

THE IVORY GULL POPULATIONS IN THE RUSSIAN AND NORWEGIAN ARCTIC: CALL FOR JOINT EFFORT TO EVALUATE CURRENT STATUS

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Introduction

Among a few truly high Arctic bird species the Ivory gull *Pagophila eburnea* still remains one of the least studied. Being a characteristic species of the ice zone of the Arctic it has a restricted breeding range and a relatively low overall population size. The Ivory gull is red-listed both in Russia and Norway, largely due to small population size, and limited knowledge of its biology and population status. According to existing data the Ivory gull is closely related to drifting pack ice and may be sensitive to changes induced by climate. Recent population decline has been reported from the Canadian Arctic (Gilchrist et al., in press), and there is indication of population decrease in the Svalbard area as well (Bakken, Tertitski, 2000). Being a top predator in the high Arctic marine ecosystem the Ivory gull may be vulnerable to contamination.

In the status report on marine birds breeding in the Barents Sea region (Anker-Nilssen et al., 2000) prepared by seabird experts within the framework of the Russian-Norwegian co-operation on environmental protection, the Ivory gull is listed as a high priority species. The main breeding area of the species stretches from the Kara Sea through the chain of high-latitude islands to the Greenland Sea. Available data indicate exchange between populations of different regions and easy shifts between breeding colonies. We hypothesize that Svalbard and Franz-Joseph Land share a common breeding population of the Ivory gull. Thus joint efforts of Russian and Norwegian ornithologists are desired to obtain relevant co-temporal information on the species.

Current state of knowledge

Distribution: The breeding area of the Ivory gull is confined to the High-Arctic islands of the Atlantic sector of the Arctic Basin. It breeds in Canadian Archipelago (Thomas, MacDonald, 1987), north and east Greenland (Evans, 1984), Svalbard, Franz Josef Land and adjacent Victoria Island, Severnaya Zemlya and on islands in the Kara Sea (Bakken, Tertitski, 2000; Gavriilo, Bakken, 2000;.). The species has also been found breeding in the northern part of Novaya Zemlya (Antipin, 1938), but current status is uncertain.

Non-breeding birds are distributed widely over the Arctic Ocean and its seas with wintering gulls recorded both in Atlantic and Pacific rims (Blomqvist, Simmons, 1986; Orr, Parsons, 1982; Trukhin, Kosygin, 1987; Everett et al., 1989). Ivory gulls are found to perform large scale migrations. Available recovery data show widespread movements of birds between the Atlantic and the Pacific sectors of the Arctic (Tomkovich, 1990; see Vuilleumier, 1995 for review). During spring and autumn migration the gulls are recorded both in high arctic latitudes and along the mainland coast, even inland (Hjort, 1976; Renaud, McLaren, 1982; Yudin, Firsova, 2002). Extensive autumn migration is observed along southern coast of the Wrangel Island during years with low ice concentration (Stishov, 1995). Non-breeding birds in summer wander widely over the entire Arctic Basin but on the mainland coast they are recorded only at the Taimyr Peninsula (Portenko, 1946; Yudin, 1964; Sdobnikov, unpubl. manusc., M. Gavriilo pers. obs.). Summer findings of adult birds on some islands in East Siberia have been considered as breeding records (Uspenskiy, 1963), but their validity have never been proved.

Thus, non-breeding Ivory gulls are widely dispersed in the Arctic and their range demonstrates typical circumpolar distribution, while breeding areas are restricted to the Atlantic sector.

Foraging habitat and food habits. The Ivory Gull is believed to be a classical pagophilous species as specified in its scientific genus name. It is closely associated with pack ice when at sea and tends to keep close to glaciated landscape or ice-bound islands when on land. It is rarely seen in ice-free waters and almost never swimming (Orr, Parsons, 1982; Hunt et al., 1996; authors observations), the latter habit was noted already by the very first observers (Martens, 1675, cited after Lovenskiold 1964). Ivory gulls prey on sympagic invertebrates (Amphipoda) and fishes (mainly Polar Cod *Boreogadus saida*) (Gjertz et al., 1985). Scavenging is also typical of the species, and Ivory gulls are often seen feeding on carcasses or accompanying polar bears, and on garbage deposits related to human activity (see Bakken, Tertitski, 2000). Like other gulls, the Ivory gull should be considered a generalist but with specific feature of preferable foraging in habitats associated with ice.

