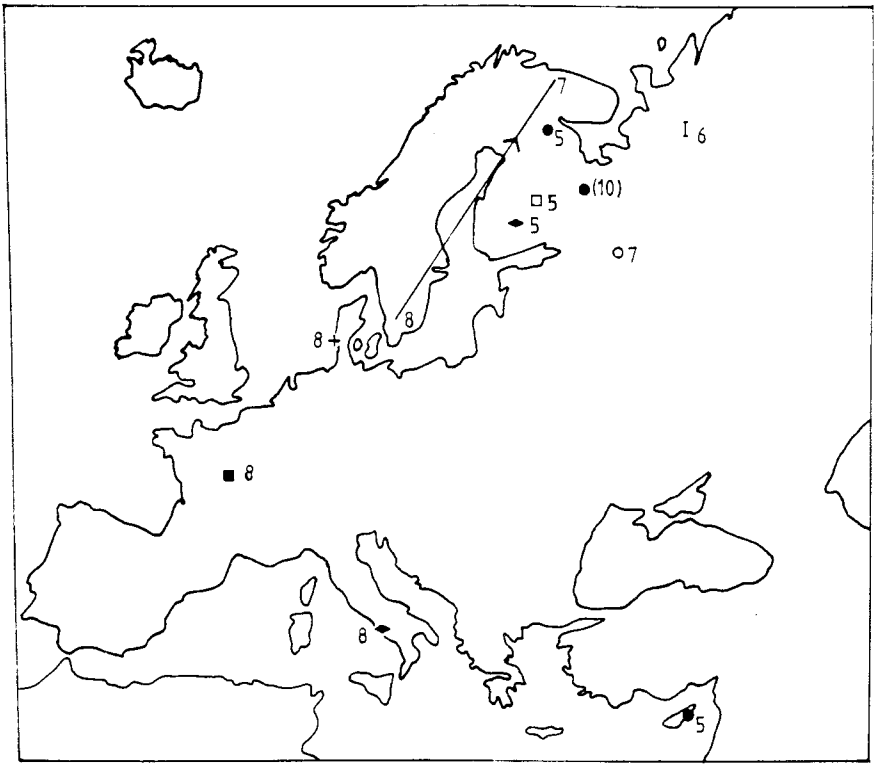

FIGURE 2

RECOVERIES IN EUROPE OF GREENSHANK *TRINGA NEBULARIA* RINGED IN AFRICA AND INDIA. INCLUDED IS A MOVEMENT OF A SWEDISH-RINGED BIRD TO INDICATE POTENTIAL WESTWARD AUTUMN MOVEMENT OF BIRDS OF MORE EASTERLY ORIGIN.

CODING : (●) RINGED IN SOUTH AFRICA, (■) ZIMBABWE, (O) ZAIRE, (□) MALI, (+) SENEGAL, (◇) MOROCCO, (◆) TUNISIA, (I) INDIA.

NUMBER INDICATES MONTH OF RECOVERY WHILE BRACKETS INDICATE MONTH OF REPORTING AND NOT NECESSARILY MONTH OF RECOVERY.

TABLE 1

TIME LAPSE BETWEEN RINGING AND RECOVERY OF GREENSHANK *TRINGA NEBULARIA* RINGED IN (A) EUROPE AND (B) AFRICA ON A SEASONAL BASIS, I.E. (0) = SAME SEASON, (1) = FOLLOWING SEASON, ETC.

CONTINENT	SEASON						
	0	1	2	3	4	5	6
(A) Europe	11	5	2	-	-	1	-
(B) Africa	1	3	2	-	-	2	1

TABLE 2

TIME LAPSE BETWEEN RINGING AND RECOVERY OF GREENSHANK BASED ON AGE OF INITIAL CAPTURE AND SHOWN ON A SEASONAL BASIS AS IN TABLE 1

AGE	SEASON						
	0	1	2	3	4	5	6
1st Year	7	2	2	-	-	1	-
2nd Year	-	2	-	-	-	-	-
Adult	1	3	2	-	-	1	1
Full-grown	4	1	-	-	-	1	-

TABLE 3

GENERALISED METHOD OF RECOVERY OF RINGED GREENSHANKS IN 15 COUNTRIES FOR WHICH DETAILS ARE AVAILABLE. (+) = KILLED BY MAN, WHETHER BY DESIGN OR ACCIDENT, (x) = FOUND DEAD, (v) = CAPTURED AND RELEASED OR IDENTIFIED IN THE FIELD BY COLOUR RING SIGHTING, (?) = NO DETAILS AVAILABLE

