Waterbirds around the world

A global overview of the conservation, management and research of the world's waterbird flyways

Edited by G.C. Boere, C.A. Galbraith and D.A. Stroud

Assisted by L.K. Bridge, I. Colquhoun, D.A. Scott, D.B.A. Thompson and L.G. Underhill

EDINBURGH, UK: THE STATIONERY OFFICE

First published in 2006 by The Stationery Office Limited
71 Lothian Road, Edinburgh EH3 9AZ, UK.

Applications for reproduction should be made to Scottish Natural Heritage,
Great Glen House, Leachkin Road, Inverness IV3 8NW, UK.

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN 0 11 497333 4

Recommended citation:
Boere, G.C., Galbraith, C.A. & Stroud, D.A. (eds). 2006.
Waterbirds around the world. The Stationery Office, Edinburgh, UK. 960 pp.

Names used for geographical entities do not imply recognition, by the organisers of the *Waterbirds around the world* conference or other supporting organisations or governments, of the political status or boundaries of any particular territory. Names of territories used (and any alternatives) are included solely to help users of this publication apply information contained within this volume for waterbird conservation purposes. The views expressed in papers included within this volume do not necessarily represent views of the editors or the organisations and governments that supported the conference and this publication.

Cover photography: Whooper Swans *Cygnus cygnus* arriving at Martin Mere, England. Photo: Paul Marshall. (www.paulmarshallphotography.com)

Migration of Pontic Gulls *Larus cachinnans* form *'ponticus'* ringed in the south of Ukraine: a review of recoveries from 1929 to 2003

Antonina G. Rudenko
The Black Sea Biosphere Reserve, Lermontov Street 1, Golaya Pristan 75600, Kherson Region, Ukraine.
(email: arudenko@gopri.hs.ukrtel.net)

Rudenko, A.G. 2006. Migration of Pontic Gulls *Larus cachinnans* form *'ponticus'* ringed in the south of Ukraine: a review of recoveries from 1929 to 2003. *Waterbirds around the world.* Eds. G.C. Boere, C.A. Galbraith & D.A. Stroud. The Stationery Office, Edinburgh, UK. pp. 553-559.

ABSTRACT

The Pontic Gull *Larus cachinnans* form *'ponticus'* breeds on islands and lagoons along the coast of the Black Sea and Sea of Azov. Censuses in 1998 revealed a total of population of 28 226 pairs. Pontic Gulls have been ringed at breeding colonies in the south of Ukraine since the late 1920s, and by 2003 there had been 1 169 recoveries of birds ringed in the Black Sea Biosphere Reserve, Swan Islands and Sivash. A total of 817 gull chicks were colour-ringed in the Black Sea Biosphere Reserve between 1999 and 2002, and 20 of these have subsequently been recovered or re-sighted. This paper reviews the recoveries of Pontic Gulls ringed in Ukraine, and compares the movements of young birds with those of adults. The great majority of adults remain within the Azov-Black Sea region throughout the year. Most young birds also remain in the region, but a small number of birds undertake lengthy migrations in their first calendar year, mostly in a south-westerly direction (Romania, Bulgaria, Turkey, Cyprus, Greece and Egypt) or north-westerly direction (Poland, Germany, Denmark and The Netherlands). Some of these birds continue their nomadic movements in their second year.

INTRODUCTION

Large white-headed gulls of the *Larus argentatus/cachinnans* complex breed in the south of Ukraine (Stepanyan 1990). Some authors assign the birds breeding in the Black Sea, Caspian Sea and eastern Kazakhstan to a distinct species, the Caspian Gull L. cachinnans (Olsen & Larsson 2002), while those birds breeding in the northern Black Sea and Sea of Azov have been assigned to the form "ponticus" – Pontic Gull. In Ukraine, the breeding area of the Pontic Gull lies between latitudes 45° and 47°N and longitudes 29° and 39°E, and includes islands and lagoons along the coast of the Black Sea and Sea of Azov. The westernmost colonies are situated in the Danube Delta, and the easternmost, on Krivaya Spit in the Sea of Azov. The northern limit of the breeding range is probably in the region of the Kiev water storage basin, and the southern limit is on the coast of the Crimean Peninsula (Kistyakovsky 1957, Klestov & Fesenko 1990, Siokhin & Grinchenko 1988; Fig. 1).

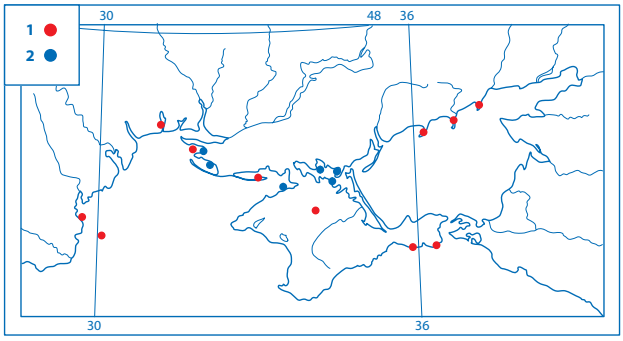

Fig. 1. Breeding areas of the Pontic Gull *Larus cachinnans* and ringing sites in the south of Ukraine. 1 – breeding areas; 2 – ringing sites.

