NUMBERS, MEASUREMENTS AND STOMACH CONTENTS OF DUNLINS, LITTLE STINTS AND KENTISH PLOVERS FROM LAKE MANZALA, EGYPT

by C. Mullié and Peter L. Meininger

Introduction

From 1 January to 12 February and from 20 December 1979 to 27 January 1980 a Netherlands Ornithological Expedition visited Egypt with the objective of gathering information on the significance of the Egyptian wetlands for wintering waterbirds. Participants of the first expedition were Jan van der Kamp, Bernard Spaans and the authors, and of the second expedition the authors only. This paper provides information on numbers of waders counted at Lake Manzala and measurements and stomach contents of some Dunlin Calidris alpina, Little Stints Calidris minuta and Kentish Plovers Charadrius alexandrinus shot by local hunters on mudflats on the eastern shore of Lake Manzala (31°15'N 32°00'E), between Port Said and El Tina, in the Ras el Ish area (see Figure 1). Other results of the expeditions are published elsewhere (Meininger et al 1979, Meininger & Mullié 1979, Meininger & Mullié in press).

Numbers

The numbers of waders counted in Lake Manzala are given in Table 1. Kentish Plover, Little Stint and Dunlin appear to be the commonest species and they are underlined in the table. For the Kentish Plover the Lake Manzala region is one of the most important wintering areas known, with higher numbers counted only on the Banc d'Arguin, Mauritania (Piersma et al 1980). We have the impression that the real numbers of waders wintering in Lake Manzala are a multiple of the numbers we actually counted. Many people, mainly fishermen, hunt birds in Lake Manzala. The majority are sold at local markets in Port Said and Dumyat. As the most suitable habitat for waders (mainly mudflats in partially dried up fishfarms or "Hoshas") is in the eastern part of the Lake (see Figure 1), most of the waders shot are to be found at the Port Said market.

We made regular counts of the birds for sale in the market in both winters and also in September and October 1980, and were thus able to make a detailed estimate of the numbers shot annually. These figures are also given in Table 1. (For a more detailed analysis of waterbird hunting on Lake Manzala see Meininger & Mullie, in press.) The very high numbers of Kentish Plovers, Little Stints and Dunlins shot are a further indication that our counts are rather incomplete and that the actual numbers present are much higher.

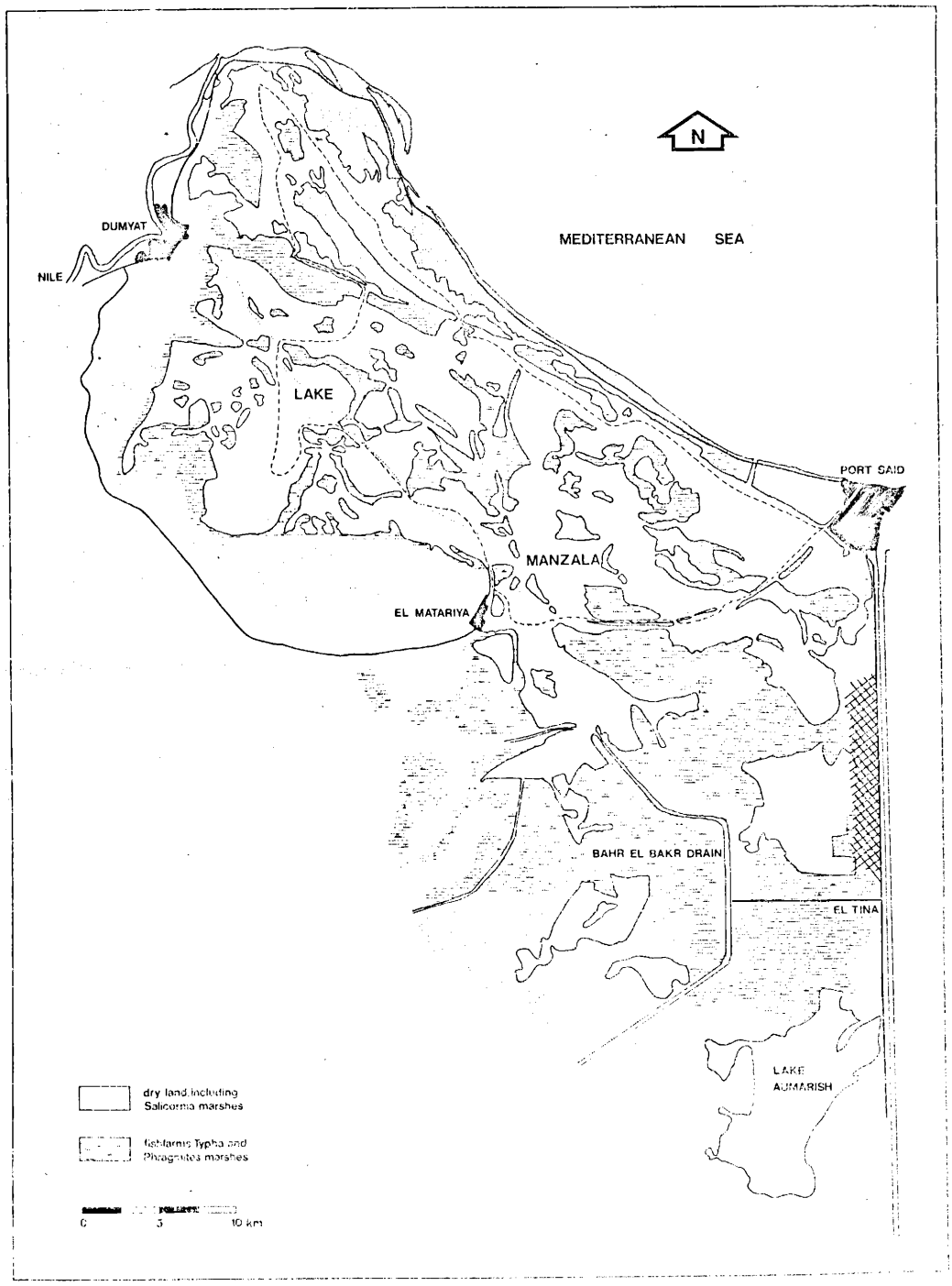
Table 1. Numbers of waders counted in the Lake Manzala region and the calculated numbers of waders annually shot in this period by local fishermen. In brackets the numbers of Cg. alexandrinus, C.minuta and C.alpina expressed as a percentage of the totals of these species seen in Egypt.

