

Important wetlands in northern and eastern Kazakhstan

**W. Cresswell, S. Yerokhov, N. Berezovikov, R. Mellanby,
S. Bright, P. Catry, J. Chaves, J. Freile, A. Gretton, A. Zykin,
R. McGregor, & D. McLaughlin.**

Glasgow University Kazakhstan 1998 Expedition, c/o Will Cresswell, Edward Grey Institute,
Zoology Department, South Parks Rd., Oxford, OX1 3PS, United Kingdom.

E-mail: juniper@beetle.u-net.com

Fax: (01865) 271168

Kazakhstan is an important country for migratory birds passing from Siberia to the north and east to their wintering grounds in Africa, the Middle East and India. Kazakhstan also has globally important breeding populations of White-headed Duck and Sociable Plover. A survey of wetlands in northern and eastern Kazakhstan was carried out July – September 1998. Important sites for migratory birds, White-headed Duck and Sociable Plover were identified. With the exception of huge wetland areas such as Lake Tengiz many of the wetlands used by migratory birds are relatively small, and a network of small sites rather than single large sites are probably most important. White-headed Ducks were found breeding near Lake Tengiz at Yesei, Sultankeldy and Kokai lakes of the Kurgaldjin lake system and the area is probably important for the species. White-headed Ducks were also found at Lake Alakol. Sociable Plovers were only found in small numbers at Naurzum and another small reserve in the same region. Human pressure on wetlands in the north of Kazakhstan appears to be declining because of depopulation since the break up of the Soviet Union. Much of the habitat appears pristine and there is probably little need for conservation concern for the network of wetlands that cover the north of Kazakhstan.

Keywords: White-headed Duck; Sociable Plover; Migratory Birds

Kazakhstan is probably extremely important for migratory birds passing from Siberia to the north and east to their wintering grounds in the Middle East, Africa, India and Pakistan because of its extensive network of wetlands and general geographical position. Kazakhstan also has

important breeding populations of several threatened European bird species such as White-headed Duck *Oxyura leucocephala* and Sociable Plover *Vanellus gregarius* (Heredia et al. 1996). Kazakhstan is thought to contain the majority of the world's breeding population of White-headed

Duck (del Hoyo *et al.* 1992), a species that has undergone a large decline in recent years and is now classified as vulnerable (Collar *et al.* 1994). The Sociable Plover breeds almost entirely within Kazakhstan and its world population may be as low as 10,000 (del Hoyo *et al.* 1996). The species is classified as vulnerable (Collar & Andrew 1988) and has been declining in numbers throughout this century, apparently through habitat loss (del Hoyo *et al.* 1996; Heredia *et al.* 1996). Despite its apparent importance for breeding and migratory birds there is little current information on the status of wetlands important for these birds within Kazakhstan. Since the break up of the Soviet Union, government funding for local bird survey work within Kazakhstan no longer exists. Survey work to establish the current status of important bird areas in Kazakhstan can only occur with collaboration and funding from outside of Kazakhstan. This paper details the results of a collaborative survey of some northern and eastern wetlands in Kazakhstan, involving the Institute of Zoology, Almaty and Glasgow University, UK.

The aim was to survey major wetland and semi-wetland sites in north-eastern Kazakhstan, July - September 1998 in order to identify important staging sites for migratory waders and waterfowl. The survey also aimed to count post-breeding White-headed Ducks so that important breeding areas could be located and to identify important passage sites for Sociable Plover.

Survey area and methods

Wetland areas in the northern region of Kazakhstan were surveyed between July 17 and August 17, from Tengiz to the west of

Astana, to Kustani further west and then eastwards to Petropavlosk. Wetland areas in the north-east of Kazakhstan were surveyed in the Lake Alakol and Zayshan areas between September 3 and September 25. Sites were selected based on previous work carried out by the Institute of Zoology in Almaty that indicated that the areas were important for migratory birds. Within a site lakes were chosen for counts according to reasonable accessibility from the road. Within Kustani and Petropavlosk region lakes were chosen mostly at random from a map according to accessibility. An attempt was made to survey all wetlands encountered or an unbiased sample where many similar lakes were clustered together.

