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Literature

Bengston,S.A. and B.Svensson. 1968. Feeding habits of Calidris and C.minuta in relation to the distribution of marine shore invertebrates. Oikos 19: 152-157

Boere,G.C., J.W.A. de Bruijne and E.Nieboer. 1973. A study on the significance of the dutch Waddensea-area for the Dunlin Calidris alpina in late summer and autumn. Limosa 46: 205-227 (in Dutch).

Dementiev,G.P., N.A.Gladkov and E.P.Spangenberg. 1951. Birds of the Soviet Union, Moscow.

Glutz von Blotzheim,U.N., K.M.Bauer and E.Bezzel. 1975. Handbuch der Vögel Mitteleuropas. Band 6. Charadriiformes (1. Teil). Wiesbaden, Akad. Verlagges.

Johansen,H. 1958. Revision und Entstehung der Arktischen Vogelfauna. Acta Arctica Fasc. IX, København.

Lindner,F. 1970. Canacidae (Diptera) als vermutliche Massennahrung überwinternder Limikolen an der Küste Südwestafrikas. Die Vogelwarte 25: 357-359.

Meinertzhagen,R. 1930. Nicoll's Birds of Egypt. London, Hugh Rees.

Meinertzhagen,R. 1954. Birds of Arabia. Edinburgh, Oliver & Boyd.

Meininger,P.L., W.C.Mullié, J. van der Kamp and B.Spaans. 1979. Report of the Netherlands Ornithological Expedition to Egypt in January and February 1979. Middelburg, report.

Meininger,P.L. and W.C.Mullié. 1979. Some results of the Dutch Ornithological Expedition to Egypt in January and February 1979. Bulletin O.S.M.E. 3: 12-14

Meininger,P.L. and W.C.Mullié. in press. The significance of Egyptian wetlands for wintering waterbirds.

Piersma,Th., M.Engelmoer, W.Altenburg and R.Mes. 1980. A wader Expedition to Mauritania. WSG Bull. 29: 14

Prater,A.J., J.H.Marchant and J.Vourinen. 1977. Guide to the identification and ageing of holarctic waders. Tring, BTO-guide no. 17.

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WADER POPULATIONS OF THE SOFT SHORES OF LEWIS AND HARRIS, OUTER HEBRIDES IN 1979

by Nigel E. Buxton

Within Britain the past ten years have seen intensive research on waders through the Birds of Estuaries Enquiry, various studies on the effect of estuarine reclamation and ringing programmes. Although large numbers of waders breed on the machair of the Uists (Fuller 1978, Wilson 1978) during the summer, scarcity of observers, difficulties of access and lack of pressure from development have resulted in little other information being collected from the Outer Hebrides. These islands therefore comprise one of the few areas in Britain where seasonal variations in wader numbers are unquantified. This paper describes the results of regular counts on three sites in Lewis and Harris in 1979.

Study Area

The study area consisted of three separate sites in Lewis and Harris, all of which are designated as Sites of Special Scientific Interest by the Nature Conservancy Council.

Melbost Sands in east Lewis is a complex habitat of foreshore, dune systems, shingle spit, boulder beach, open mudflats and saltmarsh. The main mudflat is separated from the beach by dune spits projecting from the north and south shores. The mudflat is formed from the estuaries of two small rivers, the Laxdale River and Abhainn Gill an Tailleur, which merge and flow eastwards between the spits to the Minch. On the northern shore and around the edge of the northern spit is a bank of shingle covered by wrack Fucus spp. Saltmarsh lies to the extreme west of the mudflat and closer to the shore to the west of the southern spit. The flora is dominated by Saltmarsh Grass Puccinellia maritima, Thrift Armeria maritima and Sea Milkwort Glaux maritima.

Luskentyre Banks in west Harris is a V-shaped area of sand and mudflat shielded on the south-west from the Sound of Taransay by the dune spit of Corran Seilebost. To the north-west is the dune system of Luskentyre, with the beach of Traigh Rosamul facing Taransay. There is a small estuary, Faodhail Seilbost, with some associated saltings to the south-west, but the main areas of saltmarsh are at the head of Traigh Luskentyre.