Species	numbers counted		numbers shot annually
	79/79	79/80	
Rostratula benghalensis	2	-	10
Haematopus ostralegus	74	106	-
Recurvirostra avosetta	55	1838	1030
Charadrius hiaticula	1	716	100
Charadrius pecuarius	11	4	10
Charadrius alexandrinus	56 (12%)	6490 (85%)	3780
Charadrius leschenaultii	37	13	-
Pluvialis apricaria	15	-	-
Pluvialis squatarola	9	56	60
Hoplopterus spinosus	29	25	20
Vanellus vanellus	275	28	20
Calidris alba	2	657	-
Calidris minuta	540 (5%)	6219 (53%)	12010
Calidris temminckii	6	-	-
Calidris alpina	- (0%)	4693 (62%)	12423
Charadrius/Calidris spec.	2710	3750	-
Philomachus pugnax	141	8	193
Gallinago gallinago	35	49	40
Limosa limosa	22	-	-
Numenius arquata	17	5	-
Tringa erythropus	4	5	-
Tringa totanus	1148	3418	375
Tringa stagnatilis	2	14	20
Tringa nebularia	9	12	30
Tringa ochropus	7	2	-
Tringa glareola	16	10	10
Actitis hypoleucos	6	14	-
Arenaria interpres	-	34	-

Collecting birds

In the morning of 27 December 1979, while counting birds for sale in the Port Said market, 29 Dunlins (Calidris alpina), 10 Little Stints (C.minuta) and 2 Kentish Plovers (Charadrius alexandrinus) were bought from a local bird seller. According to his information and our own observations these birds were freshly dead and had been shot about 4 hours previously on mudflats on the east bank of Lake Manzala, between Port Said and El Tina, probably near Ras el Ish. The birds were wrapped in a newspaper and kept in a refrigerator until the evening of the same day when they were sexed and measurements and weights were taken. After this the stomachs of the birds were removed and put in 5-10% formaldehyde.

Figure 1. Map of the Lake Manzala area. Matched the main feeding habitats for waders.



Measurements

Dunlin

Measurements and weights of Dunlins from Lake Manzala are given in Table 2. Of the six races presently recognised, three could possibly occur in Egypt: C.a.schinzii (Iceland, W. and S. Europe), C.a.alpina (N.W. Palearctic) and

sex	n	wing	bill	tarsus	tail	weight
♀	20	115-125 (118.6) (116.2^{+})	29.6-34.9 (32.1)	24.0-28.7 (27.3)	45-57 (51.5)	28-42 (37.6)
♂	9	120-128 (124.0) (121.5^{+})	35.2-38.3 (36.7)	26.5-29.2 (28.6)	50-56 (52.7)	37-54 (42.4)

Table 2. Measurements and weights of Dunlin from Lake Manzala. $^{+)}$Wing-length minus 2% for comparing with skins. Range is given with mean in brackets.