At each lake counts were carried out from a single point recorded by a GPS receiver. For large lakes an area of survey was estimated in hectares. The area of survey was simply that area of water in which all of the birds could be identified and counted (although unidentified ducks and Marsh Terns *Chlidonias sp.* were also counted). Identification depended on the direction of the sun, wind speed and any obscuring vegetation. For small lakes the size of the lake was estimated in hectares and all birds present were counted. For each count all water bird species within the defined area were identified and counted. Counts were usually done simultaneously by several people using telescopes, and with individuals counting particular groups or species of birds. The first counts at the same point on a lake at Tengiz were done independently by six pairs of observers and there was almost exact agreement in the counts between observers. Where several counts were made on the same lake, large distances separated points (more than 1 km) to



Figure 1. Maps showing the location of Kazakhstan and the survey areas (numbered 1-11, See Table 1).

avoid double counts. Counts were carried out at any time of day.

Counts for each lake were pooled. Counts for each lake represent underestimates because of detection difficulties caused by fringing vegetation in small lakes and because larger lakes could only be sampled. Counts between lakes can be compared, however, when controlling for the area surveyed.

Results and discussion

General bird density

In total 177 counts were made at 75 lakes; site details are given in Table 1 and Figure 1. Counts for each species pooled by site are given in Appendix Table 1 (A full list of lake specific counts is available at the Alexander Library, Oxford). In general the number of species recorded at each site increased with survey effort at each site to a maximum of about 65 species recorded after 200 ha. Figure 2 suggests

that two sites had relatively low numbers of species (Sites 10 and 11 lie well below the trend line in Figure 2): Lakes of Kalbinsky Altai mountain range (lakes north of Zayshan) and Lake Alakol were of relatively low diversity. Site two, Naurzum probably had a slightly higher relative diversity.

Sites varied considerably in the approximate density of birds present (Table 1). Taldy Kurgan (Site seven) had the highest density of birds although these were almost all Coots. Sasykkol (Site eight) also had a high density of birds almost entirely because of Coots; central region lakes had a high density of birds because of both Coots *Fulica atra* and Tufted Ducks *Aythya fuligula*. Naurzum (Site two) had a large number of both ducks and waders resulting in a very high density of birds. In general all sites surveyed had a high density of birds apart from the north-eastern sites of Zayshan and Alakol.

Important bird areas

Lake Tengiz (site one): This is already a large protected area within Kazakhstan and

Table 1 The main areas surveyed and the density and diversity of birds at the different sites.

Site	Site No	Dates of Counts	Location of first and last count	Number of counts	Number of species	Total area surveyed (hectares)	Total birds	Approx. density per ha
Lake Tengiz	1	July 27-29	58°28' N 69°33' E	33	66	404	26618	66
Naurzum	2	Aug 1-2	50°24' N 69°21' E 51°40' N 64°35' E	4	50	33	5234	159
Kustani Region	3	Aug 3-7	51°41' N 64°34' E 53°19' N 63°36' E	28	64	340	23062	68
Shoskally	4	Aug 7	53°53' N 64°41' E 53°40' N 64°56' E	6	49	100	10495	105
Petropavlosk region	5	Aug 8-13	53°40' N 64°54' E 53°59' N 64°46' E	26	67	214	18195	83
Central region	6	Aug 15-17	54°3' N 69°10' E 53°7' N 70°18' E	3	35	38	5842	154
Taldy Kurgan	7	Sep 3-25	50°7' N 72°57' E 45°21' N 78°37' E	2	28	4	728	183
Sasykkol	8	Sep 4-19	45°21' N 78°37' E 46°40' N 80°35' E	3	23	13	1824	141
Lake Zayshan	9	Sep 6-12	46°41' N 80°35' E 48°43' N 83°17' E	33	63	326	4965	15
Lakes of Kalbinsky Altai mountain range	10	Sep 14-18	47°58' N 85°1' E 49°22' N 83°1' E	15	34	129	2938	23
Lake Alakol	11	Sep 20-24	48°43' N 80°47' E 46°26' N 81°29' E	24	49	396	8406	21
Total			46°29' N 81°9' E	177		1997	108307	54