Size of the breeding population in the Azov-Black Sea region

The main breeding colonies of the Pontic Gull are located in Yagorlitsky Bay (Konsky and Krugly Islands) and Tendra Bay (Orlov and New Islands) in the Black Sea Biosphere Reserve, on islands in Jarylgachsky Bay, in the Sivash (e.g. Kitaj, Martinaychy and Chongarsky Islands), on the Swan Islands (Lebayzhie) in Karkinitsky Bay (Kistaykovsky 1957, Klimenko 1951, Sabinevsky 1958, Kostin 1983), and on Molochny Lagoon, Obitochnaya Spit and Krivaya Spit. In the mid-1990s, there were large colonies at Kuyanlitsky and Alibay Lagoons in the Odessa region (Siokhin & Grinchenko 1988, Siokhin 2000a).

Jarylgachsky Bay

In 1929, Jarylgach Island was included in the Black Sea Reserve. Here there were about 100 breeding pairs of Pontic Gulls (kistaykovsky 1957). In the last 70 years, the number of pairs breeding on islands in Jarylgachsky Bay has remained relatively stable. Some increase was observed in the 1980s and 1990s, when the population reached 3 500-3 900 pairs (Ardamatskaya 2000), and at the beginning of this century, there were about 4 500 pairs in this area (Ardamatskaya *et al.* 2000).

Black Sea Biosphere Reserve

When Jarylgach Island was excluded from the Black Sea Biosphere Reserve (in 1951), the Pontic Gulls moved onto islands in Tendra Bay, where the numbers increased to 3 100 pairs (Sabinevsky 1958). At the beginning of the 1950s, the main colonies were located on Babin Island. In 1956-1958, Pontic Gulls were eradicated from islands in Tendra Bay, as they posed an appreciable threat to other bird species nesting on the islands (Sabinevsky 1958).

Since the end of the 1950s, the main breeding colonies in the Black Sea Biosphere Reserve have been located on Konsky and Krugly Islands in Yagorlitsky Bay. In 1984-1986, the number of pairs on Konsky Island varied between 2 000 and 3 500 (Trubka 1986, Rudenko 1992). On Krugly Island, there were between 200 and 500 pairs. During the 1990s, the number of Pontic Gulls in the Black Sea Biosphere Reserve increased to 5 000 pairs. The numbers breeding on islands in Tendra Bay have increased from 50-60 pairs in 1990 to 1 500 pairs in recent years. Other colonies are located on Orlov Island and New Island

(Yaremchenko pers comm.). The total number of breeding pairs in the reserve in the early 2000s was about 4 000.

Swan Islands (Lebayzhie)

The largest colonies of Pontic Gulls have always been on the Swan Islands. Here the numbers increased from 1 750 pairs in the 1950s (Kistyakovsky 1957) to 9 417 pairs in the early 1980s (Kostin 1983). During the 1980s, the population remained relatively stable at 10 000 pairs, but by the end of the 1990s, numbers had fallen by almost half to 5 000-7 000 pairs (Tarina *et al*. 2000).

Sivash

There are large breeding colonies of Pontic Gulls in the Sivash. In the 1970s and 1980s, up to 2 000 pairs bred on Kitaj Island, up to 300 pairs on Martinaychy (Kostin 1983), 2 030 pairs on the Chongarsky Islands, and 5 500 pairs in eastern Sivash. There were also 2 500 pairs at Molochny Lagoon and 785 pairs on Krivaya Spit (Siokhin & Grinchenko 1988). In the 1990s, the total number of breeding pairs in the Sivash was over 14 000 (Siokhin 2000a).

According to the results of censuses in 1998, the total number of Pontic Gulls in the Azov-Black Sea region was 28 226 pairs (Siokhin 2000b). The relative stability in the total numbers of Pontic Gulls in Sivash and Karkinitsky, Jarylgachsky, Tendra and Yagorlitsky Bays in the Black Sea, despite considerable fluctuations in numbers at each of these sites, the synchronization of breeding, and the movements of individuals between colonies, have led to the conclusion that these colonies form part of a single Azov-Black Sea population (Sabinevsky 1958, 1966). This conclusion is supported by the fact that many of the breeding birds remain throughout the year in the Azov-Black Sea region, and there are no essential differences in the nomadic movements of birds from the various ringing sites. After breeding, birds from the various colonies are widely distributed along the coasts of the Sea of Azov and Black Sea, and also in the Danube, Don and Kuban regions.

RESULTS AND DISCUSSION

A brief history of Pontic Gull ringing in the south of Ukraine

The ringing of Pontic Gulls with metal rings began in the south of Ukraine, and in particular in the Black Sea Biosphere Reserve, at the end of the 1920s. In the reserve archives, there are recoveries of birds ringed on islands in Tendra and Yagorlitsky Bays in the Black Sea Biosphere Reserve, on the Swan Islands in Karkinitsky Bay, and on Kitaj, Martinaychy and Kuyuk-Tuk Islands in Sivash (Table 1). The presence of all this material is a legacy of the many ornithologists who have worked in the region, especially A.B. Kistaykovsky (1920s), M.I. Klimenko (1950s), B.V. Sabinevsky (1950s-1960s) and T.B. Ardamatskaya (1950s-1970s) in the Black Sea Biosphere Reserve and Sivash, and Yu.V. Kostin and N.A. Tarina on the Swan Islands.

