ARCTIC BIRDS

Bulletin of the International Breeding Conditions Survey

supported by the International Wader Study Group and
Wetlands International's Goose and Swan Specialist Groups

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compiled by Mikhail Soloviev and Pavel Tomkovich

A WORD FROM THE COMPILERS

The current issue of "Arctic Birds" is the 10th in the series of bulletins of the Arctic Birds Breeding Conditions Survey (ABBCS). This survey aims at collating information on the breeding conditions for birds in the Arctic and Subarctic with the view to relating data on weather and the abundance of predators and their prey, to bird breeding success. We note, with satisfaction, that the decade-long efforts of the survey implementation resulted in an almost two-fold increase in the total number of contributions and approximately three-fold increase in their volume, which indicates an augmentation both in quantity and quality of the accumulated data. The geographic coverage of the survey in summer 2007 did not change considerably compared with the five previous years.

As in previous years, information from the breeding grounds in the Arctic has been complemented with the data on juvenile proportions in waders during the non-breeding season in Australia, collected by researchers from the Victorian and Australasian Wader Studies groups (see the paper by Clive Minton *et al.* in this issue). Although information on juvenile proportions requires caution in interpretation (see for example, McCaffery *et al.* 2006 (Stilt Vol. 50: 194-204)), it remains irreplaceable for the assessment of bird breeding success across wide geographical regions in the Arctic, particularly for waders, whose fledging success is difficult to determine in the field.

Apart of the routine activities on data collection, reviewing, translation and publishing, special efforts were made in 2008 to further strengthen the role of ABBCS as an information resource on Arctic biodiversity. The main achievements were a re-design of the project websites (http://www.arcticbirds.ru, http://www.arcticbirds.net) and converting them from an exclusively English-language publication to also Russian, with view to increasing the availability of the project results to Russian-speaking respondents, the Russian government and NGOs. All the principal pages of the project websites were translated into Russian, as well as over 700 webpages with individual reports on breeding conditions for years 1998-2007. The pages with breeding conditions reports were updated with information on human impacts in the Arctic and waterbird non-breeding aggregations. This data has been collated in the project framework since 1998, but had not been published electronically. A bilingual scheme of data presentation will hopefully allow us to speed up the process of electronic publication, because previously the appearance of contributions in the Russian language at the project websites could be delayed for months due to the shortage of time for translation. Now they will be quickly published on the web in Russian, and non-Russian speakers will be able to assess information from these reports via bilingual summary maps, pending full translation into English.

Survey forms were modified with the aim of making the submission of data more simple and straightforward for respondents with different scientific backgrounds. An updated set of survey forms was made available for download, and now includes a completely new entry level form to be used by short-term and/or non-professional visitors to the Arctic, and potentially for community-based monitoring.

We believe that the above developments will allow ABBCS to contribute better to the current context of research activities in the Arctic, which have vastly increased during the International Polar Year (IPY, 2007-2008). IPY will terminate in March 2009 but it is anticipated that international cooperation in the Arctic research, whose background was established in the IPY framework, should continue to develop even after the announced termination date. This is particularly important for monitoring programs whose value heavily depends on their longer term duration, and even more so for programs involving the monitoring of biodiversity, which have been generally more short-term and less coordinated compared with the monitoring of the physical environment in the Arctic.

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For the latest information about the survey and data access visit the websites:

http://www.arcticbirds.net, http://www.arcticbirds.ru

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The bulletin is distributed to contributors to the database.
Others may request it, free of charge, from the project coordinators.

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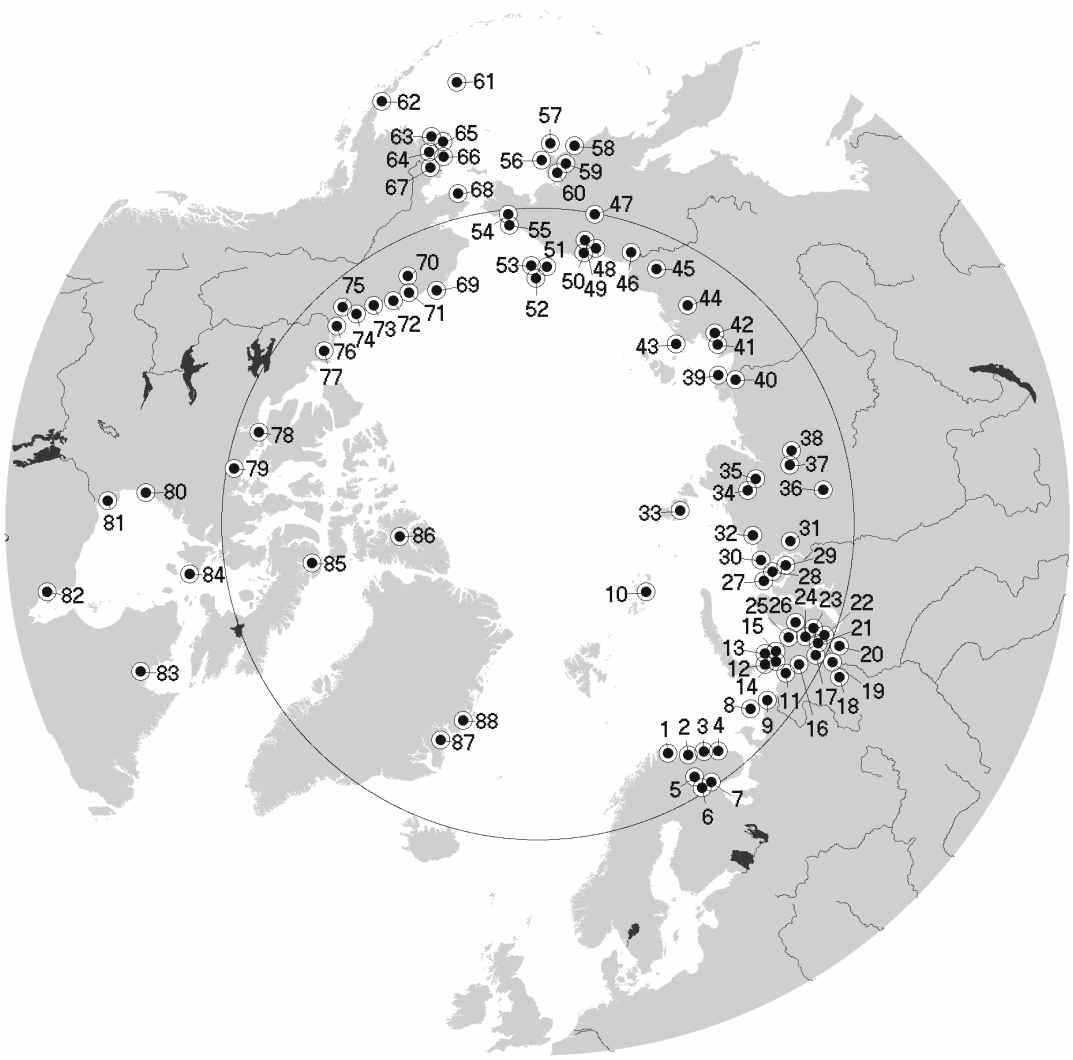

Figure. Arctic localities from which reports about bird breeding conditions were provided

LOCALITY REPORTS

1. Varanger Peninsula, Norway (70°30′ N, 29°30′ E)

The focus of the ecological investigation on the Varanger Peninsula is on food web dynamics, in particular, on the relation between small rodent prey and their predators. The most important observation at the end of March 2007 was a high number of Norwegian Lemming's *Lemmus lemmus* tracks. While only one track was observed on our transects in March 2006, there were now several 100s. Lemmings were already quite numerous in October 2006, but may have become even more abundant later in the winter due to breeding under the snow. Of course many lemmings on the snow surface may reflect mass occurrence under the snow blanket. However, an alternative explanation could has been that the conditions for some reasons had become so bad that lemmings had started to migrate. We dug a number of snow pits (some of them 3 meter deep) to investigate the properties of the snow pack. There were several heavy layers of crust snow, but little or no ice near the ground.

In 2007 the populations of Norwegian Lemming, Grey-sided Vole *Clethrionomys rufocannus* and Tundra Vole *Microtus oeconomus* had a distinct peak of the 5-year cycle. As it could be expected there was also a sharp increase in numbers of specialist lemming predators, such as Snowy Owls *Nyctea scandiaca* and Ermines *Mustela erminea*. Long-tailed Skuas *Stercorarius longicaudus* bred at a high density of ca. 1.0 pairs/km^2, and 5 nests of Rough-legged Buzzards *Buteo lagopus* were found in the study area. There were 4 established pairs of Arctic Foxes *Alopex lagopus* in the spring and 3 of them bred.

R. Ims

http://www.arctic-predators.uit.no/News.html

See also: R. Solheim, K.-O. Jacobsen & I. J. Oien. 2008. Snouglenes vandringer: Ett ar, tre ugler og ny kunnskap. Vår Fuglefauna 31, nr. 3. 102-109.

2. Gorodetsky Cape, Rybachi Peninsula, Russia (69°36′ N, 32°57′ E)

Weather conditions were usual for the period of year when the study was carried out on 8-11 June with permanent drizzling rain, wind up to 15 m/s and air temperatures not exceeding +6°C.

Counts of seabirds conducted in the colony at Gorodetsky Cape revealed a decline in numbers since 2006 by 12% in Kittiwakes *Rissa trydactyla*, by 22.3% in Common Guillemots *Uria aalge*, by 28.2% in Brünnich's Guillemots *Uria lomvia*, and by 18.4% in Great Cormorants *Phalacrocorax carbo*.

Mass reproduction of Kittiwakes was delayed compared with the previous year. A major part of their population could have given up breeding, but this was not confirmed due to the absence of observations later in the season. The breeding success of Kittiwakes was low, and they apparently suffered from food shortage.

Rodents and signs of their activities were not recorded.

Mammalian predators were not observed. Four wandering flocks of Reindeers ranging from 40-150 animals were seen. Poachers were not recorded on the coast.

Avian predators were less abundant compared with the previous year. Rough-legged Buzzards bred successfully, and 3 inhabited nests were found in the seabird colony. White-tailed Sea Eagles *Haliaeetus albicilla* were regularly seen hunting at the colony. Owls were not recorded. Herring *Larus argentatus* and Great Black-backed *Larus marinus* gulls were common. Rock Ptarmigans *Lagopus mutus* occurred in average numbers. Two broods of Ravens *Corvus corax* consisted of 4 and 5 birds.

Few passerines were seen, which was probably explained by cold and rainy weather in the period of studies.

A.V. Ezhov

3. Krutik Cape, Kola Peninsula, Russia (69°09′ N 35°57′ E)

Weather conditions were usual for the period of year when the study was undertaken on 14-16 July with frequent drizzle, wind up to 15 m/s and air temperatures not exceeding +10-14°C.