Breeding colonies. Close to one hundred breeding colonies are known (including historical records) in the north-east Atlantic, including 47 in Svalbard, 11 in Franz-Josef Land and Victoria, 11 on the Kara Sea islands and 26 in the Severnaya Zemlya archipelago (SCRIB, 2003). There are mainly two breeding habitats known for the Ivory gull: rocky cliffs/nunataks or open flat ground both ashore and inland. Colonies established in the latter habitat often contains the highest numbers of nests, often several hundred pairs, while colonies in cliffs or nunataks normally do not exceed 20 pairs.

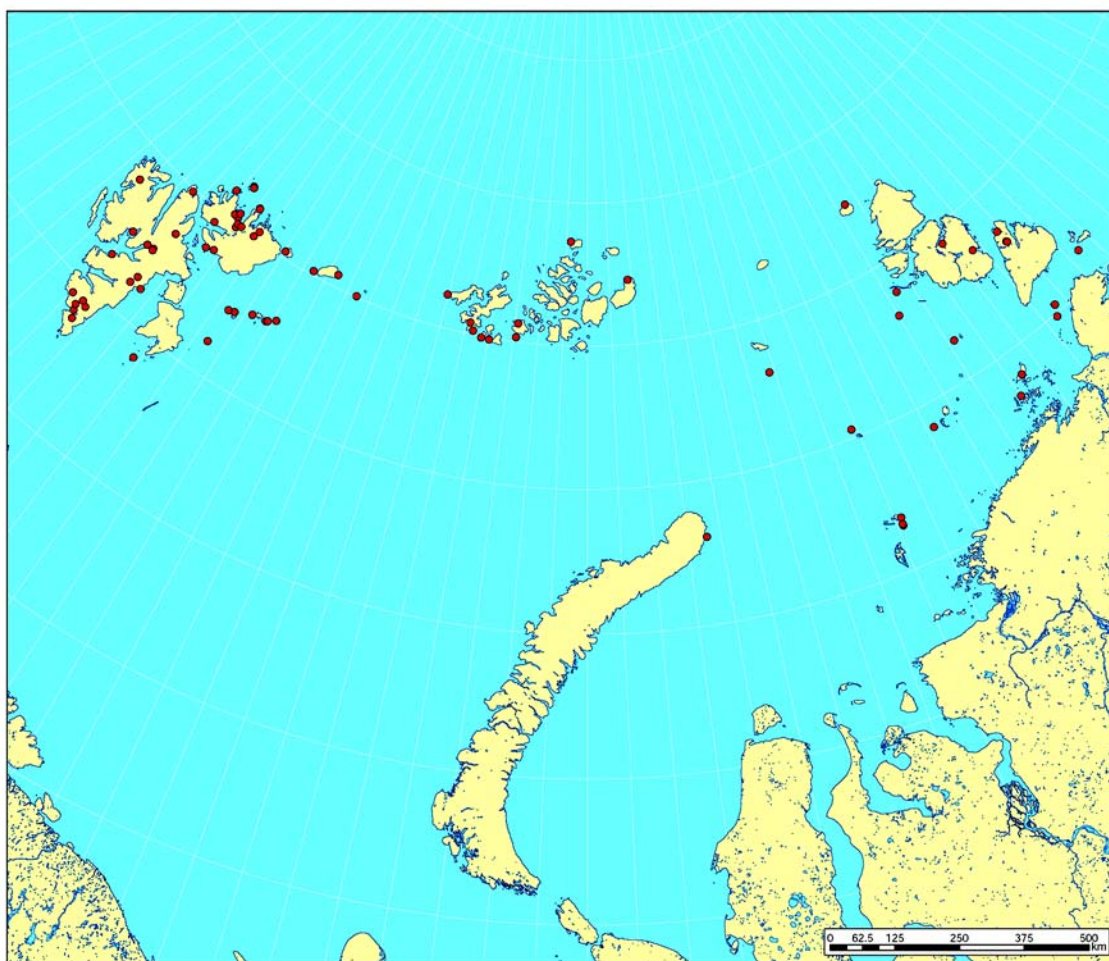


Fig. Known breeding colonies of Ivory gulls in Norway and Russia

Population numbers and trends. Remoteness and inaccessibility of the breeding grounds of the Ivory gull have resulted in few reliable population estimates. Recent estimate of the size

of the total breeding population is given by Volkov and de Korte (1996) and totals 14,000 breeding pairs. This includes 10,000 pairs in the Russian Arctic (with 3–4,000 on Frantz-Josef Land and Victoria Island) and proves the north-eastern Barents Sea and the Kara Sea to be a core breeding area for the species.

Svalbard population. The current numbers of breeding Ivory gull in the archipelago and its population trend for the area are not known (Bakken, Tertitski, 2000).