An analysis of the results of gull ringing in the Black Sea Biosphere Reserve during the period 1944-1950 was undertaken by Klimenko (1950, 1951, 1953), and later by Sabinevsky (1958, 1966), while Ardamatskaya (1977) produced a report on the migration of gulls including the Pontic Gull.

The author has been involved in the ringing of Pontic Gulls in the south of Ukraine since 1984. Since 1993, a colour-ringing programme has been in operation under the co-ordination of Norman van Swelm (Ornithological Station Voorne, The Netherlands). About 2 000 nestlings have been colour-ringed since this programme began. An independent study of the migration of the Pontic Gull using ringing has also been carried out by the Melitopol Pedagogical University (Koshelev 2000).

The following analysis of the results obtained from the ringing of Pontic Gull chicks includes the results from both metal- and colour-ringing, and uses published material as well as recent unpublished material. In total, 1 169 Pontic Gulls ringed with metal rings have been recovered. Gull chicks were ringed in spring and summer, primarily in May and June. Seventy-six adult birds were ringed in April and May in 1984 and 1985, and eight adults were ringed in 1990. Colour-ringing of Pontic Gulls was carried out on Konsky and Krugly Islands in Yagorlitsky Bay and at Potievsky in Tendra Bay in the Black Sea Biosphere Reserve. In this paper, only the results obtained from colour-ringing during the five-year period 1999-2003 are discussed.

Results from ringing with metal rings

Most recoveries, irrespective of age, were recorded as "killed by a hunter" (Table 2). A large proportion of the recoveries were recorded as "circumstances unknown", but the majority of these were probably birds killed by man. Over two-thirds of the recoveries (67.1%) were of birds recovered in their first calendar year. Somewhat fewer (19.2%) were of birds in their second and third year of life, and only 9.5% were of birds aged 4-6 years old (Table 3). The maximum age recorded was 21 years and seven months; this was a bird ringed as a chick in the Black Sea Biosphere Reserve in May 1954 and recovered in the Crimea in January 1976. The annual survival rate of Pontic Gulls increases after the birds have achieved an age of two years. However, the low recovery rates of older birds can also be explained by the loss of metal rings, which disintegrate with age (Ardamatskaya 1977).

Post-fledging roosts and autumn migration

Most eggs hatch at the beginning of May, and the first young birds fledge in the first ten days of June. In the Black Sea Biosphere Reserve, the first young were seen on the wing on 6-8 June in 1984-1989 and on 28 May in 1990. The nesting sites are abandoned by the young gulls in the last ten days of August (25-31 August in 1984-1990s), and only a few young birds from late broods remain on the islands in autumn. There are only

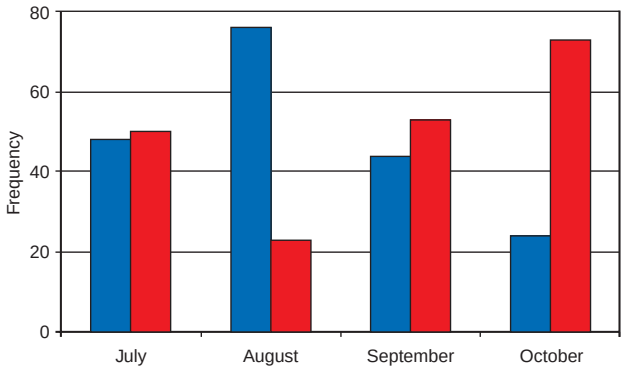

Fig. 2. Numbers of immature (blue) and adult (red) Pontic Gulls *Larus cachinnans* at roosts of non-breeding birds on Tendra Island, south Ukraine, in July to October.

Table 1. Numbers of Pontic Gulls *Larus cachinnans* ringed at three localities in the south of Ukraine: 1929-2003.

Place of ringing	Years and months of ringing	Numbers of birds ringed		Recoveries of birds ringed as chicks		Ringers
		chicks	adults	Total	%	
Black Sea Biosphere Reserve (BSBR)	1929-1955 May-June	9 231	-	308	3.3	Kistaykovsky, Sabinevsky, Klimenko & Ardamatskaya (with BSBR funding)
	1984-1986, 1990 May-June	391 770	68 8	- 1	- 0.1	Rudenko (with BSBR funding)
	1999-2003 June-July	813	-	20	2.5	van Swelm & Rudenko
Swan Islands	1949-1957, 1983-1987 May-June	6 307 2 643	- -	408 5	6.5 0.2	Sabinevsky (with BSBR funding); Kostin & Tarina
Sivash	1934-1960 May-June	No data	No data	455	-	Sabinevsky (with BSBR funding)
Total	1929-2003	20 155	76	1 197	3.7*	

* Excluding Sivash.

Table 2. Details of recoveries of Pontic Gulls *Larus cachinnans* ringed in the south of Ukraine.