Counts at the sea bird colony on Krutik Cape revealed a decrease from 2006 in numbers of inhabited nests by 10.4% in Kittiwakes, by 46.1% in Common Guillemots, and by 52.3% in Brünnich's Guillemots. Eight nests with one chick in each of them were found in Razorbills *Alca torda*. Colonial seabirds, probably, suffered from food shortage, which was indicated by finding of atypical items in food samples and by the decrease in numbers of nesting birds. Breeding success of Kittiwakes was low.

Fresh signs of rodent activities were not recorded.

Arctic and Red *Vulpes vulpes* foxes were not recorded. Non-breeding Rough-legged Buzzards and White-tailed Sea Eagles were observed in the colony area. Skuas and Common Eiders *Somateria mollissima* were common breeders. A brood of 4 Ravens was seen in the colony area. Grouse were not seen.

Human impacts on birds and their habitats were not observed.

A.V. Ezhov

4. Kharlov Island, Sem' Ostrovov Archipelago, Russia (68°49′ N, 37°20′ E)

The summer was late, cold and rainy. Two thunderstorms (which is generally a rare event) and one storm on 10 August with wind speed reaching 32 m/s occurred in the period of studies from 26 June – 16 August.

Norwegian Lemmings were not recorded.

We recorded tracks of the American Mink *Mustela vison* on Kharlov Island, while Red Foxes and Brown Bears *Ursus arctos* were recorded in the mainland tundra.

Two pairs of the Red-throated Diver *Gavia stellata* bred on Kharlov Island in 2007. Numbers of breeding Gannets *Sula bassana* increased from 161 pair in 2006 to 232 pairs in 2007. The abundance of the Great Cormorant dropped to 25 pairs on Veshnyak Island and 28 pairs on Maly Lytsky Island, but a new colony of 12 nests was discovered on Bolshoy Zelenets Island. Mean brood size varied from 2.0-2.9 chicks per nest on different islands. Several new colonies were established by Shags *Phalacrocorax aristotelis* on Veshnyak Island, and numbers of this species reached 220-205 pairs.

Barnacle Geese *Branta leucopsis* bred again on Maly Zelenets Island, where 5 families were observed. They used Maly Lytsky Island for nesting for the first time, where 1 pair with a brood was recorded. It was not possible to evaluate the abundance of breeding Bean Geese *Anser fabalis* and Common Eiders in 2007. One brood of Pintails *Anas acuta* and one nest of Long-tailed Ducks *Clangula hyemalis* were recorded on the islands of the archipelago; the Whooper Swan *Cygnus cygnus* and Common Merganser *Mergus merganser* were non-breeding species. Among birds of prey the Rough-legged Buzzard and White-tailed Sea Eagle were represented by non-breeders. Two territorial pairs of Peregrine Falcons *Falco peregrinus* were found on one of the islands, and two of 3 chicks successfully fledged from the nest within one of these territories. Gyrfalcons *Falco rusticolus* nested after a long period of non-breeding (a nest and a fledgling found).

Four pairs of Rock Ptarmigans bred on Kharlov Island, which is an average density for the recent 3-year period of their breeding on the islands.

Population of the Great Skua *Stercorarius skua* reached 18 pairs on the archipelago, although only 7 pairs nested successfully (38.9%). Numbers of the Arctic Skua *Stercorarius parasiticus* dropped from 116 pairs in 2006 to 96 pairs in 2007, of which 16 pairs (16.7%) nested successfully in the latter year. Several skua fledglings were recorded in pairs breeding on the mainland. Several records of Long-tailed Skuas were made on Kharlov Island. Numbers of Great

Black-backed Gulls increased on the archipelago, while numbers of Herring Gulls, Common Gulls *Larus canus* and Kittiwakes decreased, and mass non-breeding was observed in these species. A juvenile Glaucous Gull *Larus hyperboreus* was seen in early August. Arctic Terns *Sterna paradisaea*, probably, established a small colony on one of the small islands. Numbers of Common and Thick-billed murres have decreased insignificantly on Kharlov Island. We were not able to obtain reliable information on abundance of Razorbill, Black Guillemot *Cepphus grylle* and Common Puffin *Fratercula arctica*.

Breeding waders of the archipelago were represented by the Oystercatcher *Haematopus ostralegus* and Turnstone *Arenaria interpres*. Numbers of the latter species have been gradually declining during recent years. Nesting of Snipe *Gallinago gallinago* was recorded for the first time in the region. Territorial pairs of the Temminck's Stint *Calidris temminckii*, Eurasian Golden Plover *Pluvialis apricaria*, Ringed Plover *Charadrius hiaticula*, and Wood Sandpiper *Tringa glareola* were observed at the mainland. Observations of migrating waders were predominantly made at the mainland and included the Dotterel *Eudromius morinellus*, Greenshank *Tringa nebularia*, Redshank *T. totanus*, Spotted Redshank *T. erythropus*, Red-necked Phalarope *Phalaropus lobatus*, Ruff *Philomachus pugnax*, Little Stint *Calidris minuta*, Dunlin *C. alpina*, Purple Sandpiper *C. maritima*, Whimbrel *Numenius phaeopus*, and Bar-tailed Godwit *Limosa lapponica*.

Two males of Great Spotted Woodpecker *Dendrocopos major* were on Kharlov Island during two weeks in August. Breeding passerines of the archipelago included Meadow *Anthus pratensis*, Red-throated *A. cervinus* and Water *A. spinoletta* pipits, Hooded Crow *Corvus cornix*, Raven, White Wagtail *Motacilla alba*, Willow Warbler *Phylloscopus trochilus*, Wheatear *Oenanthe oenanthe*, Bluethroat *Luscinia svecica*, Redwing *Turdus iliacus*, and Snow Bunting *Plectrophenax nivalis*. Breeding density increased compared with the previous season in the Meadow Pipit. A considerable decrease in numbers of territorial pairs was observed in the Bluethroat and Common Redpoll *Acanthis flammea*, while numbers of other species did not change notably. Non-breeding Magpies *Pica pica*, Fieldfares *Turdus pilaris* and Lapland Buntings *Calcarius lapponicus* were observed on the archipelago. An observation of a vagrant Chiffchaff *Phylloscopus collybitus* was the first on record for Eastern Murman coast.

Breeding success was very low in the Arctic Skua and Kittiwake, and average in the Great Skua, murres, waders and passerines.

M.V. Melnikov, A.V. Osadchiy

5. Laplandsky State Nature Reserve, Kola Peninsula, Russia (67°57′ N, 31°46′ E)

Maximum air temperatures consistently rose above freezing on 10 March, which indicated the start of spring. In the previous year, 2006, spring started on 2 April, and the long-term average of this event is 12 April. The last air frost was recorded on 23 May, and the last ground frost on 26 May. Summer started on 27 June when daily mean air temperatures consistently rose above +10°C, compared with 12 June in 2006 and the long-term average of 13 June. Autumn started on 26 August when daily mean air temperatures consistently dropped below +10°C, compared with 5 September in 2006 and the long-term average of 31 August. The first ground frost occurred on 2 September and air frost on 14 September. Winter started on 8 November when daily mean air temperatures consistently dropped below freezing, compared with 19 October 2006 and the long-term average of 25 October. The first snow blanketed the ground in the forest on 10 October and was permanently established on 2 November (the long-term average for the latter event 26 October).

Mean monthly air temperature was +0.1°C in April, which was 2.4°C above the long-term average. Mean monthly air temperatures were 0.8°C above the long-term average in May, 0.9°C below average in June, 0.5°C below average in July, 2.1°C above average in August, 0.5°C above average in September, 4.5°C above average in October, 1.7°C above average in November and 7.7°C above average in December. Mean annual air temperature was 2.0°C above the long-term average.

Precipitation was 109% of the monthly average in April and May, 200% in June, 223% in July, 97% in August, 151% in September, 75% in October, 104% in November and 143% in December. The total precipitation was 135% of the annual average.

Snow disappeared from 50% of the flat open surface in the forest on 22 May (average 20 May), and completely melted on 29 May (average 30 May). Snow completely melted in the tundra on 5 June, compared with the average date 2 June. Ice-break occurred on 19 May on the largest rivers (average 15 May). Ice-break on large lakes was 3 days later, and their freezing in autumn 7 days later than the average. The winter was warm.

The period from 10-30 June was cool, and precipitation occurred on all days with the exception of 15 and 23 June. The total amount of precipitation was over 300% of the average in the period from 10-20 June, 118% and 65% of this amount was recorded on 17 and 20 June, respectively. Mean air temperature for the period from 10-20 June was +8.1°C, which was 2.5°C below the long-term average.

Weather data were obtained from the website http://www.rp5.ru.

Similarly to 2006 the water table was high in rivers and lakes both in June and July. Abundant precipitation and relatively low air temperatures in June and July did not favour successful reproduction by birds.

Food supply for herbivorous birds was determined by the yield of important plants: crowberry ranked 4-5 on a scale of 5, alder, Bog bilberry *Vaccinum uliginosum*, Bilberry *V. myrtillus*, and Bunchberry *Chamaepericlymenum suecicum* 4, pine, European Rowan, Bird Cherry, Clusterberry *Vaccinum vitis-idaea*, Alpine Bearberry *Arctous alpina*, Cloudberry *Ru-*

bus chamaemorus, Bearberry *Arctostaphylos uva-ursi*, and Cranberry *Oxycoccus sp.* 3, spruce, and birch 2.

Autumn counts of small rodents at the "Elnyun" field station at the south of Chunatundra Upland indicated a rapid increase in the numbers of Grey-sided Voles. Their abundance increased almost 5-fold compared with the previous year. Given that 92% of captured animals were juveniles, the population could potentially grow further. Noteworthy are registrations of rare species, the European Water Shrew *Neomys fodiens* and Wood Lemming *Myopus schisticolor*. Wood Lemmings were recorded in the southern parts of the Laplandsky Reserve, at a relative density of 22.5 animals/10 days of catches with cylinders, and they were also registered near Kandalaksha (N.S. Boiko, pers. com.). We observed a decrease in numbers of Bank Voles *Clethrionomys glareolus* at the station, and a pronounced decrease in numbers of shrews. Species richness was high at the station, with 54.7% of the fauna of Micromammalia recorded. Norwegian Lemmings were found in the Pechengsky District, north of Murmansk Region, at a relative density of 23.3 animals/10 days of catches with cylinders.

If conditions are favourable during the winter the numbers of Grey-sided Voles can remain high until mid summer 2008, but their abundance should decrease by autumn 2008. Numbers of shrews and Bank Voles are expected to increase gradually, while the abundance of Northern Red-backed Voles *Clethrionomys rutilus* will, probably, remain at the same level. Wood Lemmings will be recorded, and Norwegian Lemmings can appear in the reserve.