C.a.sakhalina (N.E.Palearctic, N.Alaska). The Egyptian Dunlins examined by us are larger than C.a.schnizii and must therefore belong to either C.a.alpina or C.a.sakhalina. As mean wing lengths of freshly dead birds are spproximately 2% longer than mean wing lengths of skins (C.S. Roselaar in litt.) in Table 2 the wing length minus 2% is given in brackets. Compared with Table 3 the males are intermediate between C.a.a. and C.a.s. based on wing and bill lengths, while the females could belong to C.a.s. The tarsus and tail measurements of both males and females are in the range of C.a.s. The weights are not taken into consideration, because of the unknown effect of the method of collecting and preserving.

Calidris alpina alpina (C.a.a.)

sex	wing	bill	tarsus	tail
♂	106.7-122.0(114.3)	24.0-34.5(30.5)	24.2	46.6
♀	110.0-123.0(117.1)	27.8-37.0(33.8)	24.6	47.1

Calidris alpina sakhalina (C.a.s.)

sex	wing	bill	tarsus	tail
♂	113.0-125.0(119.2)	28.5-38.8(33.0)	26.2	49.2
♀	111.0-128.0(119.1)	26.3-39.8(36.0)	27.0	51.2

Table 3. Measurements of C.a.alpina and C.a.sakhalina (Boere, de Bruijne & Nieboer 1973, Clutz von Blotzheim, Bauer & Bezzel 1975, Prater, Marchant & Vourinen 1977).

According to Meinertzhagen (1954) and Roselaar (in litt.) C.a.s. appears to have more white on the primaries than C.a.a., but unfortunately we did not pay attention to this character while handling the birds. As this is one of the few characters to be used in the winter plumage, it is not possible with certainty to consider these birds as belonging to C.a.s. Probably they are intermediate between C.a.a. and C.a.s. and of mid-Siberian origin, possibly from Taimyr (C.S. Roselaar in litt.). It is of interest to note the birds examined by us closely resemble the subspecies C.a.centralis (Buturlin), which is no longer recognised, but considered an intermediate between C.a.alpina and C.a.sakhalina. It is found breeding between Taimyr and Kolyma (Johansen 1958, Dementiev et al 1951).

Meinertzhagen (1930) states that the majority of the Dunlin wintering in Egypt belong to C.a.schinzii (and thus the minority to C.a.a.). In October 1980 we were able to take measurements from 5 male and 1 female Dunlins from the "Nicoll-collection", kept in Giza Zoological Gardens, Cairo. These skins were collected in Egypt between 1917 and 1924. The results of the measurements are given in Table 4.

sex	n	wing	bill	tarsus
♂	5	111-120(114.8)	29.8-31.7(30.5)	22.1-29.8(24.7)
♀	1	118	34.5	25.4

Table 4. Measurements of C.alpina-skins in the Nicoll-collection in Giza Zoological Gardens (Cairo).

The well-preserved Nicoll-collection contains several tens of Dunlin skins. Unfortunately we were not able to take measurements of more than 6, "random chosen" skins, due to a lack of time. According to Table 3 these birds belong to C.a.alpina and not to C.a.schinzii. The Nicoll-collection is one of the most important references on which Mainertzhagen (1930) based his subspecific status of the birds of Egypt. Therefore it is of interest to pay more attention to wintering Dunlins in Egypt and elsewhere in Eastern Africa in the future. The more so as Glutz et al (1975) mention the Atlantic coast from the Bay of Biscay to Mauritania as the main wintering area for C.a.schinzii.

Little Stint and Kentish Plover

Measurements and weights of C.minuta and Ch.alexandrinus are given in Table 5 and 6. Only the nominate forms are wintering in Egypt. The data are in accordance with the measurements of these forms as given by Glutz et al (1975) and Prater et al (1977).

sex	n	wing	bill	tarsus	tail	weight
♂	4	99-101(100.3)(98.3^{+})	17.8-18.3(18.1)	22.4-24.4(23.3)	41-43(42.0)	20-27(24.5)
♀	6	99-110(104.0)(101.9^{+})	18.2-20.0(19.0)	22.5-25.7(24.3)	42-48(44.5)	22-27(23.8)

Table 5. Measurements and weights of Little Stints from Lake Manzala. $^{+)}$ See Table 2.

sex	n	wing	bill	tarsus	tail	weight
♂	1	109(106.8^{+})	15.8	30.6	45	40
♀	1	113(110.7^{+})	15.8	27.9	49	43

Table 6. Measurements and weights of Kentish Plovers from Lake Manzala. $^{+)}$ See Table 2.