	Place of ringing					
	Black Sea Biosphere Reserve		Swan Islands (Lebyazhie)		Sivash	
Details of recovery	Total recoveries	%	Total recoveries	%	Total recoveries	%
Killed by hunter	236	77.2	256	62.7	264	58.0
Found dead	18	5.8	35	8.6	29	6.4
Found sick or wounded and dying	13	4.2	23	5.6	16	3.5
Remains of bird found	3	0.9	-	-	3	0.7
Found wounded or killed by man	1	0.2	1	0.2	2	0.4
Caught alive and released	6	1.9	25	6.1	35	7.7
Caught alive, but details unknown	2	0.7	-	-	-	-
Finding circumstances unknown	25	8.2	61	15.0	105	23.1
Caught alive and taken to zoo	1	0.3	-	-	-	-
Ring found	1	0.3	2	0.5	1	0.2
Ring number read in field	-	-	1	0.2	-	-
Caught alive and released with a new ring or without a ring	-	-	4	1.0	-	-

Table 3. Year of recovery of Pontic Gulls *Larus cachinnans* ringed at three localities in the south of Ukraine.

	Number &	First calendar	Years after ringing										Age	
Pace of ringing	%	year	1	2	3	4	5	6	7	8	11	17	21	unknown	Total
Black Sea Biosphere Reserve	Number	163	26	51	18	21	4	4	3	2		1	1	12	306
	%	53.3	8.5	16.7	5.9	6.9	1.3	1.3	1.0	0.7		0.3	0.3	3.9	
Swan Islands	Number	276	21	62	17	13	4	3	4	2				6	408
	%	67.6	5.1	15.2	4.2	3.2	1.0	0.7	1.0	0.5				1.5	
Sivash	Number	345	25	39	17	12	6	7	3		1				455
	%	75.8	5.5	8.6	3.7	2.6	1.3	1.5	0.7		0.2				
Total	Number	784	72	152	52	46	14	14	10	4	1	1	1	18	1 169
	%	67.1	6.2	13.0	4.4	3.9	1.2	1.2	0.8	0.3	0.1	0.1	0.1	1.5	

minor differences in the basic phenology of the breeding season between the Swan Islands and Sivash (Kostin 1983, Siokhin & Grinchenko 1988).

Having abandoned the islands, the great majority of young birds from the Black Sea Biosphere Reserve spend the first two to three weeks within 3-5 km of their birthplace, forming large roosts on bay shores, alongside roads and in fields. By the beginning of August, and less often by the end of July, the young birds reach Tendra Island, where they disperse along the coast. Here the young birds congregate with adults in large post-breeding roosts (Rudenko & Ardamatskaya 1993; Fig. 2).

Young birds from the Swan Islands and Sivash, having abandoned their colonies, appear along the coasts of Karkinitsky Bay

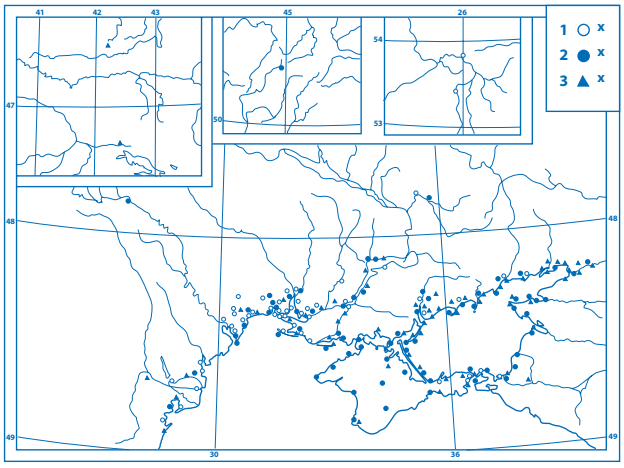

Fig. 3. Distribution of autumn recoveries of Pontic Gulls *Larus cachinnans* ringed as chicks in the Black Sea Biosphere Reserve (1x), Swan Islands (2x), and Sivash (3x). Month of recovery: 6-10 (June to October). The Black Sea Biosphere Reserve (1x), Swan Islands (2x), and Sivash (3x). Month of recovery: 6-10 (June to October).

and the Sea of Azov. Some weeks after ringing, some individuals migrate along the northern and eastern coasts of the Sea of Azov, and have been recovered 300-500 km from the place of ringing. A young bird ringed on the Swan Islands on 27 June was recovered a few days later on Krivaya Spit in the Sea of Azov, about 300 km away. Many birds ringed as chicks in May and June have been recovered in June and July between 50 and 500 km from the place or ringing, or even more (Fig. 3); of the 72 recoveries of birds in this period, only 11 (15.3%) were from within 50 km of the place of ringing. Some of the young birds undertake a long-distance migration in a north-westerly direction. For example, four gulls were observed one month after ringing on the River Neman in Byelorussia (825 km), and two birds, ringed on 23 May on the Swan Islands and 27 May in the Black Sea Biosphere Reserve respectively, were recovered in Sweden (Fig. 4). The bird ringed on 27 May was recovered in Sweden as early as June. Some young birds move south-west, reaching the Danube Delta and coasts of Romania and Bulgaria (one recovery) in June and July, while others migrate in an easterly direction, e.g. a young gull reached Cimlyansky water storage basin (850 km from the place of ringing) by 26 July.