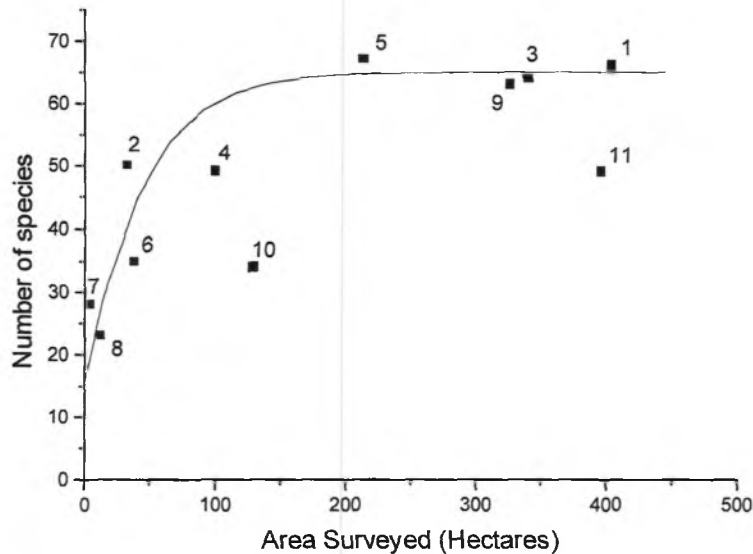


Figure 2 Numbers of species recorded at each site with area surveyed at each site. the curve of best fit is plotted; points are marked by site numbers.

is one of the most important bird areas within Kazakhstan. The site is protected as a Strict Nature Reserve (237,000 ha) since 1958 and as a Ramsar Site from 1976. Our survey data confirms its continuing importance. The site may be the most important area in Kazakhstan for breeding White-headed Duck. In the spring of 1998 a flock of 800 White-headed Duck was present at 50° 28' 11" N 69° 40' 33" E (Lake Kurgaldjin) according to the local warden. We found a breeding female with young and a post-breeding flock of 15 birds there. Tengiz has a huge central area of reedbed and reed and vegetation fringed lakes where a large number of White-headed Ducks could breed undetected. Tengiz has large breeding populations of other wildfowl including reasonable numbers of Ferruginous Duck *Aythya nyroca*. Although we only counted 16 Ferruginous Duck on 4 different lakes in the Tengiz area (lakes Yesei, Sultankeldy, Taban-Kaza and Asau-Balyk) there are

severe problems of detectability of the species in late summer. Some numbers of Ferruginous Duck were probably breeding in the Kurgaldjinskyi State Reserve. Few Ferruginous Duck were encountered at other sites. Tengiz is particularly important for migratory wildfowl and waders. The site is already well known for huge numbers of passage Red-necked Phalarope *Phalaropus lobatus* (see Hayman *et al.* 1986) where 1 to 5 million birds may be present (S. Yerekhov unpublished data). Good numbers of migratory waders of a wide range of species were present at all of the shallow lakes or lake shores surveyed at Tengiz. Considering the size of the Lake Tengiz area very large numbers of birds must be present during passage periods.

Naurzum (site two): This is already a protected area within Kazakhstan and is clearly an important bird area in the country. The area is much more prone to drying up than Tengiz and as a result the numbers of wildfowl that breed there

varies each year. No White-headed Ducks were seen and none had apparently bred in the area that year (reserve staff pers. comm.). Eight individuals were present at Malyi Aksuat lake in spring 1998 (N.Berezovikov unpublished data) and two pairs were present on the same lake on 10 May 1997 (S.Yerokhov unpublished data). During our visit there were few areas of open water remaining, although those encountered had very high density and diversity of birds, particularly waders attracted to the drying out lakes. A flock of 17 Sociable Plover were found at 51° 40' 44" N 64° 35' 13" E. None of the flock of 17 birds were juveniles.

Shoskally (site four): This area is a managed hunting preserve and had extremely large numbers of birds. The area is only about 500 ha in size and we estimated, based on counts of about 20% of the reserve that over 50,000 birds (mainly ducks and waders) were present. There were probably at least 10,000 Garganey *Anas querquedula* present at the site. A flock of four Sociable Plover was found at the site (all adults) and there were probably several hundred Black-winged Pratincoles *Glaereola nordmanni* present.

Kustani lakes (site three): Most lakes within the Kustani region were good for birds. The large lake close to Kustani at 51° 40' 44" N 64° 35' 13" E has a breeding colony of Great Black-headed Gulls *Larus ichthyaetus* and at least 55 were counted in the area. Great Black-headed Gulls occurred at many lakes in the Kustani region. Other notable lakes were lakes at 52° 32' 12" N 65° 35' 20" E (high numbers of breeding and migrant birds), 52° 39' 30" N 65° 48' 9" E (large breeding colony of White-winged Terns *Chlidonias leucopterus*) and 53° 20' 21" N 65° 34' 20" E (large numbers of ducks).