Among birds of prey and owls nests or signs of breeding were recorded in Osprey *Pandion haliaeetus*, Golden Eagle *Aquila chrysaetos*, Rough-legged Buzzard, Kestrel *Falco tinnunculus*, Gyrfalcon, Merlin *Falco columbarius*, Tengmalm's Owl *Aegolius funereus* and Eurasian Pygmy Owl *Glaucidium passerinum*. Despite the high abundance of rodents in 2005–2007, Rough-legged Buzzards and owls were very rarely recorded both in 2006 and 2007. Red Foxes, Martens *Martes* sp. and Ermines were numerous, Brown Bears, Wolves *Canis lupus*, Wolverines *Gulo gulo*, European Minks *Mustela lutreola* and River Otters *Lutra lutra* common.

The density of Tetraonid birds determined during transect counts in August continued to decrease and reached the lowest value recorded during 1998-2007, 43 birds/10 km^2. Apparently, both weather conditions and predation pressure contributed to the decline. The abundance of waterfowl (divers and ducks) per unit length of lake and river shoreline continued to increase from 2005. Waders nested in usual numbers in the forest and tundra. Great Spotted Woodpeckers, crossbills, Common Redpolls and European Siskins *Spinus spinus* nested, but breeding success of all small birds was relatively low, probably, due to cold rainy weather in June and July.

A.S.Gilyazov, G.D. Kataev

6. Kandalaksha Bay, Karelsky coast, the White Sea, Russia (67°00′ N, 32°25′ E)

As in the previous year frequent rains were responsible for high levels of soil water. Precipitation occurred on 56.7% of days in June, 51.6% in July, 58.1% in August, and 46.7% in September.

Small rodents were censused in late May (300 trap-nights) and in September (400 trap-nights). Numbers of insectivores declined dramatically during the under-snow period 2006/2007, and they were not captured in snap-traps. Catching with cylinders yielded low abundance of 1.3 animals per 10 days. One Pygmy Shrew *Sorex minutus* captured in August and one Common Shrew *S. araneus* captured in September corresponded to 5% of the total number of small mammals captured in these months. Voles over-wintered successfully, and were numerous during the whole year. Voles of 4 species amounted to 94.9% of all captured animals, with relative abundance of 1.7 and 2.2 animals per 100 trap-nights in spring and autumn, respectively. Catching with cylinders yielded an abundance of 13.3 animals per 10 days in May, 10.0 in July, 15.0 in August and 22.5 in September. The Grey-sided Vole was the most common species (54.1%), and the Tundra Vole was the second in abundance (32.4%). Wood Lemmings were recorded in catches from July, when they represented 28.8% of all captured animals.

Ermines were recorded in September in the area of trapping. Avian rodent-specialists were not observed.

Microtus spp. voles were abundant for the second year in a row on both coasts of the Kandalaksha Bay, including in human settlements. They damaged not only potatoes and other vegetables on the fields, but also vegetables in storage facilities. Voles, including animals running on snow surface, were frequently recorded in Kandalaksha town until end of the year. The local population of Common Voles *Microtus* (*arvalis*) *rossiaemeridionalis* still existed in the area of Lower Kandalaksha (species identification made by F.N. Golenischev from Zoological Institute of Russian Academy of Sciences): 17 animals were captured in 2007.

N.S. Boiko

7. Kandalaksha Bay, Northern Archipelago, the White Sea, Russia (67°01′ N, 32°36′ E)

Winter 2006/2007 started earlier than usual, and air temperatures dropped consistently below freezing on 19 October 2006. Then, more usual winter weather established for a period of one month, with prevailing temperatures –7 to –15°C. Long-term periods of warm weather occurred in the second half of November and in mid December, with positive mean daily air temperatures. Late December and early January were fairly warm as well, with day-time temperatures often rising above freezing. Consequently, ice covered the north-western part of the Kandalaksha Bay only on 15 January 2007, and the snow layer thickness was 10 cm below the long-term average in December and January. The second half of winter was frosty, and air temperatures were 6°C below average in February. March is considered a winter month

at the north, but it was 7°C warmer than average in 2007, with day-time air temperatures above the freezing point on most days after 11 March. Unfrozen patches of water were observed on the sea in mid March.

A relatively warm spring resulted in disappearance of ice on the major part of the bay in the area of the Northern Archipelago by the beginning of May. Temperatures were close to average during the summer months, with the exception of August which was slightly warmer than usual. The first night frost was recorded on 28 August in the Kandalaksha area. Mean daily air temperatures ranged from +5 to –10°C during the whole of September and in early October. Several snowfalls occurred in mid October, but the snow melted quickly. Mean daily air temperatures dropped consistently below freezing from 3 November, and permanent snow-cover was established on 8 November. Moderately cool weather with night-time temperatures dropping to –10–15°C prevailed until the end of the month. December was unusually warm, with a thaw on 15 days and mean monthly temperature 1.3°C higher than in November. The sea did not freeze until the end of the year in the north-western part of the Kandalaksha Bay.

The yield of berries was relatively low in 2007 on the islands, with Cloudberry ranked 1 on a scale of 5, Crowberry 2, Clusterberry 3, and Bilberry 4 (data of L.A. Moskvicheva).

Numbers of insectivores were low, and catching with cylinders on Ryashkov Island yielded abundance of 0 animals per 10 days in May, 1.1 in July, 2.2 in August and 6.0 in September. The only species found on all surveyed islands was the Common Shrew (29.1% of the total number of captured animals). Insectivores were absent on small tree-less islands (ludas) in 2007.

Voles over-wintered successfully, and their relative density in spring on Ryashov Island was 0.5 animals/100 trap-nights. Three species of voles accounted for 75.2% of all animals on islands of the Northern Archipelago, and the Short-tailed Vole *Microtus agrestis* was the most abundant vole species (93.4%). The Tundra Vole was the only species found on ludas (19.7% of all voles captured on the Northern Archipelago).

Running voles, predominantly *Microtus* spp., were recorded on 42.1% of forested islands and on 18.2% of ludas of the Northern Archipelago, compared with 26% and 3%, respectively, in 2006. According to reports of V.V. Korbut and A.S. Koryakin microtine rodents were found in the diet of Herring Gulls on islands of Luvengsky and Oleny archipelagos.

Mammalian predators were represented by Red Foxes, (one animal was found on each of 6 forested islands), and by American Minks on 3 islands. These predators destroyed clutches and killed land-nesting birds also on near-by islands.

Seven pairs of Ravens nested on 19 forested islands. Among rodent-specialists Kestrels were recorded during the nesting period on one island, where they probably bred. One Short-eared Owl *Asio flammeus* was observed on Telyachy Island in July, and one on Ryashkov Island in August. Lapland Owls *Strix nebulosa* were seen on Ryashkov Island in June and on Anisimov Island in August.

As in the previous year White-tailed Sea Eagles did not breed in 2007, although adult and immature birds were recorded on islands during the whole summer. As before eagles preyed upon Common Eiders, and often captured incubating birds on nests. White-tailed Sea Eagles captured 160 eider females by the start of intensive counts of breeding seabirds on islands.

Our joint counts with V.V. Bianki on 45, mostly tree-less islands, ranging in size from 0.1 to 13 ha and having the total area of 37.9 ha, yielded the following results in 2007: 4 nests of Great Cormorants, 1 nest of Mallards *Anas platyrhynchos,* 9 nests of Greater Scaups *Aythya marila*, 1 nest of Long-tailed Ducks, 1,654 nests of Common Eiders, 5 nests of White-winged Scoters *Melanitta fusca*, 19 nests of Red-breasted Mergansers *Mergus serrator*, 1 pair of Ringed Plovers, 35 pairs of Turnstones, 178 pairs of Oystercatchers, 378 pairs of Herring Gulls, 34 pairs of Great Black-backed Gulls, 221 pairs of Common Gulls, 128 pairs of Arctic Terns, 79 pairs of Black Guillemots, 37 pairs of White Wagtails, 3 pairs of Hooded Crows, 7 pairs of Wheatears. The abundance of ducks had not changed to any great extent since the previous year. The loss of clutches was 39.1% in Common Eiders, partly due to killing of females by White-tailed Sea Eagles. Numbers increased by 30% in Common Gulls, and decreased by 20-30% in Black Guillemots, Herring Gulls and Great Black-backed Gulls.

E.V. Shutova, N.S. Boiko

8. Peschanka River upper reaches, Kolguev Island, the Barents Sea, Russia (69°10′ N, 48°54′ E)

Observations were made from 25 May – 16 August. May and June were colder than in 2006 while July and August were markedly warmer. Mean daily air temperatures in June didn't exceed +5°C, and snow cover persisted until late in the month in the hilly landscape of the central part of the island. Many clear days occurred in July and August. Heavy storms with winds exceeding 20 m/s were registered every month.

In June flocks up to 50–100 migrant Purple Sandpipers, Red Knots *Calidris canutus*, and Grey Phalaropes *Phalaropus fulicarius* stopped on the southern coast near Bugrino Village.

Rodents are absent on the island.

According to reports of locals from Bugrino, the arrival of first Barnacle and White-fronted geese *Anser albifrons* was recorded on 21-23 May. Mass arrival took place after 27 May, and numbers of White-fronted geese continued to increase until 12 June.

Arctic Foxes were common and bred successfully. Five inhabited dens with up to 7-9 cubs were found at distances of 5 km from each other. All food items near the dens were represented by geese and the Willow Grouse *Lagopus lagopus*.

Red Foxes were seen several times, and two inhabited dens were found on the hilly upland.

Arctic Skuas were common and bred successfully. Glaucous and Herring gulls were rather common; their colonies were found on lowland lakes with islands and on river bluffs, associated with Peregrine Falcons. The biggest colony on the river bluff consisted of 15 pairs.

Peregrine Falcons bred successfully with chicks hatched on 5-10 July; mean brood size was 3.0 nestlings (*n*=8). Dense goose colonies were found in the vicinity of all Peregrine nests. This raptor was especially important umbrella for the Barnacle Geese and consequently Barnacles were nesting only on river bluffs and mostly close to the nests of raptors.

Eight nests of Rough-legged Buzzards were found at the upper Peschanka River; they contained 2.6 eggs on average. Hatching took place on 25-30 June. The main food of buzzards consisted of the Willow Grouse and geese of all species. Four of 8 buzzard nests were placed on the plain tundra with no nearby goose colonies.

Short-eared Owl was spotted only once during spring migration.

Nesting success of Barnacle Geese was high and reached 95% in colonies around Peregrine Falcon nests, but it was only 16% in one colony where a raptor was absent. Breeding White-fronted Geese reached densities of 17-67 nests/km^2, and their nesting success was 82%. Bean Geese were breeding with density of 3 pairs/km^2; their nesting success was 71%. Mean clutch size was 3.59 in White-fronted, 3.27 in Bean and 3.36 in Barnacle geese.

One nest and 5 broods (3.1 cygnets on average) of the Bewick's Swan *Cygnus bewickii* were found in the central part of the island. The King Eider *Somateria spectabilis*, Velvet Scoter, Long-tailed Duck, Scaup, Red-Breasted Merganser, Pintail and Teal *Anas crecca* were all recorded breeding, but they were not abundant.