The majority of recoveries of birds in their first calendar year have been in the month of August, and this is also the peak month for recoveries of adults (Fig. 5). The distribution of recoveries of

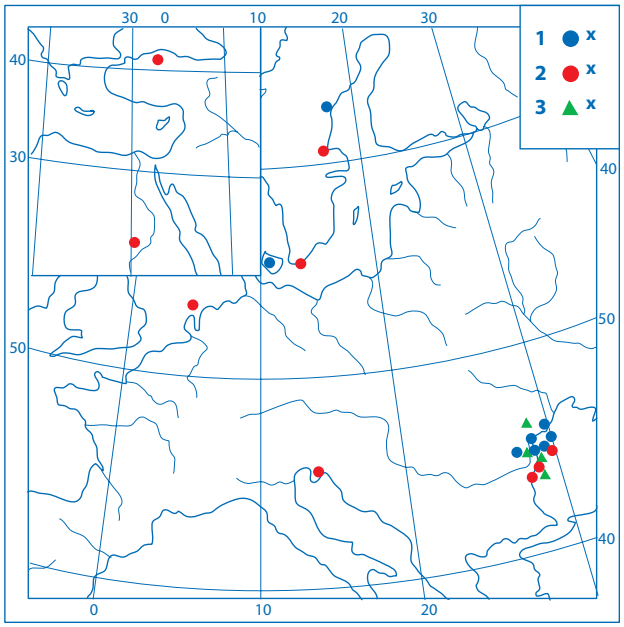

Fig. 4. Distribution of foreign recoveries of Pontic Gulls *Larus cachinnans* ringed as chicks or adults in the Black Sea Biosphere Reserve (1x), Swan Islands (2x), and Sivash (3x). Month of recovery: 6-12 (June to December).

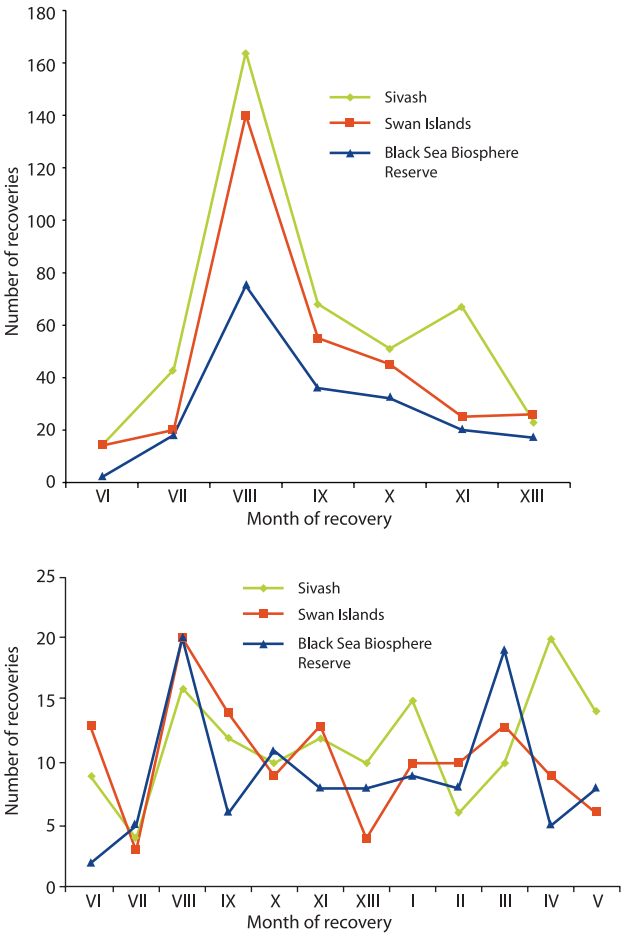

Fig. 5. Recoveries by month of Pontic Gulls *Larus cachinnans* ringed in the Black Sea Biosphere Reserve (1), Swan Islands (2), and Sivash (3). A: immature birds in their first calendar year; B: adults. Month of recovery: I-XII (January to December).

young birds in August is similar to the distribution of recoveries in June and July (Fig. 3). The birds are widely dispersed along the northern coasts of the Black Sea and Sea of Azov from the Danube to the Don and Kuban in the Crimea. In the south-west, some birds reach the coast of Romania (260 km from the place of ringing). It appears that young birds reaching the Romanian and Bulgarian coasts in their first year of life prolong their nomadic wanderings in subsequent years, as there have been 12 recoveries of immature gulls from Romania and three from Bulgaria in various seasons in later years. There is also one recovery of an immature bird in August in the Chernovtsy region, indicating that a part of the population continues to migrate in a north-westerly direction towards the Baltic coast. Immature birds in their second year of life have been found in the port of Copenhagen in Denmark, over 1 700 km from the place of ringing. Other young birds follow the Don and Manich river valleys to Lake Manich (675-680 km from the place of ringing), and there has been one recovery further north-east in the Penza region, about 1 160 km from the ringing site.

The recoveries of young birds in September and October indicate that the great majority of birds remain along the shores of the Black Sea and Sea of Azov. Some birds continue to move in a north-westerly direction, reaching the coast of Denmark (Zealand) and Germany (Heligoland), while others move east as far as the coast of the Caspian Sea (two recoveries in the Astrachansky region, 1 160-1 170 km from the place of ringing). There have also been recoveries of young birds in September and October from Greece (1 250 km) and from Lake Brollos in lower Egypt (c. 2 500 km).