Country	+	x	v	?
Morocco	4	1		
Algeria	1			
Egypt				1
Sierra Leone			1	
Mali	1			1
Guinea		1		
Ghana	2	3	2	
Nigeria	1			
Zaire	1			
Cyprus	1			
Italy		1		
France			1	
Denmark	1			
Finland	2			
U.S.S.R		3		

TABLE 4

SOURCE/RECOVERY ZONES OF GREENSHANK RINGING RECOVERIES BETWEEN AFRICA/INDIA AND EUROPE

	N. Medit	W. Europe	Fen-Scan	U.S.S.R.
North & West Africa	1	17	4	0
Central Africa	0	2	0	1
South African coast	1	0	0	2
India	0	0	0	1

TIMING OF MOVEMENTS

(A) SOUTHWARD MOVEMENT AND NON-BREEDING QUARTERS.

(i) Fenno-Scandian populations.

The generally south-westward movement may start as early as the end of June amongst southernmost breeding females in Finland but, on average, the first adult birds leave their breeding grounds from about 10 July in Sweden and Norway (Nethersole-Thompson & Nethersole-Thompson 1979). Movement is mainly coastal but a small proportion moves overland (OAG Munster 1984) and large numbers stop off at such sites as the Waddensee, where numbers peak in July, and especially August (Meltofte 1979), before continuing on to non-breeding quarters in Africa. That the movement of this population is relatively slow in autumn is well shown by OAG Munster (*loc. cit.*) where the inland southerly progression of peak population numbers only reaches southern Europe by early September.

The earliest reported arrival of a ringed Greenshank in west African quarters was of a Swedish bird recovered on an unspecified date in August (Figure 1). Trans-Saharan migrants are reported as arriving at Lake Chad from mid-August with a maximum in mid-September (Cramp & Simmons 1983). Thus west European and north-west African staging posts form important fattening stations, holding large numbers of birds prior to their major movement into sub-Saharan west Africa in August/September.

To date all recoveries from coastal west Africa fall between August and January while recoveries from the interior (including the ringing date of a bird subsequently recovered in Finland) fall in the period January to March. Most north-west African recoveries occur in December or April with a few in between these months. It is likely that the large majority of birds found in coastal west Africa either move around the coast or, more likely, overfly the interior where habitats are mostly untenable following the summer rains with concomitant flooding and vegetation growth. As the floods recede during the winter months many birds must move northwards into the interior to avail themselves of the rich feeding in the Niger basin, in particular. Further evidence of this, other than from ringing recoveries, comes from recent wader counts made in coastal Ghana (Hepburn 1986) where there was a 26 % drop in Greenshank numbers from December to January 1985/1986.

It is not known where Scottish birds go in winter but it is assumed that the estimated 1 000 or more Greenshank found in Britain and Ireland in winter are from Scotland (Lack & Hutchinson 1986). However, as the breeding population of Scotland is now estimated as *ca.* 1 550 pairs (Piersma 1986) the balance must spread out southward and some must penetrate into west Africa. The only recovery of a British-ringed Greenshank in Africa was of a bird ringed on passage which may well have originated in either Scotland or Scandinavia.

(ii) Russian populations

The start of southward movement of Greenshank from north Russia is given as 22 July (Nethersole-Thompson & Nethersole-Thompson *loc. cit.*) and it would appear that at least some of these birds migrate direct to African wintering quarters as evidenced by the recovery on 25 July in the Transvaal, South Africa, of an adult female originally ringed on the south Cape coast (Tree 1985). Because the first arrivals of colour-ringed birds at Port Alfred (eastern Cape Province) usually occur in Mid-August, Greenshank arriving early in the interior of the sub-continent must rest and replenish fat reserves at the myriads of suitable sites before proceeding to their final coastal destinations. There is no indication, either from ringing recoveries or published counts, of major staging posts for southward-bound Russian birds, but these must exist at least at sites on the Black Sea and the Nile Delta.