The first flighless (due to moulting of flight feathers) nonbreeding Barnacle, White-fronted and Bean geese were recorded on 4 July. The first adults resumed flight on 6 August. The first flying young were seen after 10 August.

Among breeding waders the Little Stint, Ringed Plover, and Temminck's Stint were abundant and widespread. Dunlins were more or less common only in spring, but almost completely disappeared after severe snowfall with frosts that occurred on 8-9 June. Little Stints were markedly more abundant everywhere than in 2006. Leks of Ruffs were uncommon in the central part of the island and only one nest was found. Red-necked Phalaropes were recorded breeding in several places. Grey Plovers *Pluvialis squatarola* were found along the banks of the Peschanka River, while Eurasian Golden Plovers were common everywhere on the uplands. In August birds of the latter species concentrated into flocks in the marshy tundra. The Turnstone was recorded only in two places, on uplands and on a steep slope of the western coast.

Common Snipes were breeding in the Peschanka River valley. Jack Snipes *Lymnocryptes minimus* were heard and seen displaying in many places of the Peschanka valley, including the island centre. Wood Sandpipers were displaying in bushy sites of river valleys as well as on upland bogs with bushes.

In general, breeding success was extremely low in the Dunlin, but high in the Little Stint, Temminck's Stint, and Ringed Plover.

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9. Tobseda settlement, Kolokolkova Guba, Malozemelskaya Tundra, Russia (68°35′ N, 52°20′ E)

According to observations from 24 May to 15 August the spring was relatively late compared with the two previous years. Ice-break on the Pechora River in the Naryan-Mar town area occurred during the last ten days of May, when snow almost completely melted in the town. In the Tobseda area snowfalls occurred regularly until 10 June, and air temperatures dropped below freezing until 12 June, occasionally reaching –4°C. Approximately 85% of the area was snow-covered in late May, and snow only melted completely in the area of the Barnacle Geese colony by 17 June. June was cold with a mean monthly air temperature of +4.5°C, but July and August were considerably warmer than formerly, with mean monthly air temperature of +12.1°C in each month. Precipitation was recorded on 28 of 85 days, and the summer was foggy, windy, occasionally with strong thunderstorms and storms.

Avian rodent-specialists were not recorded in the tundra adjacent to the dunes, probably because of low rodent abundance.

In contrast to previous years Arctic Foxes were regularly observed in the Tobseda area in 2007, and predation by foxes resulted in considerable losses of eggs and entire clutches of Barnacle Geese in some parts of the colony, as well as clutches of White-fronted Geese.

Weak migration of Barnacle, Brent *Branta bernicla*, White-fronted and Bean geese, was recorded already at the start of observations on 25 May, and there was an increase of intensity of migration on 28 May. Mass migration of Brent Geese took place on 5 June, when over 13,000 birds were recorded from one observation point. The migration of Barnacle Geese was prolonged and peaked on 28 May, 11 and 12 June. Geese migration was over on 13 June.

The first nests of Barnacle Geese were found on 31 May, but most of the early clutches were deserted, probably, because of heavy snowfalls during the first ten days of June. The start of their nesting peaked on 7-8 June. As usual, the mean clutch size was higher in the mainland part of the Barnacle Goose colony (3.86±0.04 eggs, *n*=868) than on Chayachiy Islands in the northern part of the Kolokolkova Bay (3.59±0.05 eggs, *n*=797).

For the first time a complete count of all Barnacle Goose nests in the Kolokolkova Bay was conducted in 2007 using

GPS. The total number of nests was 2500, including 1200 at the mainland, 875 on Chayachy Islands, and 209 on Southern Chayachy Islands in the Neruta River delta at the south of the bay. In contrast to previous years, large-scale flooding of coastal lowland marshes did not happen in 2007. The nest success of Barnacle Geese was relatively low, on average 54.5%. It is noteworthy that more birds, including incubating females, were killed, presumably by White-tailed Sea Eagles.

The nesting density of White-fronted Geese decreased in 2007 compared with previous years, and we found only 21 nest. It is probable that more geese initiated nests but their clutches were destroyed before the start of incubation in this late season. The start of incubation peaked on 8-11 June. The mean clutch size was 3.77 eggs, and nest success was low, as 5 broods were produced in 21 nests.

We did not conduct special nest surveys for ducks and waders. However, breeding success was low in these birds, as only rare broods of few species were recorded. Generally breeding conditions in 2007 were unfavourable for birds.

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10. Frantz Josef Land Archipelago, Russia (80°35′ N, 57°40′ E)

June was slightly colder in 2007 than in 2006, mostly due to a cold start of the month. Based on the data of weather station on Kheysa Island the mean monthly air temperature was –1.6°C, and mean daily temperature of the coldest day (4 June) –6.7°C. Mean monthly air temperature was 0.3°C above the long-term average (+0.2°C) in July 2007; maximum and minimum temperatures were +4.8°C and –1.7°C, respectively. The mean daily air temperature dropped to –0.9°C on the coldest day of the month, 14 July. The first half of August was also slightly warmer than in 2006. In the period of our studies on the archipelago on 27 July – 8 August the weather was variable with fogs and drizzle, but no snowfalls, and air temperatures ranging from –1.1°C to +4.3°C (mean daily temperature +1°C). The mean daily air temperature was –0.2°C on the coldest day of the month, 5 August. Thus, weather conditions were close to the long-term average based on the weather station data.

According to the expedition report of the Arctic and Antarctic Research Institute, St. Petersburg, Russia, in spite of generally very light ice conditions recorded in summer 2007 in the northern Barents Sea, ice conditions were quite heavy with a dense pack ice edge moving southward to 80–81º N along the 60ºE longitude. Dense (rank 9–10 of 10) first year broken ice (40–100 cm thick) blocked Franz-Josef Land from the east. At the same time, ice conditions in archipelago straits varied greatly with vast areas of open water in its central and western parts.

Rodents do not inhabit Frantz Josef Land Archipelago. Mammalian predators were not recorded.

The Purple Sandpiper was a common breeder on Kheysa Island, and two broods examined on 27–29 July contained chicks 6-7 and 9-11 days old. Thus, hatching occurred on 18-21 July. A nest with 3 eggs at the final stage of incubation was found on July 31. Flocks of 3–5 birds roaming over tundra were seen on 31 July. The first (for the archipelago) breeding record of the Ringed Plover was made on Kheysa Island, where a brood with two downy chicks was found.

The Common Eider and Brent Geese *Branta bernicla hrota* bred successfully on different islands of the archipelago. On our aerial surveys, combined with ground observations, we found broods or active nests of eiders on Kheysa , Lamont, Wilczek, and Eva-Liv islands, and of Brent Geese on Kheysa and Lamont islands. Breeding success of Ivory Gulls *Pagophila eburnea* was different on different islands. It was very low in colonies on Eva-Liv and Rudolf islands. Late clutches on Kheysa Island probably indicated repeated breeding attempts. However, chicks hatched successfully on Alexandra Land. Glaucous Gulls bred successfully on Kheysa Island, where we found three broods of two chicks each, and at least 15 alarming pairs. Pairs of Arctic Skuas with feathered chicks were recorded on Eva-Liv Island and Wilczek Island. Arctic Terns had an extremely prolonged reproductive season: both eggs and newly fledged chicks were observed in colonies on 8 August.

Wandering Pomarine *Stercorarius pomarinus* and Arctic skuas were recorded as singles and in flocks up to 10 birds on all surveyed islands. One Great Skua was observed on Kheysa Island.

Surveys were carried out in the expedition of the Arctic and Antarctic Research Institute in a framework of the Russian program of the International Polar Year.

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11. Dolgi Island, Barents Sea, Russia (69°12′ N, 59°13′ E)

We flew to the island by helicopter on 5 July and worked there for two weeks. It is a long (as the Russian name indicates!), narrow and flat island at the very east of the Barents Sea. The vegetation constitutes more or less humid tundra with prostrate shrubs or marshy wet meadows. We saw only a few willow bushes. There were numerous lakes and short rivers flowing along miniature valleys.

There were no rodents on the island. We registered herbivore faeces on 16 15×15 m grids located in two different types of habitat, and all were from geese or ptarmigan. We saw one Arctic Hare *Lepus timidus*, and hare pellets in several places.

We visited Arctic Fox dens which had been mapped during previous expeditions from the Nenetski Nature Reserve and looked for additional dens. We found 6 large dens, 2 of which were inhabited by families with cubs, and at least 7 smaller dens. Several dens were located in the “valleys”, which provided some protection from the frequent strong winds, and two of them were located near to one of the rare willow bushes.

Arctic and Long-tailed skuas were rather numerous, although almost not breeding. A few Pomarine Skuas were observed. We found only a single nest of the Arctic Skua with one egg. Most skuas were flying over the island in small groups searching for food. Towards the end of our stay groups of 20-30 Long-tailed Skuas were gathering and sitting on tundra or on the shore. The only other bird of prey we saw was a White-tailed Sea Eagle, which flew along the island shore. In the northern part of the island there was an old eagle nest on a wooden tower.

Numerous geese were breeding, mostly Bean and White-fronted geese, but also some Barnacle Geese in the northern part of the island. Goslings were hatching in the third week of July. Of 33 nests we followed, there were 17 with eggs or goslings at the end of the two weeks period. Thus, the predation rate during incubation seemed moderate. Larger flocks of non-breeding geese and ducks were seen regularly. Common waders were Turnstones, Grey Plovers, Little Stints, and Dunlins. The most common passerine was the Lapland Bunting, but Red-throated Pipits, Shore Larks *Eremophila alpestris*, and Snow Buntings were also regularly seen.

Although Dolgi Island is not currently inhabited by humans, there were numerous traces of human activity. There were two houses, boats, fishing nets, reindeer sledges, several crosses and a lot of things washed in by the sea.

D. Ehrich
http://www.arctic-predators.uit.no/News.html

12. Lyamchina Bay, Vaigach Island, Russia (69°52′ N, 59°21′ E)

In the period of observations on 28-29 July weather was usual for Vaigach Island with cool, air temperatures +5-8°C, low clouds and permanent drizzle. The Nenets people reported hot weather in early July.

Lemmings were not observed in coastal tundra, but two lemmings and a downy chick of Willow Grouse was recorded in a nest of Rough-legged Buzzards. Three records of single Snowy Owls were made. Rare observations of gulls included 4 Glaucous Gulls and 3 Herring Gulls. An Arctic Fox was hunting Common Eiders resting near the water on the sea coast.

Lakes in coastal tundra were inhabited by a nesting pair of Red-throated Divers, 2 pairs of Bewick's Swans, and 5 broods of Bean Geese. We recorded a flock of ca. 300 moulting Bean Geese, a flock of 17 Barnacle Geese, and an aggregation of 36 adult Barnacle Geese and 24 chicks in the bay, along with flocks of female Common Eiders and several broods of downy chicks of this species. Moulting males of Common Eiders were not recorded. A flock of 8 Common Merganser males was observed.