Northton Saltings, also on the west coast of Harris, is a wide V-shaped complex of saltings, wet and dry machair and lagoon. Saltings lie both to the north and south with the lagoon of permanent water at the head. The majority of the intertidal flats are fairly well sheltered from wave-action but at the mouth the beach is considerably exposed.

Methods

All sites were small enough for the birds to be counted at low tide. Melbost Sands and Northton Saltings were both counted by walking the shores, saltmarshes and flats. The whole of Luskentyre Banks, except the tidal shore of Traigh Rosmul, was counted from the raised road which ran round the site. Luskentyre and Northton were counted monthly, but Melbost Sands was counted more frequently; up to twice a week. Counts were carried out from January 1979 to December 1979.

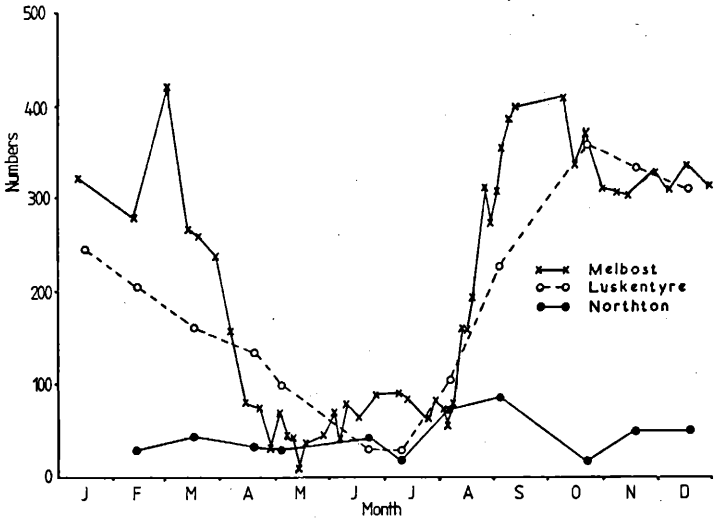

Figure 1. Seasonal variation in the numbers of Oystercatchers.

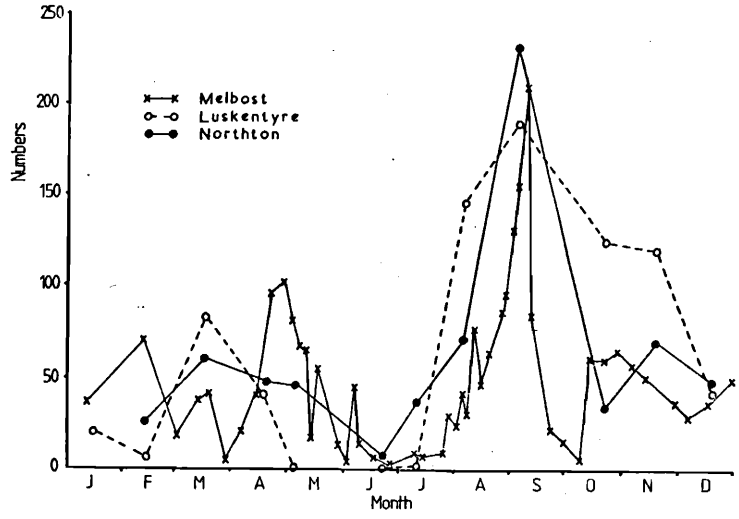

Figure 2. Seasonal variation in the numbers of Ringed Plover.