(B) NORTHWARD MOVEMENT

(i) West African populations

Fattening for the northward flight over the Sahara will take place both coastally and in the interior and a proportion of these birds almost certainly stop off at the Mediterranean (possibly indicated by an upsurge in ringing recoveries in north-west Africa in April), with others overlying to important wader habitats such as at Vendée (France), the Waddensee or various Baltic sites. In the Waddensee, Greenshank occur only in late April and May and are few in comparison with autumn numbers (Meltofte *loc. cit.* and Smit 1982). There are no recoveries of west African-ringed Greenshank in Europe south of the breeding grounds on return migration, although local European ringing recoveries may throw more light on this aspect of the species' migration, which is beyond the scope of this paper.

On the Fenno-Scandian breeding grounds, birds may arrive from mid-April in the south in Finland but from early to mid-May onwards in Sweden and Norway. Build-

ups of numbers at west European staging posts are relatively small, considering the estimated total size of the breeding population of 100 000 pairs for Fenno-Scandia (Piersma *loc. cit.*), so it would appear that the vast majority of Greenshanks fly direct to their breeding grounds from Africa, a flight of which they are very capable as evidenced by the distances travelled by birds from South Africa.

(ii) Eastern/southern African populations

Information is mainly available from southern Africa. The return movement of adult birds from the Cape coast takes place over a very short period as estimated from Port Alfred colour-ringed Greenshank. Birds leave in the evening in various-sized flocks (the largest noted was 19), heading in a northerly direction during the period 19 March to 1 April. No colour-ringed birds were seen after this date although odd unringed adults were seen up to 9 April (pers. obs.). Birds from Zimbabwe tend to leave later in April when their body mass peaks instead of in late March, as on the Cape coast (Tree 1979).

In European U.S.S.R., Greenshank arrive on the breeding grounds from early May, with the most northerly birds arriving as late as early June (Nethersole-Thompson & Nethersole-Thompson *loc. cit.*). Large numbers of Greenshank therefore spend some time at intermediate staging posts between non-breeding and breeding quarters; for instance, birds leaving the Cape coast in late March are likely to arrive at the eastern Mediterranean or Red Sea a few days later and must, of necessity, spend the next five or six weeks at these, or other, staging sites. The recovery of an eastern Cape-ringed bird in Cyprus on 10 May gives some indication of the potential duration of their stay in that area. Where then are these important northward migration staging posts for this population, or are birds well spread out over a wide range of habitats?

The recent recovery of a Port Alfred-ringed Greenshank in the Western Desert some 400 km south-west of Cairo provides no firm evidence on timing of passage because the date of recovery is not known (in July the ring was found in possession of children at a small oasis).

In India most birds have acquired considerable migratory fat deposits by mid-April (Ali & Ripley *loc. cit.*) but must also stage at suitable bodies of water en route as the direct flight from there to the breeding grounds would take only two or three days to accomplish.

SPEED AND RANGE OF MOVEMENT

Ringing recovery information is obviously very limited and requires supplementary data gathered from body mass increments at migration time and from which a potential flight range may be determined. As mentioned above, western populations appear to make medium- to long-distance flights from localities such as the Waddensee, stopping off either in north Africa or over-flying the Sahara to the west African coast. Northward flights may be more substantial. These are relatively short distances in comparison to those flown by birds from western U.S.S.R. to southern Africa and there is evidence accumulating that this journey, or a large portion of it, may be completed in a single flight. Tree (1979) showed that departure weights of Greenshank on the south Cape coast may be as high as 305 g and subsequent data collected there supports this with weights commonly in excess of 275 g for birds trapped in March. In the same paper a normal lean mass of 150 g to 170 g was given, but migrating Greenshank may call on additional reserves in emergency and arrival weights of southward bound adults may be as low as 128 g in seemingly healthy individuals. Thus Greenshank are well able to use 50 % or more of their departure mass for a single migratory flight.

In calculating potential flight range I have used Davidson's (1984) formula:

$$R = 95,447 \times S \times (T^{0,302} - M^{0.302})$$

Where R = flight range in kilometres; S = flight speed in km/hour, T = total mass (g) at start; and M = lean mass (g), or total mass (g) at end.