One Ringed Plover, one Eurasian Golden Plover and one Dunlin were recorded in tundra. Snow Buntings, mostly wandering with broods, were the most common passerines. One pair of White Wagtails, one of Meadow Pipits and one of Lapland Buntings were noted, and 3 Shorelarks were recorded at one place.

Y.V. Krasnov

13. Bolshoi Tsinkovy Island, Vaigach Island coastal waters, Russia (69°51′ N, 59°26′ E)

Several lemmings were seen during a visit to the island, which is 2.5×3 km, on 29 July. The island was also inhabited by 2 Reindeers and a family of Arctic Foxes with 3 cubs. Remains of moulting Bean Geese were found near the fox den, and adult foxes were observed hunting broods of Bean Geese. Five pairs of Glaucous Gulls, one immature White-tailed Sea Eagle and one immature Pomarine Skua were recorded.

Three pairs of Bewick's Swans were counted, and one predated nest was found. An aggregation of 45 adult Barnacle Geese and 19 downy chicks were observed on the sea coast, and one predated nest was found. Approximately 15 nests and broods of Bean Geese and up to 20 single geese were scattered across the island. Several small flocks of Common Eiders and 2 broods of downy chicks were recorded on the sea near the island.

Turnstones were common among waders, with 7 alarming pairs and small flocks of presumed migrants. Breeding species included the Ringed Plover, Little Stint, Red-necked Phalarope and Eurasian Golden Plover. Purple Sandpiper and Dunlin were recorded. Snow Buntings, mainly with broods, were the most common passerines. Two pairs of Wheatears were seen.

Y.V. Krasnov

14. Krasnye Islands, Vaigach Island coastal waters, Russia (69°41′ N, 59°50′ E)

The Common Eider was the most common species on three small islands surveyed on 1 August, with up to 30 pairs nesting. Most clutches were destroyed by Glaucous Gulls, and probably by local people when they were collecting eggs of Barnacle Geese. Flocks of eider females, up to 40 birds in total, and a small flock of Long-tailed Ducks were observed on the sea near the islands. Signs of successful hatching were found only in 6 nests of Barnacle Geese.

The islands were used for nesting by a maximum of 13 pairs of Glaucous Gulls and 6 pairs of Herring Gulls. A nest of Arctic Skuas with downy chicks was found.

The Nenets people relied on subsistence hunting, which included hunting of geese and swans, and egging. All colonies of Barnacle Geese on small islands in the vicinity of the Varnek settlement were exploited, which had side effect of increased disturbance resulting in depredation of eider nests by Glaucous Gulls.

Y.V. Krasnov

15. Krasnaya Gulf, Vaigach Island, Russia (69°40′ N, 59°55′ E)

Many under-snow nests and droppings of lemmings were recorded on 31 July in tundra to the south of the bay, but ani-

mals were not seen. Arctic Foxes were not seen either. Three single Rough-legged Buzzards and one probably nesting pair were recorded. A pair of Pomarine Skuas showing territorial behaviour, and one wandering skua were observed. Two pairs of Glaucous Gulls and two pairs of Herring Gulls were noted.

Geese observation included one brood of Bean Geese with 4 chicks, a predated nest of Barnacle Geese on coastal rocks, and two broods of the latter species in the coastal area. One flock of Common Eider females without chicks was present near the coast-line.

The Ringed Plover was the most common wader; other observations included twos of the Grey Plover, Red-necked Phalarope and Temminck's Stint. Wandering family parties of Snow Buntings were common. Pairs of White Wagtails, Lapland Buntings, Meadow Pipits and Red-throated Pipits were rairly recorded.

Y.V. Krasnov

16. Vashutkiny Lakes, Bolshezemelskaya Tundra, Russia (68º04′ N, 61º38′ E)

The timing of nature events was close to average. The summer was warm and dry. Snow cover reduced to 50% on 21 April on flat surfaces. Ice broke on large rivers on 24 June. Five snowfalls were recorded in the period of studies from 17 June to 12 July. A storm occurred on 9 July, but, probably, had no adverse effect on numbers or breeding success of birds.

Lemmings were rare and voles common, based on visual observations.

Arctic Foxes were rare and their breeding was not recorded.

The abundance of Rough-legged Buzzards and White-tailed Sea-eagles was average. A nest of buzzards with a clutch of 4 eggs was found and one old nest of eagles on the roof of a cabin. Few records of Northern Harrier *Circus cyaneus*, Merlin and Short-eared Owl were made. Common Long-tailed Skuas nested, while breeding of rare Arctic Skuas was possible, but not confirmed. Herring Gulls were common breeders, and Arctic Terns were numerous. Willow Grouse nested in average numbers, and 4 nests contained 10-11 eggs.

Y.N. Mineev, O.Y. Mineev

17. Vorkuta City vicinity, east of Bolshezemelskaya Tundra, Russia (67°15′ N, 64°35′ E)

The snow accumulation had been low during the winter according to reports of local people, and wide tundra areas became snow-free already after warming in late April – early May. Heavy showers in early June further contributed to the snowmelt, and at this time snow remained only in river valleys and locally in high willow stands on slopes of hills.

Ice broke on the rivers during the last 5 days of May, but the flood was low due to small amounts of snow and the following drop of temperatures. The spring had started early and initially developed rapidly, but retarded in June, and accordingly phenological events in the second half of June occurred on the dates close to long-term average. The second flood on rivers in the period from 10-20 June was higher than the first flood, and then the river islands and lower floodplain were flooded. Ice on the lakes broke in mid and late June.

According to observations from 8 June to 2 August the summer was warm with moderate amount of precipitation. Extreme weather events were not recorded.

Populations of lemmings and voles were at a low, and these animals were not recorded during June and almost the whole of July. Muskrats *Ondatra zibethicus* and fresh excavations of Water Voles *Arvicola terrestris* were observed locally. Numbers of Arctic Hares were relatively high.

Neither Arctic Foxes, nor Red Foxes were recorded.

A few pairs of Rough-legged Buzzards nested, but mostly unsuccessful, and some clutches were deserted at the incubation stage. A single nest with one chick with already developed feathers was recorded in late July. Northern Harriers nested at a very low density, and observations of owls were restricted to a single vagrant Short-eared Owl. Long-tailed Skuas probably did not breed as neither nests, nor broods were recorded, and adults were observed mostly in wandering flocks. Herring Gulls either did not breed, or failed, and many pairs in mid summer left their territories for river valleys and lakes.

Waders nested in numbers usual for the area. Long-tailed Skuas in flocks and Herring Gulls were the principal predators. According to general impression nest success of most waders did not exceed average, with an exception of the Eurasian Golden Plover, Terek Sandpiper *Xenus cinereus* and Ringed Plover that showed better performance. Nest success of the Ruff was low.

V.V. Morozov

18. Voikar River middle reaches, Lower Ob' River area, Russia (65º48′ N, 63º57′ E)

A pronounced spring warming in April resulted in rapid snowmelt, ice movements on small rivers and ice clearance near the banks of large rivers. The following spell of cold weather continued until 10 May, but then air temperatures were above freezing only during the day. Snowmelt was accelerated by rainy weather at the end of the second ten-day period of May, and, as a result, ice-break on the Voikar River took place on 23 May, which was close to the average date. Snow cover on flat areas reduced to 50% on 25 May and completely disappeared on 7 June. The weather became adverse suddenly in late May, when strong wind was accompanied by heavy snowfalls, replaced by pelting rains by mid June. The spring turned generally prolonged, and leaves on birch trees opened only by 19 June.

Numbers of voles (*Microtus* and *Clethryonomys* genera) were low. Accordingly, owls were not recorded, with an exception of rare non-breeding Short-eared Owls. Breeding Northern Harriers, White-tailed Sea Eagles and Merlins were common, and a Northern Goshawk *Accipiter gentilis* was observed.

Northern waders, Eurasian Golden Plovers, in particular, stayed in the area longer than usual in this spring, and flocks of Arctic Terns and skuas (primarily Long-tailed and single Arctic skuas) appeared in tundra habitats and remained there during the first half of June. Alarming behaviour was apparent in some pairs, but nests were not found. The appearance of these northern species was probably caused by cold conditions to the north of our study area.

Numbers of Willow Grouse continued to decrease and dropped below the long-term average. In contrast, abundance of Capercaillie *Tetrao urogallus* was the record high for 18 years of observations. An increase in abundance of the Teal, Tufted Duck *Aythya fuligula* and Black Scoter *Melanitta nigra* was notable.

Among waders, numbers of Wood Sandpipers and Greenshanks were high, but the abundance of most other species decreased compared with 2006 and approached the long-term average. Numbers of almost all species of passerines also decreased, with the exception of thrushes (Redwing and Fieldfare) and Redpolls. The abundance of Sedge Warblers *Acrocephalus schoenobaenus* increased notably.

M.G. Golovatin

19. Sob River basin, the Polar Ural, Russia (66º44′ N, 65º31′ E)

An unusually hot weather was experienced in the study period on 2-12 July, but air temperatures, very high in day-time, were dropping to –2-+3ºC at night. A single rain with thunderstorm was recorded.

Rodents and signs of their activities were not observed.

Arctic Foxes were rare. Rough-legged Buzzards and Merlins were rare, Northern Harriers common, but only buzzards bred. Owls and skuas were not recorded. Willow Grouse bred in moderate numbers; Rock Ptarmigans were rare. Ducks were rare and waders common breeders. The brief period of the survey did not allow conclusions about bird breeding success.

E.Y. Loktionov

20. Lower Ob floodplain, western Siberia, Russia (66°39′ N, 66°23′ E)

April was relatively warm and windless with air temperatures ranging from –20-22°C to +8°C; warming was recorded on 6-9, 15 and 17-25 April. Pelting rain had started on 17 April in the evening and continued until the morning of the next day. The next warming on 21-22 April was also accompanied by drizzling to pelting rains.

The period from 1-20 May was fairly cold, and air temperatures dropped to –20°C on 1 May. Snowfall occurred on 4 May, and then nearly incessant snowfalls of varying intensity were recorded from 7-13 May. The weather changed on 17 May when air temperature rose above the freezing point, and snowfall turned into heavy rain. Air temperatures reached +2-8°C on 17-19 and 21-22 May. Ice-break had started on 20 May on the main channel of the Ob River, and the latter cleared quickly because the ice was thin and loose. The flood was not high. The weather turned cool again later with short-term snowfalls on 20-23 May and more prolonged snowfalls on 29-30 May. There was a strong south-westerly gale on 28 May with wind speeds reaching 20-25 m/s.

The first half of June was cold and air temperatures generally did not exceed +5°C from 1-13 June. Air temperature dropped below the freezing point for the last time on 11 June, when it reached –2°C. Snowfalls occurred regularly on 1-3 and 5 June, with the last record on 11 June. Air temperatures increased to +15°C on 20 June, and daytime maximum temperatures reached +22-26°C later. The first thunderstorm was recoded on 23 June in the evening, and phenological summer had started. The weather was generally wet in June with precipitation occurring on one third of all days; rains of different intensity were observed on 4, 8-10, 15-18 and 23-24 June. The first half of the month was windy with prevailing northerly winds of 5-10 m/s (up to 12 m/s).