Petropavlosk region (site five): The north of Kazakhstan has many thousands of lakes varying from a few hectares to many hundreds of hectares. Almost all of the lakes surveyed had large numbers of mainly migrant birds. The general impression was that the whole region provided an extremely large total area of suitable migrant waterbird habitat and that no lake was much more significant than any other. Notable lakes, however, were at 53° 59' 57" N 64° 46' 5" E (high numbers of duck) and 53° 52' 9" N 64° 51' 0" E (high density and diversity).

Central Kazakhstan (site six): Again the general impression was that the whole region contained many lakes of suitable migrant waterbird habitat; few were surveyed but many were scanned opportunistically from adjacent roads. Of particular note was a lake at 52° 48' 47" N 70° 12' 22" E (Ferruginous Duck, many ducks and White-winged Terns).

North-eastern Kazakhstan (Sites seven to 11): In general the lakes surveyed in the north-east of Kazakhstan had lower density and diversity of birds. Lake Zayshan (48° 2' 21" N 84° 19' 56" E) had high numbers of Great Black-headed Gull and Dalmatian Pelican *Pelecanus crispus*.

White-headed Ducks in Kazakhstan

A total of 25 White-headed Duck were found at two sites. At Lake Kurgaldjin (Lake Tengiz site), a female with two young was found at 50° 28' 10.7" N 69° 33' 26.9" E on 27 July. At least 15 White-headed Ducks (four male and 11 female or juveniles) were present at Kokai Lake at 50° 28' 44.6" N 69° 23' 51.6" E on 27/9/98. A post breeding flock of four male and eight female/juveniles was present at the same location on 29 July but were

probably the same birds. At Lake Alakol, two males and one female/juvenile were found at 45° 59' 33.9" N 81° 30' 25.6" E on September 24; a further three females/juveniles were found at 45° 59' 52.2" N 81° 27' 30.0" E. Despite breeding habitat being available at Naurzum and at many of the larger lakes surveyed in Kustani region, Central region and in particular Petropavlosk region, no other White-headed Ducks were found. All of these areas have been well documented as forming the core areas of breeding for the White-headed Duck (Anstey 1989).

Lake Kurgaldjin, a huge area of interconnected reedbed lakes adjacent to Lake Tengiz is known as a breeding site for White-headed Ducks, although mostly historically (Anstey 1989). Approximately 30 – 70 pairs were recorded in the area in the late 1960s (Anstey 1989) but extensive boat surveys would be needed for accurate counts. It seems likely, due to the extensive suitable breeding habitat and its continued existence in a fairly pristine state that the number of breeding pairs at Tengiz may be globally important. The report of a flock of 800 White-headed Ducks being present in the spring of 1998 may also indicate this. Naurzum was described as having about 30 pairs of White-headed Ducks in the 1960s (Anstey 1989) but the site is much more prone to drying up and therefore variable breeding numbers. Lake Alakol has not been identified as a breeding site in previous surveys, although Dolgushin (1960) thought that breeding in the freshwater bays of Sasykkol and Alakol Lakes was possible. The White-headed Ducks we encountered there in late September may well have been migrants. The lake is brackish and similar to the favoured wintering lakes in Turkey.

White-headed Ducks breed in areas that

are difficult to survey and can be very difficult to detect in areas where there are extensive reedbeds. Many breeding White-headed Duck were almost certainly overlooked in the Kurgaldjin Lakes System at Lake Tengiz. However, most White-headed Ducks should have finished breeding by August and post-breeding flocks should have been relatively easy to detect because they gather in large groups with other diving ducks well out from the fringes of lakes (Cramp & Simmons 1977). White-headed Ducks are easy to detect when loafing or sleeping on water, even at a distance and in poor light because of their characteristic "cocked tail" silhouette (caution should be used with this character as many Goldeneye *Bucephala clangula* also cock their tails, although the cocked tail tip does not exceed head height in Goldeneyes). It is therefore surprising that none were found on any of the many apparently suitable lakes in the Kustani and Petropavlosk region of Kazakhstan. Many lakes surveyed had reedbeds and extensive fringing vegetation, were slightly brackish and had large numbers of other bird species that are associated with White-headed Duck habitats (eg Black-necked Grebes *Podiceps nigricollis* and various diving duck species). During September all White-headed Ducks should have finished breeding and large post-breeding flocks are expected in suitable habitat. Lake Alakol is such an area yet despite 15.7 km of lake shoreline being surveyed in total only two small groups of White-headed Ducks were found. White-headed Ducks are difficult to find in Kazakhstan and/or occur at very low densities throughout their breeding range.