A flight speed of 80 kph is assumed although where suitable tail winds occur a flight speed of 100 kph may be possible. Early in the year southerly winds may be found at some altitude between 500 m and 1 000 m much of the way from the Cape Province to the Horn of Africa (Summers & Waltner 1979); an enhanced flight speed is, therefore, very likely. The distance from the Cape coast to the eastern Mediterranean is in the region of 7 500 km while the potential flight range of a Greenshank with a normal lean mass of 150 g and a maximum take-off mass of 290 g would be in the vicinity of 7 650 km. This leaves a very narrow margin for birds travelling at 80 kph. It can, therefore, be assumed that a faster average speed is attained, or that birds are able to drop off at earlier staging posts (such as the east African rift valley lakes), or that the flight range formulae still need modification. To date there is no proof that the Kenyan lakes are visited, there being no recoveries of Kenyan-ringed Greenshank further south and no recoveries of colour-ring sightings of southern African-ringed birds in Kenya. The time required for the prodigious flight of

7 500 km at a mean flight speed of 80 kph is just under four days, so birds would be arriving within a single flight striking range of their breeding grounds, a further 3 000+ km further north, in late March.

From ringing recoveries Cape coast birds are known to originate from the White Sea region. As this is fairly far to the north in the Greenshanks' breeding range, it is likely that breeders do not arrive there until the second half of May, thus necessitating a stop-over at an intermediate point, or points, for a period of some six or seven weeks. It is unlikely that the March departure from Port Alfred is necessitated by a sudden local decline in numbers of the Greenshanks' principal prey, the mud prawn *Upogebia africana* (Tree 1979), because Greenshank numbers also drop dramatically in March at the Swartkops estuary, close to Port Elizabeth, 120 km to the west whereas in the same locality the Grey Plover *Pluvialis squatarola*, another major predator of the mud prawn, shows a seasonal peak in March and April (Martin & Baird, 1987). The reason for such early Greenshank migration is, therefore, far from clear.

Incredible as this northward migration may be, it could well be eclipsed by the very rapid, long-distance flight of some southward-bound birds. If birds leaving the U.S.S.R. in July have accumulated similar quantities of fat to those birds flying north from the Cape coast in March, then they may well be able to reach central-southern Africa in a single flight. This would result in emaciated birds such as those with masses as low as 126 g caught in northern Botswana, or to the ringed bird found freshly dead in the Transvaal on 25 July.

AGE, TIME LAPSE AND METHOD OF RECOVERIES

With so few recoveries it is not surprising that no record of longevities have been recorded. To date the oldest ringed bird recorded in Europe is 11 years 11 months (Cramp & Roselaar 1983) while in this study the oldest is a bird ringed as an adult which had to be at least eight years old when resighted six years later. There are three recoveries of birds in their fifth year after ringing and the remainder were recorded in the first two years after ringing (Table 2). Predictably, juvenile mortality was highest in the first year of life and in this context it is likely that many of those birds ringed as 'full-grown' were, in fact, juveniles. Of all age classes ringed in Europe, 58 % were subsequently recovered in the same season; by comparison only 11 % of those ringed in Africa were recovered in the same season. A large proportion of the European-ringed birds were juveniles, while the only same-season recovery of an African-ringed bird was of an adult. Obviously juvenile birds ringed early in the season are more at risk than those that have survived longer and completed their first southward migration to non-breeding quarters before being trapped and ringed.

The highest recovery rates occurred in Morocco and Ghana (Table 3). In Morocco 80 % of those birds recovered were killed by man, as were 29 % of those recovered in Ghana. It is likely, however, that some of those 'found dead' in the latter region suffered a similar fate; trapping of shorebirds, especially terns, is a popular sport amongst Ghanaian boys (Hepburn *loc. cit.*). In all, killing by man (presumably for food but a few possibly for sport), accounted for 50 % of all recoveries, although the two in Finland were killed by accident in traps set for mammals. There is always doubt as to the fate of birds 'found dead'; many may be genuine but some at least were probably also killed by man, this applying particularly to Morocco, Ghana, Italy and the U.S.S.R. where hunting pressures on birds are quite high.

SUGGESTIONS FOR FUTURE RESEARCH.

Expeditions are usually a feature of the autumn migration period but there is a particular lack of published information on wader counts from the eastern Mediterranean, especially during spring migration in April and May. Black Sea sites are likely to be of great importance and counts from there would be invaluable.

Greenshank are, unfortunately, one of the more difficult waders to catch and retraps are rare. Judicious colour-ringing studies are therefore necessary, particularly where birds may be caught on a regular basis. These need to be followed up by regular observations at selected sites along their migration routes both for western and eastern populations. However, anybody considering colour-marking of any form must liaise with the Wader Study Group in the U.K. to obviate duplicating colour combinations of other study groups..