July was hot and dry. Air temperatures were above +15°C most of the time, on some days remaining above +20°C during the whole 24 hour period. Conditions were particularly hot on 1-7 and 16-18 July, with temperatures reaching +27-29°C. A single light rain was recorded before 18 July, then a thunderstorm occurred on the latter date, after which periodic light rains or short-term showers were recorded on 19-23 and 25 July.

August was warm but wetter than July. Prevailing temperatures ranged from +10°C to +16-18°C (on 1-5, 15-21 and 30-31 August), and +19-23°C were reached on the warmest days, 18 and 19 August. Minimum temperature (0°C) was recorded at night on 29/30 August. Rains occurred rarely and were mostly light and short-term; there were weak variable winds.

The Hooded Crow and Snow Bunting arrived on 1 and 5 April, Whooper Swan on 18, White-tailed Sea Eagle on 21, and Herring Gull on 25 April, Rough-legged Buzzard on 3 May, Fieldfare on 5, Chaffinch *Fringilla coelebs* on 6, Short-eared Owl on 11, Shorelark on 13, geese and White Wagtail on 18, Northern Harrier and Lapwing *Vanellus vanellus* on 19. A majority of species appeared after 20 May: Merlin on 21, Redstart *Phoenicurus phoenicurus* on 22, Redwing on 24, Little Gull *Larus minutus* and Meadow Pipit on 26, Wood Sandpiper, Siberian Accentor *Prunella montanella*, Willow Warbler, Bluethroat, Brambling *Fringilla montifringilla* and Little Bunting *Emberiza pusilla* on 29. The intensity of migration was low, and it was not recorded on some days even at the end of May. However, early migrants appeared on the usual dates or approximately one week earlier, while late migrants arrived on the usual dates or later, in the second half of May or in June. This difference was, probably, explained by a relatively cold weather during the last 10 days of May and early June.

Birds of floodplain habitats depend heavily on the height and duration of the flood, and the latter was long in 2007. The second flood was caused by precipitation in the second half of July, and the water table remained at a high level until mid September. This resulted in the flooding of extensive flood-

plain areas, including patches with high willow trees and causeways. An associated shortage of nesting habitats for ground and shrub nesting birds caused changes in their distribution in the floodplain. Breeding density increased locally, but overall species diversity and density decreased. Nesting of the Ringed Plover, Little Ringed Plover *Charadrius dubius*, Terek Sandpiper and Temminck's Stint was recorded on dams. Wood Sandpipers, Greenshanks and Common Snipes were recorded locally on unsubmerged ridges, but their numbers decreased considerably.

Rodents were not recorded in the floodplain due to the high flood, with an exception of the Water Vole which was common in late May and early June. The abundance of rodents in watershed habitats near the Labytnangi town was also low.

The Hooded Crow, Herring Gull and Common Gull were the principal avian predators in the floodplain. Dogs regularly visited the area. No evidence of breeding of rodent specialists was recorded on watersheds.

The breeding success of waders was not high, judging by behaviour of birds and finding of nests. Four of 6 monitored clutches of Terek Sandpipers were lost; one clutch of 4 eggs produced 3 chicks, but the chicks apparently died, and a single pair managed to raise chicks to fledging. Nesting was successful in 2 of 3 pairs of Little Ringed Plovers and in 1 of 2 pairs of Ringed Plovers. One of 3 clutches of Temminck's Stints was probably lost.

Common Terns *Sterna hirundo* nesting on artificial dams near floodplain lakes were the most successful among other birds. With the exception of the Tufted Duck, numbers of ducks were extremely low, but some pairs managed to raise chicks. Abundant juvenile pipits, wagtails, warblers and buntings appeared in the floodplain in August, apparently having arrived from other habitats, because breeding opportunities for birds in the floodplain were very limited.

S.P. Paskhalny

21. Bolshaya Khadyta River basin, the Polar Ural, Russia (67º36′ N, 67º01′ E)

The summer 2007 was warm and rainy. Day-time temperatures ranged from +10 to +15ºC, and night temperatures from +4 to +6ºC. Rains were recorded on over half of the days in the study period from 20 July to 15 August.

Lemmings and voles were rare.

Arctic Foxes were rare, but bred. Among birds of prey Merlins and Northern Harriers were common, White-tailed Sea-eagles and Rough-legged Buzzards rare. Breeding was confirmed in Merlins and White-tailed Sea-eagles. A few records of single Short-eared Owls were made. Arctic and Long-tailed Skuas were rare, without signs of breeding.

A few species of passerines were numerous. Breeding Willow Grouse occurred in average numbers, while Rock Ptarmigans were rare. Observations of broods of ducks, waders and Black-throated Divers indicated average nest success.

E.Y. Loktionov

22. Schuchya River, middle reaches, Yamal Peninsula, Russia (67°16′ N, 68°42′ E)

The studies were carried out from 21 June – 24 July. Spring was approximately 7-10 days delayed compared with average dates, although a pronounced and long-term warming had occurred in April according to reports by local people. May and the first half of June were cold. Snow melted completely on flat surfaces on 20-21 June, but it was then still present in depressions and on the northern slopes, and lakes were still frozen. Ice-break on rivers occurred in early June according to reports of local people. The accumulation of heavy snow during the winter resulted in a high flood. River bluffs up to 5-6 m high were flooded in some places. The water table dropped only slowly in June due to large quantities of snow in the Ural Mountains. The weather was constantly warm or even hot after 22 June, with prevailing day-time air temperatures of +25-28°C, and exceeding +30°C on several days. Rains were rare, and water levels were dropping quickly. Strong wind was not recorded, and the weather did not turn cold until the last two days of the study period, when temperatures dropped to +12-14°C. Extreme weather events were not recorded.

Abundance of rodents was the lowest on record for the last 3 years. However, Arctic Hares were unusually numerous, being recorded more often than in 2005-2006.

Arctic Foxes were not recorded, but Red Foxes were more abundant than in 2006, and we often observed animals and found their inhabited dens. Numbers of Brown Bears were average. A single Short-eared Owls and a single Hawk Owl *Surnia ulula* were seen during the whole study period. Rough-legged Buzzards did not breed and there were only a few records of single wandering birds and a few birds staying on their territories in July. Numbers of breeding White-tailed Sea Eagles were lower than in 2005-2006, and mean brood size was also lower in this species. A new nesting pair of the Golden Eagle was discovered, but their chick(s) was killed by a Brown Bear, as were two chicks of this species in another nest. Peregrine Falcons occurred in relatively high numbers, and Gyrfalcons in usual numbers. Brood size was low in the Gyrfalcon. However, one brood with 5 fledglings was found, which happens rarely. Breeding was delayed in the Peregrine Falcon and Merlin compared with the previous year.

Non-breeding Long-tailed Skuas were common in June, but became rare by mid July. Herring Gulls and Common Gulls were not abundant, and were mostly recorded in the vicinity of the camps of Reindeer *Rangifer tarandus* herders. Numbers of breeding Hooded Crows, Ravens and Magpies were below average.

The high and prolonged flood apparently impeded breeding of a portion of the wader populations in floodplains, since, in contrast to the previous seasons, we observed small flocks of non-breeding Terek Sandpipers, Ringed Plovers and a few Temminck's Stints several times during the summer. Nevertheless, the abundance of breeding Terek Sandpipers was very high, and many nests were found. Whimbrels were numerous and nested in all tundra and forest-tundra habitats, while

this species was relatively rare in 2006 and represented by a few pairs only in 2005. Wood Sandpipers, Eurasian Golden Plovers, Bar-tailed Godwits, Ruffs, Red-necked Phalaropes, Common Snipes, and Pintail Snipes *Gallinago stenura* were common breeders; Ringed Plovers, Temminck's Stints, and Common Sandpiper *Actitis hypoleucos* were less common than in 2005-2006. Generally, numbers of breeding waders were high.

The abundance of Willow Grouse and most species of ducks was average. A declining trend in abundance of the Long-tailed Duck was recorded during the last 3 years, and an increasing trend in the abundance of the White-winged Scoter. Breeding success of ducks and grouse was not evaluated due to the early termination of studies in this year.

Numbers of the Lesser White-fronted Goose *Anser erythropus* and Bean Goose have been increasing during the last 3 years. Non-breeding geese of both species were relatively abundant in July 2007, partly probably due to appearance of birds from more northerly regions. The number of nests of Lesser White-fronted Geese was slightly higher than in 2006.

Among small passerines Bramblings were unusually uncommon, while Siberian Accentors were, in contrast, relatively numerous. This is in accordance with the increasing trend in numbers of this species during the last 3 years.

Breeding of geese, ducks, waders, and passerines was delayed compared with 2005-2006 due to the late snowmelt and high prolonged flood. However, favourable summer weather, high abundance of invertebrates and relatively small abundance of birds of prey were, probably, beneficial for the successful reproduction of birds.

S.A. Mechnikova, N.V. Kudryavtsev

23. Erkatayakha and Payutayakha rivers, Yamal, Russia (68°13′ N, 69°09′ E)

According to reports of the local people there was an exceptionally warm sunny weather, without strong winds or precipitation, in mid May, accompanied by rapid snowmelt. Daytime air temperatures reached +10°C. Cold weather returned in late May, when strong northern and north-western winds with heavy snowfalls occurred. The local people observed return southward migration of waterfowl and gulls. The adverse weather lasted until mid June. Ice-break had started on large rivers only on 18-20 June when the water table in the Erkatayakha River was still at a maximum level. Large ice floes were still moving on the Payutayakha River when we arrived on 24 June. Almost all the lakes were still frozen. Snow completely melted on 20-25 June. There was warm and dry weather after 24 June, with air temperatures reaching +25°C in the daytime. The absence of precipitation resulted in a rapid decrease of the water level in the river. July was dry and hot, with temperatures just below +30°C on most days, and above this on some days. Precipitation occurred only on 3 days in July. Pelting rain had started in the evening on 23 July and continued during the whole night, which, probably, caused the death of chicks in some nests of passerines. Thus, a nest of the Pechora Pipit with dead chicks approximately 10 days old was found. Strong wind was not recorded during the whole study period until 1 August.

Numbers of *Microtus* voles were average based on trapping results. Collared Lemmings *Dicrostonyx torquatus* were observed and their breeding was recorded, but Siberian Lemmings *Lemmus sibiricus* were absent. A considerable number of lemming undersnow nests were found, but results of rodent reproduction were probably strongly affected by spring conditions.

It is interesting that Rough-legged Buzzards were rare, and for the first time in 9 years we did not find their nests in the study area of over 150 km^2. However, 6 inhabited dens of Arctic Foxes were found with 4-8 cubs, and records of Red Foxes were more frequent. Skuas were rare, and were represented mostly by wandering flocks and single Arctic Skuas. A single nest of Long-tailed Skuas found on 28 June was deserted later.