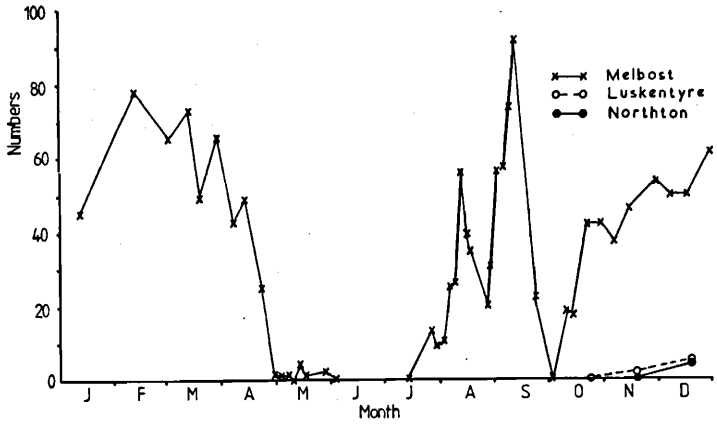

Figure 3. Seasonal variation in the numbers of Turnstone.

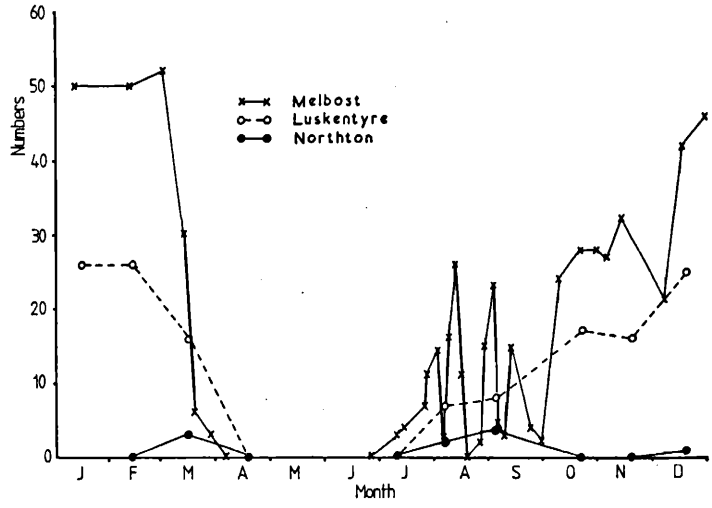

Figure 4. Seasonal variation in the numbers of Bar-tailed Godwit.

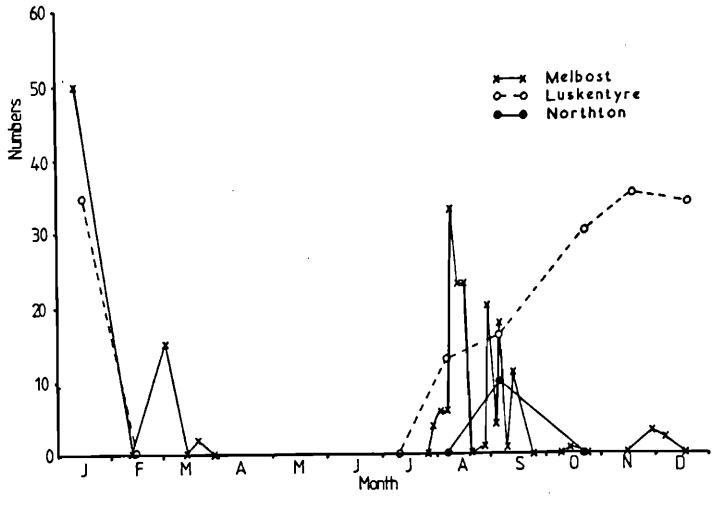

Figure 5. Seasonal variation in the numbers of Knot.