The recoveries of adults after the end of the breeding season and in autumn indicate that these birds disperse along the coasts of the Black Sea and Sea of Azov (Fig. 6). Field observations have revealed that adults and young birds migrate in mixed flocks.

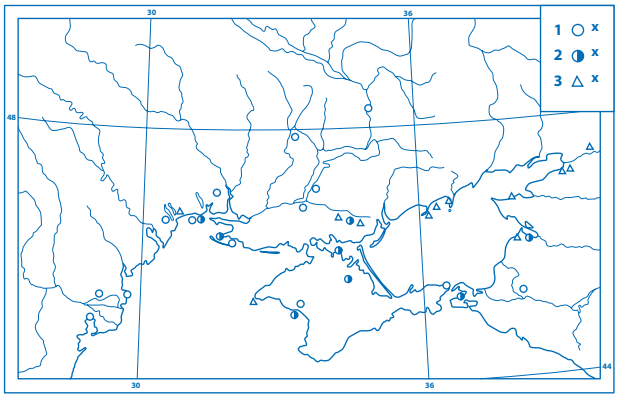

Fig. 6. Distribution of recoveries of adult Pontic Gulls *Larus cachinnans* ringed as chicks in the Black Sea Biosphere Reserve (1x), Swan Islands (2x), and Sivash (3x). Month of recovery: 1-12 (January to December).

Wintering period

During the wintering period (from the end of November to the end of February), most Pontic Gulls in all age groups remain within the Azov-Black Sea region in Odessa, Nikolaev, Kherson, Zaporozhye, Crimea, Donetsk and Rostov territories in Ukraine and Krasnodar Territory in Russia (89.0% of all winter recoveries; n = 163). This region can be considered to be the centre of

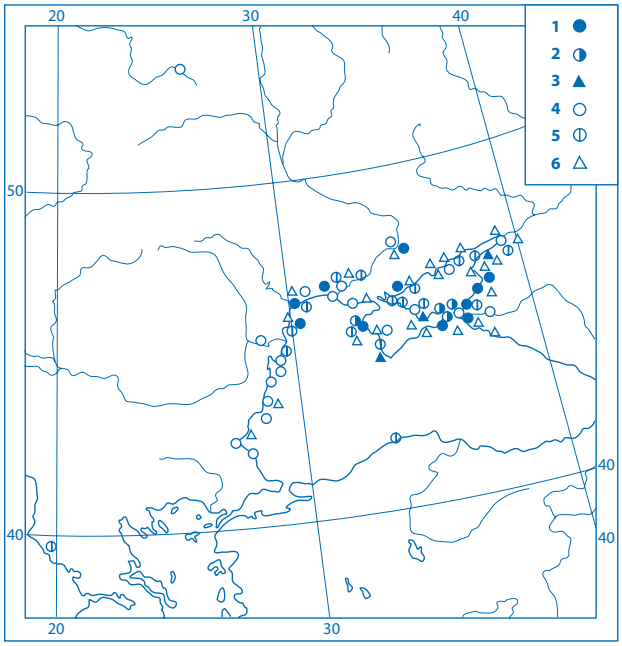

Fig. 7. Distribution of winter recoveries of Pontic Gulls *Larus cachinnans* ringed as chicks in the Black Sea Biosphere Reserve (1 and 4), Swan Islands (2 and 5), and Sivash (3 and 6). 1-3 = first-year birds; 4-6 = immature and adult birds.

the wintering range of the Azov-Black Sea population of the Pontic Gull (Fig. 7). The recoveries suggest that most of the adult birds remain throughout the winter in this region. However, some immature birds winter on the coast of Romania, Bulgaria, Greece and Turkey (10.4% of recoveries), and one bird has been recovered in winter in Byelorussia.

Spring migration period

The date of return of Pontic Gulls to their breeding grounds varies somewhat from year to year. In the Black Sea Biosphere Reserve, the main arrival of adults at the colonies usually occurs between 20 February and 10 March, but in severe winters with late springs, the arrival may be delayed until the second ten days in April. The adults arrive on the breeding islands in small flocks of between three and eight individuals. Egg-laying usually commences at the end of March or beginning of April. Immature birds remain dispersed along the coasts of the Sea of Azov and Black Sea south to Romania (Fig. 8). Thus, the distribution of immature Pontic Gulls in spring scarcely differs from that in autumn. The main concentrations (88.8% of recoveries) are in the Odessa, Kherson, Crimea, Zaporozhye and Rostov regions in Ukraine, and on the coast of Krasnodar Territory in Russia. However, some birds remain in the Baltic Sea, and there has been one recovery of an immature on the River Narva in Estonia in May.

Pontic Gulls ringed on islands in the Black Sea Biosphere Reserve have been recovered in May in the Rostov region, and birds ringed on the Swan Islands have been recovered at the height of the breeding season on islands in the Black Sea Biosphere Reserve. These recoveries indicate that there is some interchange of individuals between breeding colonies.