A unique pattern of bird breeding phenology developed in 2007 due to the unusually cold spring and relatively high abundance of Arctic Foxes. In the beginning of our studies we found nests of most species at a stage of egglaying, but in July we often recorded clutches of eggs and chicks of various age as well as fledglings. For example, a nest of Willow Grouse with 9 eggs at an advanced stage of incubation was found on 24 July, and several grouse broods with chicks the size of a thrush were found on the same date. On 26 July along with fledglings of Little Buntings we recorded a nest of this species with 5 chicks 4-5 days old. The variation of breeding dates was very high in pipits and Lapland Buntings, as well as in geese. The first geese broods were recorded on the Erkatayakha River on the usual dates, in early July (n=3), but the first records of geese broods on the Payutayakha River were made on 15 July (n=5). Two nests of Pintails were found on bluffs near nests of Peregrine Falcons, but broods of ducks were not recorded.

Thus, the prolonged spring and considerable predation pressure resulted in a longer reproduction period in most species of birds. Summer weather was favourable for the reproduction of birds, but predation, primarily by Arctic Foxes, was heavy, in particular, on ducks. Some species probably laid replacement clutches. Reproductive success of geese, swans, grouse, waders and passerines can be evaluated as average based on observations of broods and fledglings.

V.A. Sokolov, A.A. Sokolov

24. Coasts of the Baidaratskaya Gulf, the Kara Sea, Russia (68°30′ N, 67°30′ E)

The summer was generally rainy on the western coast of the gulf, but warmer than in 2006. A period of 10 sunny and relatively warm days in mid July was followed by a rainy period, with precipitation on most days, that lasted until mid September. Air temperatures ranged from +5 to +12°C, and atmospheric fronts associated with strong (up to 20 m/s) winds occurred more often than usual. In contrast, the weather was

rather stable, cloudy and less rainy in September on the eastern coast of the gulf, on the Yamal peninsula.

Lemmings and voles were recorded more often than in 2006, but their abundance was still below average.

Numerous Arctic Hares, 3 pairs of Rough-legged Buzzards and an inhabited den of Arctic Foxes with cubs were recorded per 40 km of coastline of the Yamal Peninsula from the Mutny Bay to the northern edge of the Yuribei River delta. Owls were not seen.

F.A. Romanenko

25. Ngoyuyakha River mouth and adjacent coastline of the Baidaratskaya Gulf, Russia (68°51′ N; 66°55′ E)

A relatively dry and moderately warm weather prevailing in July changed to cold and rainy at the end of period of observations, on 20-31 July, which could have adversely affected the survival of the late broods in birds.

Rarity of undersnow nests and a few records of single animals indicated a low stage in the populations of Siberian and Collared lemmings. Other species of rodents were not recorded.

Arctic Foxes were fairly common and bred. Due to low rodent abundance foxes should have certainly had an adverse impact on reproduction of birds. Avian predators were very rare, including Rough-legged Buzzards, which did not show indications of breeding. Owls were not seen, and a single Long-tailed Skua was recorded. Rare Arctic Skuas nested. Herring Gulls were numerous, and some pairs successfully raised chicks.

Willow Grouse had low numbers. We recorded broods of Red-throated and Black-throated *Gavia arctica* divers, Bewick's Swans, King Eiders, Long-tailed Ducks, several species of waders (Ringed Plover, Red-necked Phalarope, Little Stint) and passerines (White Wagtail, Meadow and Red-throated pipits, Lapland Buntings).

Generally, breeding conditions were, probably, moderately favourable for most species of birds in this season.

S.V. Rupasov

26. Yarayakha River lower reaches, Yamal Peninsula, Russia (69°17′ N; 68°04′ E)

Relatively dry and moderately warm weather that prevailed in July favoured successful hatching and development of chicks. Cold and rainy weather established in late July and prevailed during the study period on 1-10 August, with a few sunny, relatively warm days. However, breeding success of birds was not probably affected strongly by this fall in temperatures.

Lemming numbers were probably low to moderate in the beginning of the season, and they increased considerably in the second half of summer. Lemmings were observed several times each day on excursions, and were captured by a dog in August. Collared Lemmings were less abundant than Siberian Lemmings. Juvenile lemmings prevailed among recorded animals, and their proportion was increasing notably even during the short period of studies. Voles were not observed.

Arctic Foxes were common and bred. Their predation pressure on birds should have been considerable, given that rodent populations had just started to increase. Rough-legged Buzzards, Peregrine Falcons and Arctic Skuas occurred in average numbers and nested, while Herring Gulls were numerous breeders. At least two alarming pairs of Pomarine Skuas were recorded in a range of 10 km from the field station.

We observed broods of Red-throated and Black-throated divers, King Eiders, Long-tailed Ducks, Willow Grouse, Grey Plovers, Eurasian and Pacific Golden *Pluvialis fulva* plovers, Ringed Plovers, Red-necked Phalaropes, Little and Temminck's stints, Shorelarks, White Wagtails, Meadow and Red-throated pipits, Wheatears, Lapland and Little buntings, and Common Redpolls.

Breeding conditions were probably moderately favourable for most species of birds in this season.

S.V. Rupasov

27. Oleny Island, the Kara Sea, Russia (72º22′ N; 77º28′ E)

Stable warm weather prevailed on the island in the period of studies from 18 July to 3 August. Air temperatures did not drop below +4ºC at night, and varied from +6-17ºC during day-time. A single day was windless, while moderate north-eastern, less often south-eastern, northern or north-western wind was recorded on other days. Dry weather prevailed at the beginning of the study period, but short-term light rains occurred almost daily after 26 July.

Siberian Lemmings were numerous, and we recorded several animals daily.

Arctic Foxes were common and bred successfully. Lemming bodies were often abundant near fox dens, but remains of chicks were also occasionally found. Thus, 4 chicks of White-fronted Gesse which had been taken by an Arctic Fox were found on 1 August in the central part of the island.

A White-tailed Sea Eagle was seen once, at the south of the island. A Snowy Owl was recorded on 19 July. Pomarine Skuas were common everywhere, but neither nests, nor chicks were found. Rare Arctic Skuas were recorded, but they showed no signs of breeding. Aggregations of 10-30 feeding Long-tailed Skuas were observed everywhere, but territorial pairs of this species were recorded only in the southern part of the island.

Herring Gulls were numerous in the southern part of the island, and we found a nest with chicks near the southern coast on 26 July. Approximately 250 Herring and Glaucous gulls at a ratio 2:1 inhabited Khaleev Island near the shore of the southern coast of the Oleny Island in the Oleny Strait. Glaucous Gulls were common and probably also nested on the bogs of the southern part of the island. Arctic Terns were common on the island, and we found a nest with two chicks in the southern end on 20 July.

Black-throated and Red-throated divers were common; while no nests were found, some pairs of the former species were apparently territorial. Two broods of Brent Geese were observed on 21 July at the upper part of the channel in the southern part of the island, and we found 3 already left nests of this species in a close vicinity to each other on 26 July. With binoculars we counted 52 adult Brent Geese with broods in a colony of approximately 150 Herring and Glaucous gulls on a small island (700×200 m) in the Oleny Strait. At the end of the breeding season 6 nests of White-fronted Geese were found; hatching had not started in one of them on 19 July, and the others contained chicks until 21 July. We counted 57 broods of geese per 7.9 km of small rivers and channels in the western part of the island (7.2 broods/km), and at least 180 broods were counted on 1-3 August in the north-western part of the island in an area of under 29 km² (6.2 broods/km²). Large aggregations of moulting geese were found on 2-3 August on large lakes. Three aggregations of moulting geese, totalling 1000 birds, were recorded along the helicopter route of 20 km in the western part of the island. Long-tailed Ducks probably did not breed but flocks of 10s to 200 birds were recorded on lakes of the island and in the strait. King Eiders were more abundant than Steller's Eiders *Polysticta stelleri*, and both species were common breeders. Small flocks of both eider species were regularly observed on lakes and channels everywhere on the island.

Waders were represented by 9 species. The status of Bar-tailed Godwit remained unclear. The Ringed Plover and Ruff were rare breeders; the Little Stint, Grey Plover, Turnstone, Dunlin, Red-necked and Grey phalaropes were common and nested. The three species of breeding passerines (the Shorelark, Lapland and Snow buntings) were not numerous, but were still more abundant than in the Mongocheyakha River delta on the mainland.

A.E. Dmitriev, N.N. Emelchenko

28. Mongocheyakha River delta, Gydan Peninsula, Russia (72º20′ N; 78º19′ E)

The study period from 13-17 July was characterized by relatively warm (air temperatures ranging from +1-12ºC), dry and cloudy weather with weak north-western and north-north-western winds. No snow was present in the delta.

Regular records of lemmings indicated their high numbers in the study area, similarly to localities everywhere further upstream in the river.

Arctic Foxes or signs of their activities were not recorded. Their absence probably favoured the successful nesting of geese and ducks in the area.

Birds of prey and owls were not observed. Distraction displays of an Arctic Skua indicated nesting of this species. Pomarine Skuas were common, but their breeding was not confirmed. Numerous Long-tailed Skuas were represented by birds feeding in bogs in groups of 20-30 on 15 and 16 July. Herring Gulls were common breeders on the islands in the delta, in the central part of which we found a colony of 4 pairs of Herring Gulls and a pair of Glaucous Gulls.

Black-throated and Red-throated divers were common, but breeding was confirmed only for the latter species. Bewick's Swans were recorded daily in groups of 4-8 birds. White-fronted Geese were numerous and bred at an average density of 24 pairs/km². Most of geese nests (12 of 22) were found within a single lake-bog system of 0.26 km², giving a local density of 46.7 nests/km². Geese clutch size ranged from 1 to 7 eggs. The first chick hatched on 16 July. Brent Geese were common everywhere on the delta islands, however, only 2 nests were found (5 and 3 eggs). Among ducks, we recorded the Long-tailed Duck (breeding not confirmed), King Eider (common breeder), and Steller's Eider (numerous). Single-species flocks of eiders were common, while mixed flocks were less often observed.

Waders of 8 species were recorded in their typical habitats at high densities. Breeding status of the Pacific Golden Plover remained unclear; the other 7 species bred. Turnstones and Red-necked Phalaropes were rare; Grey Plover, Grey Phalarope, Little Stint, Dunlin and Ruff were common. Passerines were represented by 3 species, including rare Shorelarks and White Wagtails, and relatively abundant Snow Buntings.