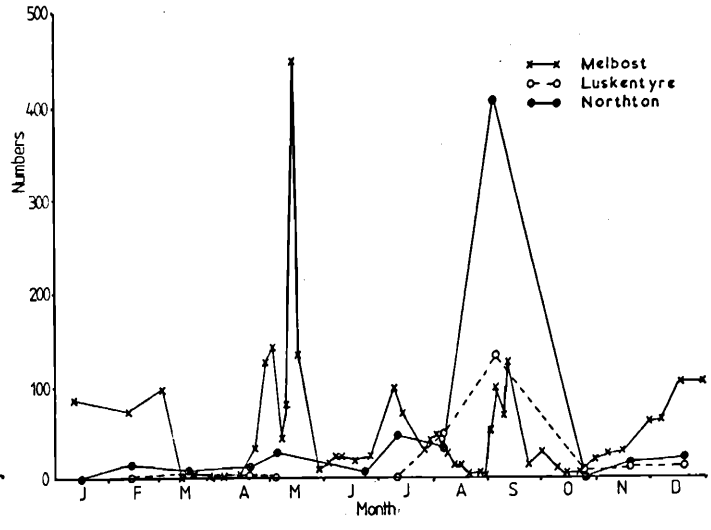

Figure 6. Seasonal variation in the numbers of Dunlin.

Results

Oystercatcher Haematopus ostralegus. Melbost and Luskentyre held the most birds (Fig. 1). The small summer population (<100) of non-breeders, and perhaps failed breeders, increased rapidly during August to a peak in September and October. Numbers then decreased slightly to a stable winter population of about 300 birds. Emigration progressed steadily through the spring (February - April) but was more rapid in April at Melbost. The spring peak at Melbost was probably due to weather conditions rather than passage birds. Minimum numbers occurred in May at Melbost but about July at Northton and Luskentyre.

Lapwing Vanellus vanellus. Few Lapwings were present between March and June. Numbers began to increase initially in June and reached a maximum in autumn. The largest flocks (>300) frequented Melbost Sands in September and October although the sporadic flocks from July to November generally consisted of over 100 birds. Smaller numbers occurred at Luskentyre and Northton although the latter held a breeding population of more than 30 pairs.

Ringed Plover Charadrius hiaticula. Numbers at each of the three sites fluctuated around 50 birds from October to January but on occasions (November 1979 and January 1980 at Luskentyre) more than 100 birds were present (Fig. 2). These numbers compare favourably with much larger sites on the mainland; about 125 birds in Morecambe Bay (Wilson 1973), about 100 birds in the Ribble (Smith and Greenhalgh 1977) and 200-300 birds in the Cheshire Dee (Buxton 1977).

Detailed counts at Melbost suggested there were two periods of spring passage, one in late February/March which appeared to be the departure of the wintering birds followed by a second larger and more protracted movement through April, May and June. Many of the small numbers remaining at the end of June belonged to local breeding pairs, as birds with young were seen at all three sites. Numbers began to increase again in late July and were at a maximum (about 200 birds) in early September. Throughout August there was a slight predominance of adults (Table 1), but by early September relatively few adults were present, most birds being juveniles. Counts through the Uists in late August (20th-23rd) 1979 suggested that about 50% of the Ringed Plover there were adults.

Grey Plover Pluvialis squatarola. Numbers at all sites were low. Melbost supported between one and four during the winter and one was present during the winter of 1979/80 at Luskentyre. The only summer-plumaged bird occurred on 19 August 1979 although a flock of 33 seen of Baleshire, North Uist on the 20 August 1979 included 26 adults in summer plumage.

Golden Plover Pluvialis apricaria. This species occurred sporadically at all three sites since the preferred habitat was the adjacent croftland. Winter numbers tended to be small (<50) although larger flocks occurred at Northton (234 maximum), and occasionally at Luskentyre (61 maximum), during the spring. Melbost Sands was only important as an autumn roosting site (up to 250 birds).

Turnstone Arenaria interpres. Although generally distributed around the coasts of Lewis and Harris (Buxton in prep); the main estuarine stronghold of the Turnstone was Melbost Sands (Fig. 3); few (<5) were recorded at the other sites. Occasionally birds fed during winter amongst the cockle debris at Luskentyre or on the machair amongst Golden Plover and Lapwing - on rocky coasts in Lewis and Harris Turnstones often were seen feeding on grassy clifftops. At Melbost numbers increased through the winter, peaking in February at about 80 birds, then decreased steadily through March and April until few birds were present in May-July (Fig. 3). The autumn migration appeared as two peaks, one in August and one in September. Many birds passing through in September still had traces of summer plumage. The first juveniles were seen in late August.