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APPENDIX

RINGING RECOVERIES OF GREENSHANK *TRINGA NEBULARIA* BETWEEN EUROPE, AFRICA AND INDIA.

DR32377	FG	29.07.76	52°50N 00°26E	England
	+	(25.03.82)	33°04N 07°37W	Morocco
DN30483	AD	26.08.83	50°51N 00°02E	England
	?	25.02.85	12°50N 06°30W	Mali
1109413	AD	15.07.73	53°18N 05°00E	Netherlands
	+	19.04.75	32°18N 09°12W	Morocco
1124638	AD	29.06.74	53°18N 05°00E	Netherlands
	+	11.09.75	04°18N 06°06E	Nigeria
1129510	1y	03.09.77	52°36N 04°36E	Netherlands
	+	24.12.77	35°06N 02°18W	Morocco
1149843	1y	25.08.80	52°33N 04°37E	Netherlands
	x	16.04.81	32°18N 06°42W	Morocco
1150018	1y	10.08.82	52°33N 04°37E	Netherlands
	v	15.09.82	05°05N 01°21W	Ghana
2024231	1y	09.09.67	51°18N 03°42E	Netherlands
	v	19.12.67	08°18N 13°00W	Sierra Leone
1160141	1y	09.09.82	52°54N 04°48E	Netherlands
	x	22.11.84	05°37N 00°01E	Ghana
2038503	FG	13.08.69	52°12N 06°12E	Netherlands
	x	04.01.71	06°06N 01°00E	Ghana
6283277	1y	19.08.72	52°00N 07°42E	West Germany
	+	06.01.74	05°06N 01°24W	Ghana
6283290	1y	26.08.72	52°00N 07°42E	West Germany
	+	28.01.73	05°54N 00°48E	Ghana
6304562	1y	06.09.78	52°02N 07°39E	West Germany
	x	30.01.79	08°30N 13°15W	Guinea
00623358	FG	18.08.66	55°38N 12°34E	Denmark
	x	26.01.67	13°00N 01°49W	Ghana
00685535	FG	02.08.57	55°38N 12°34E	Denmark
	+	19.01.58	01°33N 25°23E	Zaire

00697110	FG	08.09.54	55°38N 12°34E	Denmark
	+	05.03.55	16°49N 02°50W	Mali
6060444	1y	22.08.74	55°23N 12°50E	Sweden
	+	01.12.74	32°21N 06°26W	Morocco
6094044	1y	16.08.82	59°11N 15°24E	Sweden
	v	00.08.84	06°06N 00°10E	Ghana
F16972	FG	18.09.72	47°12N 08°30E	Switzerland
	+	10.12.72	34°48N 05°42E	Algeria
FE5553	AD	16.09.71	32°48N 08°48W	Morocco
	+	13.05.72	62°24N 26°00E	Finland
GA82409	AD	16.08.69	36°54N 10°18E	Tunisia
	x	02.08.71	41°06N 14°06E	Italy
GE8363	2y	10.03.73	16°12N 16°18W	Senegal
	+	12.08.74	55°18N 08°42E	Denmark
GE9002	2y	10.02.79	15°18N 03°48W	Mali
	+	13.05.81	63°06N 28°24E	Finland
4Z.96011	AD	22.11.71	00°30S 29°36E	Zaire
	x	08.07.76	59°12N 36°42E	U.S.S.R.
412916	1y	21.03.71	33°50S 25°42E	South Africa
	+	10.05.72	35°05N 33°10E	Cyprus
D03522	AD	07.01.78	33°35S 26°53E	South Africa
	x	(00.10.79)	62°55N 34°27E	U.S.S.R.
D00103	1y	23.11.74	33°50S 18°30E	South Africa
	x	18.05.80	66°49N 32°18E	U.S.S.R.
D03566	AD	12.08.78	17°46S 30°53E	Zimbabwe
	vv	08.08.84	47°45N 02°28E	France
D07831	AD	15.03.85	33°33S 26°53E	South Africa
	?	14.07.87	28°15N 28°57E	Egypt
?	?	24.10.66	27°13N 77°32E	India
	?	10.06.68	64°35N 48°25E	U.S.S.R.

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