Stomach contents

After the stomachs had been removed, they were kept in 5-10% formaldehyde and taken to the Netherlands at the end of January for further analysis. In May 1980 the stomachs were emptied and the contents were put in 90% alcohol. After this Mr.Th. Piersma (Netherlands Ornithological Mauritanian Expedition 1980) kindly analysed the contents. The results of these analyses are given in Tables 7 and 8. It is not clear if the stomach-contents of Dunlins represent food items. Also, the time between death (and feeding) and preservation would have allowed continued digestion of some items. The little gastropods especially looked, at least partially, subfossil. It is not unlikely that pulverized matter has a function in digestion (e.g. the only C.alpina stomach without pulverized matter contained very large sand-grains!). Fragments of Pelecypoda probably represent food items; they looked fresh. Although it seems probable that the stomachs of C.alpina were empty for the greater part concerning food items, there are some striking differences between C.alpina and C.minuta. Six of the eight investigated stomachs of C.minuta contained remains of Chironomus sp. (identification by B.P.M.Krebs). Facet eyes and parts of the scutum of adults as well as head capsules of larvae were found in considerable amount. Apparently Chironomus sp. is the main source of food for the Little Stint wintering in Lake Manzala. Chironomidae are probably also an important source of food for the Whiskered Tern (Chlidonias hybridus) wintering in the lakes Burullus and Manzala (Meininger et al 1979, Meininger & Mullie in press). Dense flocks of Chironomidae can be seen under favourable conditions on both lakes. Although very few studies have been carried out on winter feeding of C.minuta, it seems likely that insects are an important source of food (Glutz von Blotzheim et al 1975, Lindner 1970), as well as on the autumn migration (Bengtson & Svensson 1968). To what the extent the difference in stomach contents of the two species is a reflection of a difference in feeding habitats in Lake Manzala is unknown, but not unlikely. Middlemiss (1961) found in South-Africa that C.minuta showed a daily foraging rhythm with the highest proportion of birds feeding in the early morning. Perhaps this is one of the reasons that nearly all stomachs of C.minuta analysed contained food particles.

Kind of contents	no. of stomachs	frequency (%)	amount of contents
Polychaeta			
c.f. Nereis sp. (?)	1	4	70 jaws
Mollusca			
c.f. Bittius sp.	12	46	Many pulverized specimens (tens).
c.f. Hydrobia sp,	20	77	About 260 specimens
Rissoidae sp.	1	4	1 specimen
Gastropoda sp.	1	4	Fragments
Pelecypoda	9	35	A number of pulverized specimens.
fragments	1	4	splinters
Crustacae			
Ostracoda sp.	1	4	6 specimens
Vegetable matter			
seeds	12	46	About 70 specimens of 3 species
fragments	9	35	Sometimes in considerable amount
Sand	24	92	Sometimes in considerable amount. In one stomach very large sand-grains.

Table 7. Stomach contents of 26 Dunlins (C.alpina) from Lake Manzala.

The two stomachs of Ch.alexandrinus were nearly empty: Pelecypoda sp. (fragments of 1 specimen), Insecta (fragments of several specimens), Vegetable matter (fragments) occurred in one stomach, Gastropoda sp. (fragments of 2 specimens) in both.

Kind of contents	no. of stomachs	frequency (%)	amount of contents
Mollusca			
c.f. Hydrobia sp.	4	(50)	45 specimens
fragments	1	(13)	
Crustacae			
Ostracoda sp.	1	(13)	1 specimen
Insecta			
Chironomus sp. (adults)	5	(63)	(44 pair of facet eyes,
Chironomus sp. (larvae)	4	(50)	(numerous fragments of scutum (numerous head capsules.
Vegetable matter			
seeds (1-3 mm)	4	(50)	22 specimens of at least 3 species
fragments	4	(50)	
Sand	8	(100)	sometimes in considerable amount

Table 8. Stomach contents of 8 Little Stints (C.minuta) from Lake Manzala.

Acknowledgements

For the kind permission to make use of laboratory facilities in Port Said and for all kinds of assistance we are greatly indebted to Fred Meth, Don Toews and Brian Rendell, James F. Maclaren Ltd., Cairo. For his critical comments on an earlier draft of this paper and for the analysis of the stomach contents we are indebted to Theunis Piersma, Groningen, the Netherlands. The Chironomidae in the stomachs of the Little Stints were identified by Bernard Krebs, Delta Institute for Hydrobiological Research, Yerseke, the Netherlands. We also received help and valuable comments from Bertel Bruun, New York, while Dave Weaver kindly corrected the English. The 1979 Expedition was supported by the Prins Bernhard Fonds, the International Waterfowl Research Bureau and the Netherlands Foundation for International Bird Preservation. The 1980 Expedition was supported by the P.B.F., I.W.R.B. and the Holy Land Conservation Fund.

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.

W.C.Mullié, Herberdsland 66, 4337 CP Middelburg, The Netherlands.
P.L.Meininger, Grevelingenstraat 127, 4335 XE Middelburg, The Netherlands.

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.