Curlew Numenius arquata. The numbers of Curlews on the sites varied considerably, probably due to local movements to feeding areas in the nearby croftlands. Northton and Luskentyre supported few birds (about 10) through the winter, with rather more at Melbost (17-49). There was a well-marked spring migration in March with up to 40 birds present but, in common with many other estuaries (Wilson 1973, Smith and Greenhalgh 1977, Buxton 1979), the autumn movement was far larger. Again Melbost Sands was the most important site although the numbers fluctuated rapidly and widely (1-104 birds). The first migrants returned in June, although peak numbers were not attained until August. By November numbers had declined to the wintering population.

Whimbrel Numenius phaeopus. Whimbrel occurred occasionally and in small numbers, sometimes with Curlew, in May and July through to September. During spring 1980 larger numbers of birds passed through Lewis, a flock of 15 being seen at Melbost.

Black-tailed Godwit Limosa limosa. Five individuals only were seen during autumn migration, feeding on the saltings at Northton.

Bar-tailed Godwit Limosa lapponica. This is the common godwit of the Hebrides, although only Melbost Sands and Luskentyre supported regular flocks, with small numbers of birds at Northton during migration periods (Fig. 4). The wintering population at Melbost was at a maximum (about 50 birds) in January, whilst that at Luskentyre was constant from December to February (about 25 birds). There was a rapid decrease in March with godwits totally absent from April to July. Autumn migration began in July and continued with fluctuating numbers through to the end of September. The birds in July and August were largely in breeding plumage although they were accompanied by others which were either sub-adults, since at least one was in heavy wing moult on 2 August 1979, or were already moulted. Juveniles appeared to move through the Hebrides later, with a flock of eight feeding at Melbost on 12 September 1979.

Redshank Tringa totanus. Although common, the Redshank was not abundant and its numbers were difficult to assess due to extensive feeding in the croftlands, tidal channels and saltmarsh creeks. Melbost Sands was the most important site with between 20-30 birds present during December to February. Numbers at the other two sites were generally less than 10. The wintering population appeared to leave at the end of February and was replaced by birds moving through on spring migration. The peak passage occurred in April and May with 50 and 67 birds at Northton and Melbost respectively. The summer absence from the soft coasts was short (only Northton held a breeding population of more than 1-2 pairs) and the return passage began in July with maximum numbers (49) in Melbost in August. Numbers then fell rapidly to the fluctuating winter level. At Luskentyre and Northton the large autumn peaks were not recorded and numbers fell further in October/November to the very low winter populations.

Greenshank Tringa nebularia. Small numbers occurred at Luskentyre and Northton throughout the year with maximum numbers (7) during autumn. Both sites supported a small wintering population and in the subsequent winter of 1979/80 a bird was present at Melbost. Birds were present most consistently at this latter site during July to September (1-4 birds).

Knot Calidris canutus. The Knot is not a common wader in Lewis and Harris. Only Luskentyre supported a consistent winter population (Fig. 5). Numbers increased steadily from late July to a winter level of about 35 individuals, then decreased rapidly in February. The wintering population at Melbost was very small except for a large transient flock in January. By the middle of February most wintering birds had left both sites although there was evidence of a small movement through the islands in the succeeding weeks. Up to 33 birds occurred on Melbost Sands during autumn, but movement through the site appeared rapid as the numbers constantly changed. In July and most of August the passage consisted of birds in breeding plumage but, as in the Ribble (Smith and Greenhalgh 1977) and Morecambe Bay (Wilson 1973), juveniles were more frequent in September (Table 1).

Dunlin Calidris alpina. Only Melbost Sands supported a substantial wintering population of about 100 birds (Fig. 6). Those at Northton and Luskentyre tended to be less than 20 birds. Maximum wintering numbers occurred from mid-December to early March, after which departure was rapid. Spring migration began in late April and was completed by the end of May. In mid-April (14.4.79) less than 70% of birds were in full summer plumage but a week later almost 100% were.