During the survey no evidence was found of major (or even minor) habitat destruction, pollution or hunting. Fishing is common, however, with small numbers of

fishermen living beside most large lakes. Fishing is of a relatively low intensity from rowing boats and there was little evidence of much export of fish out of the immediate area of the lake. In dry summers, however, fisherman may become concentrated into the same areas as White-headed Ducks. White-headed Ducks have undergone a large decline in recent years (Green & Hughes 1996) and are now classified as vulnerable (Collar *et al.* 1994). The reasons for this decline seem unlikely to be linked to human-mediated habitat change in the breeding areas of north and east Kazakhstan. The human population and level of infrastructure is clearly declining through much of northern Kazakhstan, with many parts of towns and villages now abandoned. One possibility to account for the decline in the global population of White-headed Ducks may be climate change. Naurzum, for example, was undergoing its third consecutive extremely dry summer and many lakes in northern Kazakhstan may be drying out earlier in the summer.

Sociable Plovers in Kazakhstan

A total of 21 Sociable Plovers were found; flocks of 14 and 3 at 51° 40' 43.6" N 64° 35' 12.9" E at Naurzum and a flock of four at 53° 40' N 64° 54' E at Shoskally. The north of Kazakhstan, in particular the Kurgaldjin area (between Lake Tengiz and Achmola) and Naurzum are well known by the ornithologists at the Institute of Zoology as good areas for breeding Sociable Plover. In 1995 between 25 July - 10 August, about 70 individuals were seen around the Kurgaldjino village area (V. Julyi unpublished data), and two Sociable Plovers were possibly seen by a single member of our team there on 29 July

1998. In 1998 three small colonies of Sociable Plover consisting of about 25 pairs total were found at a nearby village of Dokuchayevka and 23 displaying birds were also present there 10 May 1997 (S. Yerekhov unpublished data). Nevertheless none were confirmed during our survey at Kurgaldjino and very few at Naurzum. Local scientists at the reserve centre at Naurzum thought that Sociable Plover nests were locally very unsuccessful because they favoured nesting in grassland that is heavily grazed. Those few nests that survived trampling were then frequently depredated by the very high density of Rooks *Corvus frugilegus*, that also favour heavily grazed pasture (see also del Hoyo *et al.* 1996). Of 18 Sociable Plovers observed immediately after the breeding season, when ageing of juveniles is straightforward, none were juvenile birds. Only two flocks were encountered, however, and segregation by age is common in waders.

Staff at Naurzum and at the Institute of Zoology have no clear idea of the current status of the Sociable Plover but all agreed that the species has become much harder to find, even in well known breeding areas. The Sociable Plover is classified as vulnerable (Collar & Andrew 1988) and has been declining in numbers throughout this century, apparently through habitat loss (del Hoyo *et al.* 1996; Heredia *et al.*) It seems an urgent priority for research to be carried out on the factors influencing breeding success of Sociable Plover. A simple measure such as reduction in stocking densities of grazing animals in some key areas may allow Sociable Plover to breed more successfully.

Migrant waterbirds in Kazakhstan

The survey found large numbers of migrant birds using the wetlands. Small lakes of a few hectares frequently contained hundreds of ducks, grebes and waders. Garganey, Black-necked Grebes and Red-necked Phalaropes occurred in particularly high numbers. Of species of particular conservation interest, Dalmatian Pelicans occurred in reasonable numbers on lakes in the Kustani region and Lake Zayshan and Demoiselle Cranes *Grus virgo* occasionally used wetlands but were widespread away from wetlands. In general wetlands in the north were equally good for migrant birds regardless of whether they were in protected areas such as Lake Tengiz or small lakes by towns or roads. Wetlands to the northeast of Lake Balkash were much less important for migrant birds.