Results from colour-ringing

In the period 1999 to 2002, 817 Pontic Gull chicks were ringed with red colour-rings. Reports of 20 of these birds have been

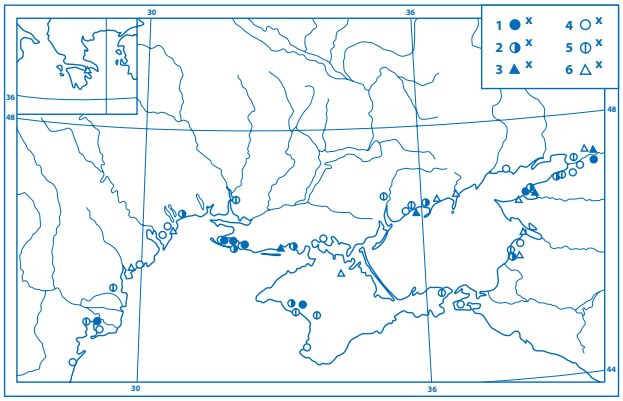

Fig. 8. Distribution of spring recoveries of Pontic Gulls *Larus cachinnans* ringed as chicks or adults in the Black Sea Biosphere Reserve (1x and 4x), Swan Islands (2x and 5x), and Sivash (3x and 6x). 1x -3x = adult birds; 4x-6x = immature birds. Month of recovery: 3-5 (March to May).

Table 4. Recoveries and re-sightings of Pontic Gulls *Larus cachinnans* colour-ringed as chicks at Yagorlitsky Bay, Konsky Islands, in the south of Ukraine in 1999-2002.

Date of ringing	Number of chicks ringed	Recoveries/re-sightings	
		Total	%
29.06.1999	430	15	3.5
13.07.2000	275	3	1.1
14.07.2001	100	1	1.0
28.07.2002	12	1	8.3
Total	817	20	2.4

received from the Kiev and Moscow Ringing Centres and Norman van Swelm (Table 4). Nine birds were reported in the year of ringing, seven in the following calendar year, two in the third year, and two in the fifth year. Sixteen of the birds were seen alive, and the number on the colour ring was read in the field; four birds were found dead. Three of these were found dead in the calendar year after ringing, although they were less than one year old (7-10 months). One bird was found dead four months after ringing. Most of the live birds were re-sighted in winter (seven) and summer (six).

Four of the birds were reported in Ukraine, and the remainder (17 re-sightings of 16 birds) were found in seven countries further west in Europe: Poland (6), Germany (3), Romania (3), Cyprus (2), Denmark (1), The Netherlands (1) and Bulgaria (1) (Table 5). Most of these birds were seen in natural habitats (on sea coasts, along rivers and at lakes), but two birds were found at rubbish tips in Poland, two birds were seen at Nicosia airport in Cyprus, and one bird was seen in the city of Berlin in Germany (Rudenko & Rudenko 2004).

CONCLUSIONS

On the basis of evidence from the recovery of ringed birds, it can be concluded that there are no essential differences between the migration routes of Pontic Gulls nesting on islands in the Black Sea Biosphere Reserve and those nesting in the Sivash or on the Swan Islands (Lebyazhie). There appears to be regular inter-

Table 5. Distribution of recoveries and re-sightings, by country and month, of Pontic Gulls *Larus cachinnans* ringed in the Black Sea Biosphere Reserve in the south of Ukraine in 1999-2002.

Country	Number of recoveries/ re-sightings	% of total recoveries/ re-sightings	Month of recovery/ re-sighting
Bulgaria	1	4.8	I
Cyprus	2	9.5	I, I
Denmark	1	4.8	XII
Germany	3	14.3	X, XII, XII
Netherlands	1	4.8	XII
Poland	6	28.6	VIII, X, XI, XI, XI, XII
Romania	3	14.3	VIII, VIII, VIII
Ukraine	4	19.0	IV, IV, IV, X
Total	21		

change between these breeding populations, confirming the earlier conclusion of Sabinevsky (1966) concerning the uniform nature of the Azov-Black Sea population of the Pontic Gull. The bulk of the population is resident within the region, and this tendency to remain in the area appears to increase with age. Only young birds undertake long-distance migrations, migrating in two main directions: in a south-westerly direction to Romania, Turkey, Bulgaria and Cyprus, and in a north-westerly direction towards Poland, Germany, Denmark and The Netherlands. The movements of adult birds in autumn, winter and spring are largely confined to the limits of the Azov-Black Sea region.

ACKNOWLEDGEMENTS

I would like to thank all the generations of ornithologists in the Black Sea Biosphere Reserve who have taken part in ringing of Pontic Gulls on islands in the Azov-Black Sea region. Special thanks go to Dr Tatiana Ardamatskaya for giving me the opportunity to analyse the recoveries resulting from her field work and that of Dr Boris Sabinevsky. I would also like to thank Norman van Swelm for enabling me to participate in the Pontic Gull colour-ringing programme, and Gerard Boere for encouraging me to prepare this paper.

REFERENCES

Adamatskaya, T.B. 1977. Seasonal distribution and migrations of larids nesting in the Black Sea Reserve. Information of the Baltic Commission on learning about the migration of birds. Tartu, 1977, No. 2: 87-113. (In Russian).