A few non-breeding birds were present throughout the summer until return migration began in July. The autumn migration period appeared far longer than that of spring, extending over 3½ months. During that time there were two major influxes; one in early July and other in mid-September. Two similar influxes occurred in Skye (pers. comm. A Currie). The birds present in June and July were mainly in breeding plumage but towards the end of July the proportion of juveniles rapidly increased (Table 1). Throughout August and the first part of September i.e. mainly the second influx, until ageing in the field became too unreliable, the passage was mainly juveniles.

Autumn migration had ceased by the middle of October from whence began the build-up to the winter population. In the Hebrides this was rather slower than that in Morecambe Bay (Wilson 1973) where the winter maximum was attained by mid-November.

Sanderling Calidris alba. Although wintering in large numbers in the Uists, few do so in Lewis and Harris; ones and twos feeding amongst Dunlin and Ringed Plover in Harris. Sanderling mainly occurred in autumn, although small numbers were present in Melbost in spring. Autumn passage occurred in two peaks; the first in late July consisted of adults mainly in breeding plumage, the second in early September of juveniles. In the Uists in late August, presumably with many birds remaining to winter, 46% of the birds on the Atlantic beaches were adults. A minimum of 740 Sanderling were present in the Uists at that time. Both Luskentyre and Melbost Sands usually supported less than 30 and the maximum at Northton was only 67 individuals.

Ruff Philomachus pugnax. Two birds were present at Melbost on 15 August 1979.

Little Stint Calidris minuta. The only bird seen was feeding amongst Dunlin on the saltmarsh at Melbost on 2 September 1979.

Curlew Sandpiper Calidris ferruginea. Curlew Sandpipers occurred in both Lewis and Harris. Three, including a bird in breeding plumage, were present amongst Dunlin at Northton on 4 September 1979. A juvenile fed amongst Dunlin at Melbost on 5 September 1979 and another bird frequented a saltmarsh 6 km further north at Gress.

Discussion

The total number of waders in Lewis and Harris is not large (Buxton in prep) but Melbost Sands, Luskentyre and Northton support the greatest concentrations. Consequently they are important sites in the Outer Hebrides and probably in north-west Scotland since there are few estuaries in the region; the Clyde being the most northerly, regularly monitored site. If the numbers of waders in the three sites are presented as peak counts (Table 2), both

Table 1. The proportion of adult waders in the autumn populations

		Ringed Plover		Knot		Sanderling		Dunlin	
		No. counted	% adult	No. counted	% adult	No. counted	% adult	No. counted	% adult
Melbost Sands	26.6.79		-		-		-	22	100
	9.7.79		-		-		-	98	100
	13.7.79		-		-		-	70	100
	25.7.79		-		-		-	33	91
	29.7.79		-	4	100	31	100	12	83
	2.8.79	24	62	6	100	7	100	45	22
	5.8.79	39	51	6	100		-	36	22
	8.8.79	24	63	33	100		-	28	46
	12.8.79	53	75	18	94		-	14	14
	15.8.79	3	33	18	94		-	13	15
	19.8.79	27	74		-		-	5	20
	26.8.79	46	54	1	0		-	8	13
	29.8.79	22	68	20	30	1	0	3	0
	2.9.79	54	19	4	25	5	0	9	11
	5.9.79	53	8	18	6	4	0	24	17
	9.9.79	26	19	1	0	11	0	23	26
	12.9.79	19	5	11	0		-		-
Luskentyre	6.8.79	33	91	13	100		-	51	100
Banks	4.9.79	10	50	4	0	14	0	19	5
Northton	6.8.79	25	69		-		-	33	85
Saltings	4.9.79	102	15	10	10	20	0		-

Melbost Sands and Northton are amongst the 30 principle estuaries for waders in Scotland (Prater 1974, 1976, 1977) and Luskentyre is one of the largest of the smaller estuaries. Melbost stands out as the site which may support large numbers (in a Hebridean context) of most species. Luskentyre, to a lesser degree, is similar, but Northton has a higher peak count due to the presence of very large numbers of Golden Plovers and Dunlin, species which were not abundant at Luskentyre.