The Ivory gull was first time reported from in Svalbard as early as in 1609, and later, in 1774 Constantine Phipps scientifically described the species from the specimen obtained in the archipelago (Lovenskiold, 1964). The Ivory gull has been found breeding in all larger islands of the Svalbard archipelago except for Prince Karl Foreland and Bear Island. The southernmost breeding colony used to be in Sörkapp Land, south of Hornsund, but most colonies are concentrated in the north-eastern part of archipelago, the most glaciated and ice-bound area. The biggest colonies recorded in the archipelago numbered 350 and 400 pairs on Kong Karls Land (1889) and Kvitøya (1931) respectively (SCRIB, 2003). There is only one more colony known to exceed one hundred pairs – on Storøya (125 pairs in 1887, Collette, 1890). Other colonies numbers less than 50 pairs, a dozen on average (SCRIB, 2003). First evidence for the disappearance of Ivory gull colonies were noted already in 1930–50s (Bateson, Plowright, 1959; Lovenskiold, 1964). Some few new colonies have been discovered, but the total number of breeding colonies seems to have been decreasing. For example, none of the three larger colonies found in the late 1800 have been seen used by Ivory gulls in subsequent visits in the colonies. By the end of XX century the Ivory gull population in Svalbard was estimated to be between 200 and 750 pairs; 200 pairs as a minimum based on counts conducted after 1980. The great uncertainty in this figure is a result of the fact that very few colonies has been surveyed in recent years, and few data are available on colony size. It should also be mentioned that the existing population estimate are based on a combination of figure from counts conducted in different years during more then a decade.

Absence of reliable population estimates may also be due to a number of peculiar biological features of the species. Change or abandoning of nesting colonies is characteristic of the Ivory gull. Reproductive success in this species seems to be correlated with the ice situation early in the breeding season (Volkov, de Korte, 1996) and birds may consequently either switch to breeding colonies situated in areas with more favourable feeding conditions or skip breeding at all. There are also observations of deserted breeding colonies soon after the nesting have commenced, and no reasons were evident (Demme, 1934; Tomkovich, 1986). In one colony monitored for three years in Severnaya Zemlya the inter-annual changes in numbers of breeding birds exceeded 250% (Volkov, de Korte, 1996). Birds can also shift colony locality for some few kilometers within the same general breeding area.

Taking into account all above mentioned factors we can not obtain reliable data on the current status of the Ivory gull breeding in Svalbard and evaluate population processes, studying the arcipelago isolated. The nearby Frantz-Josef archipelago and Victoria Island are home to large numbers of breeding Ivory gulls and ecologically these islands, connected with Kvitøya and Nordaustlandet in Svalbard by the ice bridges virtually all year round, form continuous habitat for the species.

Proposed field research project

Current state of knowledge on the species biology clearly demonstrates the necessity of a simultaneous broad-scale investigation of the species over the major part of its breeding area. The area to be covered during the same summer season includes at minimum the Svalbard archipelago, Victoria Island and the Franz-Josef Land archipelago; the Kara Sea islands and Severnaya Zemlya are highly desirable to be included as well.

There are already good examples of fruitful joint co-operation on high Arctic species studied within the area of Svalbard and Franz Josef Land, including walrus (e.g. Gjertz, Mørkved, 1993) and polar bear (e.g. Mauritzen et al., 2002, 2003)

The field study project should include a survey of all known breeding colonies, banding of chicks and adult birds by both metal rings and colour rings, blood sampling for analysis of contaminants and food sampling. Field research project should be supplemented by collecting data through enquiries widely distributed within different expeditions working in the area in question; tourist vessels, personnel of polar stations and research vessels.

Expected output (results)

1. Simultaneous counts conducted in all major breeding areas will provide unique data on the current size of the breeding population, in an area where up to 75% of the total world population are believed to concentrate.
2. Banding, including individual colour marking of birds will allow to reveal exchange rates between colonies and trace movements of the birds over the species range including seasonal migration and dispersal.
3. Blood (and feather) sampling will screen contaminants' levels in the Ivory gull and evaluate potential risk of chemical pollution.
4. Food sampling will provide data of food choice and evaluate connection of the Ivory gull with different marine habitats including dependence on the sympagic fauna and ice habitats.

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Current state of knowledge of the Ivory gull is briefly outlined with emphasis on the population size and dynamics in Svalbard. Neediness of joint efforts from both Russian and Norwegian sides to proper understanding of modern population status. Proposal for the large-scale survey in north-east Atlantic is drafted.

III. –1, References – 14.