In late summer, Kazakhstan is clearly an important staging area for many waders and wildfowl migrating from Siberia to Europe, the Middle East and Africa. Whilst on migration, waterbirds often rely on a small number of sites at which they can replenish food reserves to enable them to continue their passage. The protection of such sites is therefore vitally important for the conservation of these species. However, in northern and eastern Kazakhstan, there are very many wetlands of varying size. With the exception of huge wetland areas such as Lake Tengiz most of the wetlands used by migratory birds are relatively small. Protection or destruction of any one wetland would make little difference; it is the network of many small sites that is probably most important.

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Appendix Table 1 Overall counts at each site

Site number		1	2	3	4	5	6	7	8	9	10	11
Number of lakes		6	4	12	2	23	3	1	2	8	11	4
Number of counts		33	4	28	6	26	3	2	3	33	15	24
<i>Gavia arctica</i>	Black-throated Diver					1				10		
<i>Tachybaptus ruficollis</i>	Little Grebe	6	2	3								
<i>Podiceps grisegena</i>	Red-necked Grebe	48	2	13	7	7	1					2
<i>Podiceps cristatus</i>	Great Crested Grebe	134		365	7	192	10	41	39	134	77	216
<i>Podiceps auritus</i>	Slavonian Grebe	20	5	10		5						
<i>Podiceps nigricollis</i>	Black-necked Grebe	56	27	243		1171	226	4	1	5	10	7
	Unidentified Grebes	73		4	1							
<i>Phalacrocorax carbo</i>	Great Cormorant	50		189	42	117				93	1	188
<i>Pelecanus onocrotalus</i>	Great White Pelican				55				2			
<i>Pelecanus crispus</i>	Dalmatian Pelican	15		39		3			1	158		
<i>Ardea cinerea</i>	Grey Heron	39		79	39	69	1	28		42	54	16
<i>Casmerodius albus</i>	Great Egret	18		42	11	11		1	3	16	23	49
<i>Botaurus stellaris</i>	Great Bittern			1								
<i>Ciconia nigra</i>	Black Stork							3			24	
<i>Phoenicopterus ruber</i>	Greater Flamingo	4234										
<i>Cygnus olor</i>	Mute Swan	51		7		23	2		6			8
<i>Cygnus cygnus</i>	Whooper Swan	1	7			15				1		
<i>Anser anser</i>	Greylag Goose	712		138	7	1801			12	268		272
<i>Tadorna ferruginea</i>	Ruddy Shelduck	253	32					2		17	114	
<i>Tadorna tadorna</i>	Common Shelduck	922	149	7	2	121	25			9		20
<i>Anas strepera</i>	Gadwall	276	23	15	299	77	485			66	171	183
<i>Anas penelope</i>	Eurasian Wigeon	1187		81	461	165	2			3	31	21

Appendix Table 1 Continued

Site number		1	2	3	4	5	6	7	8	9	10	11
<i>Anas platyrhynchos</i>	Mallard	581	15	275	443	472	55	95	12	164	484	68
<i>Anas clypeata</i>	Northern Shoveler	1524	2	53	170	272	22	13	4	168	15	43
<i>Anas acuta</i>	Northern Pintail	488		12	145	9	32	20	8	15	38	138
<i>Anas querquedula</i>	Garganey	84	183	137	2079	241	190	132		13		
<i>Anas crecca</i>	Common Teal	12	2	20	298	105	175	121			106	29
<i>Netta rufina</i>	Red-crested Pochard	1126		7	2	5			12	6	8	399
<i>Aythya ferina</i>	Common Pochard	4229	38	74	29	771	610	26	69	23	255	287
<i>Aythya nyroca</i>	Ferruginous Pochard	16					4			2		
<i>Aythya fuligula</i>	Tufted Duck	153		107		448	1090				27	1
<i>Mergellus albellus</i>	Smew	43	1									
<i>Bucephala clangula</i>	Common Goldeneye	113		111	3	46	51				18	
<i>Mergus merganser</i>	Goosander											1
<i>Oxyura leucocephala</i>	White-headed Duck	19										6
	Unidentified ducks	7274	1146	6170	4543	3049			272	554	374	8
<i>Rallus aquaticus</i>	Water Rail									1		
<i>Gallinula Chloropus</i>	Common Moorhen									2		
<i>Fulica atra</i>	Common Coot	915		664	52	2153	1200	12	1225	116	810	5918
<i>Grus virgo</i>	Demoiselle Crane	7		7		4						
<i>Grus grus</i>	Common Crane		5	6		53			3			10
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher	1			15							
<i>Himantopus himantopus</i>	Black-winged Stilt	3	150	77	67	62	22	21	4			
<i>Recurvirostra avosetta</i>	Pied Avocet	176	194		10	15	118					
<i>Glareola nordmanni</i>	Black-winged Pratincole			2	47							
<i>Pluvialis fulva</i>	Pacific Golden-Plover			5								1
<i>Pluvialis squatarola</i>	Grey Plover				11	75						