Information on the waders of the Hebrides is sparse. Dr. J. W. Campbell (unpublished) is the best source, but his records tend to be only incidental observations dealing mainly with the Uists; more detailed data are long overdue. Campbell considered Knot as regular migrants but only infrequent winter visitors. This would appear to be true for Melbost but Luskentyre supported a regular winter flock. Similarly he thought Grey Plover were scarce winter visitors although few of his records relate to Lewis and Harris. Birds wintered regularly at Melbost in both 1978/79 and 1979/80 and at Luskentyre in 1979/80. Another species previously under-recorded in winter is the Greenshank. Prater (1979) gives a population of 11-20 in the Uists but none in Lewis and Harris, whereas this study shows they frequented all three sites.

In many species e.g. Dunlin, Ringed Plover, Knot, Bar-tailed Godwit, Redshank and possibly Curlew, the migrants appeared to move through the sites very quickly. Each site was therefore important to far more birds than was apparent purely from the counts. It would appear that movements are either highly synchronised through the whole country or involve the same birds since peak Dunlin numbers in Melbost occurred on 13 May 1979 whilst that in the Severn Estuary occurred on 11 May 1979 (pers. comm. P. N. Ferns). Consequently with birds moving through a site so quickly the peak passage may easily be missed. The counts at Luskentyre and Northton in spring were on either side of May 13 but coincided with the peak count at Melbost in autumn. Knot, Redshank, Sanderling, Bar-tailed Godwit, Curlew, Ringed Plover and Oystercatcher may all have been similarly under-estimated on occasions. In many current studies on waders, comparisons of abundance are often made between years by using the monthly data from the Birds of Estuaries Enquiry. On the above evidence this may be unwise since with counts made once per month (or even more frequently), the peak passage may be counted one year and missed the next. So-called differences in numbers on migration may only relate to the date of counting, necessitating care in the use of such data.

Summary

Melbost Sands, Luskentyre Banks and Northton Saltings are the main estuarine habitats in Lewis and Harris, supporting peak populations of 2104, 934 and 1283 waders respectively. These concentrations are regionally important in the Outer Hebrides and probably in north-west Scotland. Oystercatchers are the most numerous wintering species but peak numbers of Dunlin occur in mid-May and early September; Ringed Plover peak in early May and early September. The numbers of birds are compared between sites.

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References

Buxton,N.E. 1977. The Dee Estuary Water Storage Scheme Feasibility Study: Report of the Ornithological Studies. Unpublished, reported to CWPU and WNWDA. 60 pp.
Fuller,R.J. 1978. Breeding populations of Ringed Plovers and Dunlins in the Uists and Benbecula, Outer Hebrides. Bird Study 25: 97-102
Prater,A.J. 1974. Birds of Estuaries Enquiry for 1972/73. BTO/RSPB/WT.
Prater,A.J. 1976. Birds of Estuaries Enquiry for 1973/74. BTO/RSPB/WT.
Prater,A.J. 1977. Birds of Estuaries Enquiry for 1974/75. BTO/RSPB/WT.
Prater,A.J. 1979. Winter numbers and distribution of the Greenshank. In "Greenshanks" by D. and M. Nethersole-Thompson. Poyser. 275 pp.
Smith,P.H. & Greenhalgh,M.E. 1977. A four year census of wading birds on the Ribble Estuary, Lancashire/Merseyside. Bird Study 24: 243-259
Wilson,J. 1973. Wader populations of Morecambe Bay, Lancashire. Bird Study 20: 9-23
Wilson,J.R. 1978. Agricultural influences on waders nesting on the South Uist machair. Bird Study 25: 198-206

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Table 2. The 1979 peak counts at the most important wader sites in Lewis and Harris

	Melbost Sands	Luskentyre Banks	Northton Saltings
Peak count	2104	934	1283

The peak count is obtained by summing the maximum numbers of each species irrespective of the month in which they occur.