Ardamatskaya, T.B. 2000. Ornithofauna and ornithocomplexes. In: T.I. Kotenko & Yu. R. Shelyag-Sosonko (eds). Biodiversity of the Jarylgach: modern state and ways for conservation. Vestnik Zoologii Supplement, Special Issue, Kiev: 74-82. (In Russian).

Ardamatskaya, T.B., Siokhin, V.D. & Poluda, A.M. 2000. Jarilgachsky Bay. In: V.D. Siokhin (ed). Number and distribution of breeding waterbirds in the wetlands of Azov-Black Sea Region of Ukraine. Branta, Melitopol-Kiev: 145-167. (In Russian).

Kistyakovsky, A.B. 1957. Fauna of Ukraine. A: Birds. Naukova Dumka Publication, Kiev. (In Russian).

Klestov, N.L. & Fesenko, G.V. 1990. Laridae in the water storage basin of Dneprovsky. Publication 90.3, Institute of Zoology, Academy of Sciences, Ukraine SSR, Kiev. (In Russian).

Klimenko, A.I. 1950. Seasonal migrations of Laridae on the northern Black Sea coast. Transactions of the Black Sea Reserve, Kiev, Vol. 1: 3-52. (In Russian).

Klimenko, A.I. 1951. On the seasonal migrations of Laridae in the south of Ukraine. Abstracts of the Ornithological Conference, Riga, p. 11. (In Russian).

Klimenko, A.I. 1953. On the migration of Laridae of the south Ukrainian SSR. In: Migration of birds in the European part of the USSR, Riga: 117-125. (In Russian).

Koshelev, A.I. 2000. Migratory movements of the North Azov Pontic Gull (*Larus cachinnans*). In: I. Rusev, A. Korzyukov & V. Stoilovsky (eds). Birds of the Azov-Black Sea region on the border of the Millennium. Astroprint Publications, Odessa: 25-26. (In Russian).

Kostin, Yu.V. 1983. Birds of Crimea. Nauka Publications, Moscow.

Olsen, K.M. & Larsson, H. 2002. Gulls of Europe, Asia and North America. C. Helm and Princeton University Press.

Rudenko, A.G. 1992. The modern status of the Pontic gull (*Larus cachinnans*) populations in the Black Sea Reserve. In: Ornithological Investigations in Reserves. Nauka Publications, Moscow: 113-128. (In Russian).

Rudenko, A.G. & Ardamatskaya, T.B. 1993. Roosts of gulls on Tendra Island Seashore in the Black Sea Biosphere Reserve. Bulletin of the Moscow Society of Natural Investment, Department of Biology, 98,(4) 3-16. (In Russian).

Rudenko, A.G. & Rudenko, V.P. 2004. Results of colour ringing of the Pontic Gull (*Larus cachinnans*) in the Black Sea Biosphere Reserve in 1999-2003. In: V.V. Serebryakov (ed). Modern problems in zoological science. Kiev University Publication: 148-150. (In Ukrainian).

Sabinevsky, B.V. 1958. Economic value of the Pontic gull in requirements of the Black Sea Reserve. Transactions of the Black Sea Reserve, Golaya Pristan, 2: 65-81. (In Russian).

Sabinevsky, B.V. 1966. A problem of the Azov-Black Sea population of the Pontic gull in terms of items of information about its seasonal placement and new economic problems. In: Proceedings of the IV Inter-University Zoogeographic Conference, Odessa: 234-236. (In Russian).

Siokhin, V.D. 2000a. Sivash. In: V.D. Siokhin (ed) Number and distribution of breeding waterbirds in the wetlands of the Azov-Black Sea Region of Ukraine. Branta, Melitopol-Kiev: 190-200. (In Russian).

Siokhin, V.D. 2000b. Characteristics of the distribution and numbers of breeding birds in the wetlands of the Azov-Black Sea costs. In: V.D. Siokhin (ed). Number and distribution of breeding waterbirds in the wetlands of the Azov-Black Sea Region of Ukraine. Branta, Melitopol-Kiev: 412-444. (In Russian).

Siokhin, V.D. & Grinchenko, A.B. 1988. The Herring Gull. In: Colonial hydrophilic birds of the south of Ukraine. Naukova Dumka Publications, Kiev: 24-33. (In Russian).

Stepanyan, L.S. 1990. In: V.E. Sokolov (ed). Conspectus of the ornithological fauna of the USSR. Science Publication, Moscow: 217-228. (In Russian).

Tarina, N.A., Kostin, C.Yu. & Bagricova, N.A. 2000. Karkinitsky Bay. In: V.D. Siokhin (ed). Number and distribution of breeding waterbirds in the wetlands of the Azov-Black Sea Region of Ukraine. Branta, Melitopol-Kiev: 168-189.

Trubka, A.G. 1986. An estimation of some methods of the registration of the Pontic Gull on Konsky Islands in Yagorlitsky Bay. In: All-Union Conference on the problem of a cadastre and registration of fauna, Abstracts, Vol. 1, Moscow: 203-205. (In Russian).

Gulls nest on the strandline of the Ukrainian part of the Danube Delta, the westernmost limit of the breeding distribution of Pontic Gull *Larus cachinnans*. Photo: David Stroud.