Appendix Table 1 Continued

Site number		1	2	3	4	5	6	7	8	9	10	11
<i>Charadrius hiaticula</i>	Common Ringed Plover	2	2	2	25	65	17					9
<i>Charadrius dubius</i>	Little Ringed Plover	8	1			1		12		24	1	1
<i>Charadrius alexandrinus</i>	Kentish Plover									1		
<i>Vanellus vanellus</i>	Northern Lapwing	54	52	419	75	447		107		114	52	43
<i>Vanellus gregarius</i>	Sociable Plover		17		4							
<i>Calidris alba</i>	Sanderling		4									
<i>Calidris minuta</i>	Little Stint	250	181	112	13	224	11	15		65	7	30
<i>Calidris temminckii</i>	Temminck's Stint	8	1	7						15		
<i>Calidris alpina</i>	Dunlin		25			14						
<i>Calidris ferruginea</i>	Curlew Sandpiper					4		4		8	2	
<i>Philomachus pugnax</i>	Ruff	742	857	98	106	202		20		16	3	19
<i>Gallinago gallinago</i>	Common Snipe			8	5	11		4	1	1		1
<i>Lymnocyptes minimus</i>	Jack Snipe					1						
<i>Limosa limosa</i>	Black-tailed Godwit	170	505	60	115	724		4		19		27
<i>Numenius phaeopus</i>	Whimbrel		4		2	5	1					
<i>Numenius arquata</i>	Eurasian Curlew		60	1		11	1	4		3		3
<i>Tringa erythropus</i>	Spotted Redshank	10	7	4	2	7				2		2
<i>Tringa totanus</i>	Common Redshank	10	2	3		34	5					3
<i>Tringa stagnatilis</i>	Marsh Sandpiper	26		10	4	50				6		
<i>Tringa nebularia</i>	Common Greenshank	5		2		12		6		1	3	
<i>Tringa ochropus</i>	Green Sandpiper	8		3	1	18				6		
<i>Tringa glareola</i>	Wood Sandpiper	24		43	63	168		19				
<i>Tringa cinerea</i>	Terek Sandpiper	10	11	4		6		11		14		
<i>Tringa hypoleucos</i>	Common Sandpiper	1	2							3	1	
<i>Arenaria interpres</i>	Ruddy Turnstone		20	2		7				2		1

Appendix Table I Continued

Site number		1	2	3	4	5	6	7	8	9	10	11
<i>Phalaropus lobatus</i>	Red-necked Phalarope	158	865	42	158	1816	263			58		
	Unidentified waders	10	450			150				64	15	
<i>Larus cachinnans</i>	Yellow-legged Gull	78	96	2976	75	591	120	3	107	583	19	103
<i>Larus canus</i>	Common Gull		2	26		230	1					
<i>Larus ichthyaetus</i>	Great Black-headed Gull	8		145			4			1042		114
<i>Larus ridibundus</i>	Black-headed Gull	13	6	5939	417	739	568		42	198	194	146
<i>Larus genei</i>	Slender-billed Gull	5										
<i>Larus minutus</i>	Little Gull		26	106	6	153	29					
<i>Sterna nilotica</i>	Gull-billed Tern									10		1
<i>Sterna caspia</i>	Caspian Tern	20		2	3					414		
<i>Sterna hirundo</i>	Common Tern	93		894	396	349			1	397	1	10
<i>Sterna albifrons</i>	Little Tern	25			2					7		1
<i>Chlidonias leucopterus</i>	White-winged Black Tern	18	23	3058	178	585	501			6		
<i>Chlidonias niger</i>	Black Tern	11	32	104		3						1
	Unidentified Marsh Terns			102		10						
Total by Site		26626	3251	23135	1650	6637	1521	209	151	3079	298	515
Overall Total = 108307												