A.E. Dmitriev, N.N. Emelchenko

29. Mongocheyakha River, middle and lower reaches, Gydan Peninsula, Russia (72º03′ N; 79º01′ E)

The weather was extremely variable during the spring. Pronounced warmer weather with rain in April did not melt the snow. A return of cold weather in May with air temperatures dropping to –20ºC and snowstorms resulted in the death of approximately one third of the local herd of domestic Reindeers. A small-scale return migration of geese was observed during the period of cold weather in May. Overall, the spring was late and cold, and this, combined with the death of Reindeers, caused many of the reindeer herders to decide not to move their flocks to the northern parts of the Gydan Peninsula. This reduced pressure from trampling on clutches of birds. The end of June was warm (+20ºC) and dry, but temperatures decreased in July (+10ºC) with light showers occurring from time to time. Permafrost had retreated to the depth of 10-12 cm when we arrived on 23 June, but snow patches remained until early July in the tundra. Ice broke on 24 June on the Gyda River. The water level dropped by approximately 5 meters in mid summer in the middle reaches of the Mongocheyakha River and by 3 meters in the lower reaches. Tides in the estuary were only 90 cm high.

Lemmings were numerous, and we recorded several animals daily.

Arctic Foxes were common, and signs of their activities were found everywhere. Foxes bred in all surveyed dens.

Birds of prey were recorded across the whole study area, in pairs and as singles. We found 2 nests of Peregrine Falcons and 3 nests of Rough-legged Buzzards in the surveyed area. Snowy Owls were regularly observed (11 records in total), but did not maintain territories. Pomarine Skuas were common, and we found 2 nests (1 and 2 eggs) in the lower reach-

es of the Mongocheyakha River on 6 July. Two other species of skuas were less common, and their breeding was not confirmed, although it appeared probable for the Long-tailed Skua. Rare Herring Gulls were the only gulls recorded.

Black-throated Divers were somewhat more common than Red-throated Divers, and the abundance of these species was very similar to the previous year. Nesting of divers was not recorded.

Bean Geese were observed only on migration. The nesting density of common White-fronted Geese did not differ from that in 2006. Nests of these geese in the Pukhutseyakha River valley were found primarily on high bluffs which were also inhabited by Peregrine Falcons or Rough-legged Buzzards. In the middle reaches of the Mongocheyakha River geese preferred nesting in the open tussocks in the lowlands of the river valley and its tributaries. The second most important breeding habitat was riparian willow stands up to 10-15 cm high, where the density was 2.8 pairs/km² and locally reaching 6 pairs/km². In the lower reaches of the Mongocheyakha River nests of White-fronted Geese were often found in wet tundra and among coastal driftwood, although dry tussocky slopes of watersheds close to creeks were also used. Red-breasted Geese *Branta ruficollis* were more numerous than in the previous years, although 16 of 22 found nests were destroyed, presumably by Arctic Foxes. Bewick's Swans were seen more often than usual in pairs and groups of 3-8 birds across the whole surveyed valley. Ducks were rare, and of 5 species recorded only Long-tailed Ducks bred in small numbers, primarily in the southern part of the area.

Willow Grouse were common and nested in the central part of the peninsula. Their abundance decreased from 1.5 to 0.3 birds/km of river nearer to the sea coast, and in the lower river reaches grouse were recorded only on dry watershed. Rock Ptarmigans were slightly more abundant close to the sea, where single birds were seen several times on dry hillocks.

None of 15 wader species was numerous. Breeding status of 6 species was not determined: Pacific Golden Plover, Eurasian Golden Plover, Curlew Sandpiper *Calidris ferruginea*, Pectoral Sandpiper *Calidris melanotos*, Jack Snipe, and Pintail Snipe. Ringed Plover, Turnstone and Grey Phalarope were rare breeders. Grey Plover, Red-necked Phalarope, Little Stint, Temminck's Stint, Dunlin, and Ruff were common breeders.

Among 11 species of passerines 7 were rare, while the Shorelark and Red-throated Pipit were common, and the Lapland Bunting numerous.

A.E. Dmitriev, N.N. Emelchenko

30. Medusa Bay, Taimyr Peninsula, Russia (73°21′ N, 80°32′ E)

Field studies at the Willem Barents station were carried out from 8 June to 21 July. The seasonal phenology was between moderate and cold in 2007. The snow accumulation was high during the winter, and snow covered 80-90% of the tundra when we arrived at the study site. Snow melt was intensive during the next week, but then slowed down due to the drop in air temperatures. Snow cover reduced to 50% by 20 June and completely melted by 1 July. Ice broke on 15 June on the Medusa River. This made the river and numerous streams impassable until 27 June.

The summer was relatively cold, and the highest air temperature for the second half of June, +18.1°C, was reached on 30 June. Mean air temperature was approximately +4°C in the period from 10-30 June. The highest air temperature for the season, +23.6°C, was recorded on 3 July. The end of the season was cold, windy and rainy, with most rains occurring in early June and late July. Breaking of sea-ice in the Shirokaya-Severnaya Bay started in early July, and the whole adjacent area almost completely cleared by 6 July.

Lemming abundance was evaluated as 3.5 at a rank scale, which corresponds to intermediate between average and high numbers. Seven nests of Snowy Owls were found, mostly in the vicinity of relatively small rivers, Maksimovka, Lemberova and Efremova. The maximum clutch size of 7 eggs was recorded in 3 nests. Bodies of Siberian Lemmings were found at hummocks used by Snowy Owls and Rough-legged Buzzards. Collared Lemmings were not recorded. One Arctic Hare was observed near the Efremova River.

Numbers of Arctic Foxes were not high, and some of their dens remained uninhabited. We found only 3 inhabited dens and one open shelter with cubs in a stone hollow. Individual Arctic Foxes were observed everywhere across tundra, also at a long distances from the dens. Apparently, Arctic Foxes had enough food, and their pressure on large tundra birds was not heavy. They did not visit islands in the bay and did not destroy nests of Brant Geese there, but a portion of nests of the latter species on the mainland was depredated.

Breeding numbers of Rough-legged Buzzards in 2007 were very close to numbers in 2004; 26 nests with clutches were found in 2007 at a survey area between the rivers Lemberova and Efremova (175 km^2) which was censused in both years. Apart from these, we examined 7 empty nests and 10 territories inhabited by single birds. Clutch size ranged from 2-5 eggs, and averaged 4.0 eggs, which exceeded mean size in 2004 (2.9), but was almost identical to the mean size in 2005 (4.1). Hatching in nests of buzzards started on 11 July.

Breeding numbers of skuas were also high, as we found 6 nests and recorded 43 territories of Pomarine Skuas, as well as 7 nests and 9 territories of Long-tailed Skuas.

Migration of White-fronted Geese to moulting areas started on 6 July, which was 3 days later than in 2006, and continued until 21 July with the peak during 6-15 July. In Brant Geese the moult migration was less pronounced than spring migration, and was most notable on 2-7 July.

Numbers of Brent Geese breeding in the mainland tundra were low (6 nests found), in spite of the presence of breeding Snowy Owls. The first goslings were recorded on 19 July. Eight nests of Red-breasted Geese were found between the Lemberova and Efremova rivers, and apparently all these

nests were successful (hatching started on 19 July). One brood of Red-breasted Geese was observed on the Maximovka River and other 3 on the Efremova River.

Six nests of Peregrine Falcons were found on river banks, including 2 on the Lemberova River, 2 on the Maximovka River, 1 nest and 3 territories on the Efremova River, and 1 nest on a steep rocky sea coast 8.5 km to the south-west of the field station. However, it is possible that there were 3 nests on the Efremova River which we failed to discover because of the steep impassable terrain. Hatching started on 19 July in Peregrine Falcons, which is later than in all previous years.

Breeding success was average in waders, Red-breasted Geese and White-fronted Geese; above average in Rough-legged Buzzards, Snowy Owls, Peregrine Falcons and skuas. Nesting success of Brent Geese was low on the mainland and high on islands.

Tracks of two wolves (an adult one and a smaller animal) was recorded on the sea shore between the Isachenko Cape and Medusa Bay, and two wolves were also observed in the station vicinity. Reindeers were not numerous in the study area. The first small flocks of several animals were recorded near the Efremova River on 4 July, and only 2 Reindeers were observed in the station vicinity. For the first time since the start of our studies in 2000 a Tundra Shrew *Sorex tundrensis* was captured on the northern bank of the Efremova River, at 71°09′ N.

D.V. Osipov, O.V. Natalskaya, B. van den Boogard, M.L. van der Aa, S.P. Kharitonov

31. Agapa River basin, Taimyr Peninsula, Russia (71º20′ N, 86º00′ E)

The Agapa River was surveyed in the period from 7 June – 19 July in course of the trip on dingeys from the upper river reaches (70º11′ N, 86º15′ E) to the inflow into the Pyasina River (71º26′ N, 89º13′ E). The seasonal phenology was average in 2007.

The second half of June was colder in 2007 than in 2004, when a similar 420 km downstream had been undertaken, with mean air temperatures +9.9ºC and +11.1ºC, respectively. July 2007 was also colder than in 2004 (+10.0ºC and +12.1ºC). Maximum air temperature of +29.1ºC was recorded on 5 July 2007. The 2007 season was considerably more windy than in 2004. When we arrived at the upper river reaches, approximately 50% of the tundra surface was under snow. Ice-break occurred on 23 June in 2004 and on18 June in 2007. A short snowfall was recorded in the first half of July.

According to visual evaluation numbers of Siberian and Collared lemmings, as well as Red-backed and Grey-sided voles were lower in 2007 than in 2004, although rodent abundance was low in both seasons. Distribution of rodents was uneven in 2007, and they occurred locally at a relatively high density. Accordingly, the total number of Rough-legged Buzzards recorded on the same river section in 2007 was higher than in 2004 (76 and 62 birds, respectively). However the number of breeding Buzzards was significantly lower in 2007, but the clutch size was considerably higher than in 2004.

Peregrine Falcons were recorded at 20 sites in 2007, including 15 nests and 5 territories, which indicated an increase in abundance in this part of Taimyr by a factor of 1.5 during the period 2000-2007.

Numbers of White-tailed Sea Eagles increased from 7 observations in 2004 to 23 in 2007. Northern Harriers, mostly males, were recorded north to 70º25′ N. A female Pallid Harrier *Circus macrourus* was observed at 70º23′ N, 86º17′ E on 22 June, when the bird was examined at a range of less than 5 m. A single Merlin was recorded at 70º17′ N on 9 June. Among owls we observed Short-eared Owls, apparently non-breeders.

Arctic Foxes were rare, and breeding was not recorded.

We found 68 nests of Red-breasted Geese in 2007 along a river stretch where 54 nests had been found in 2004, an increase at 26%. However, species abundance was still below the levels in the mid 1980s. 13 breeding females of Red-breasted Geese were captured on nests in 2007 and banded with colour rings with number codes. Willow Grouse were common breeders.

S.P. Kharitonov, N.A. Egorova

32. Pyasina Delta, Taimyr, Russia (74°08′ N, 86°44′ E)

Even after Taimyr standards the weather during our stay was full of extremes. When we arrived on 26 June the snow on the tundra had disappeared. The ice in Lidia Bay broke relatively early on 29 June. In the first week of July the weather was dry and mild with average 24 hours air temperatures between +10 and +18°C. On four days maximum air temperatures rose above +20°C. On 7 July a cold spell arrived with a little rain and snow, and the ice moved into the river from the sea. This rather bad period lasted until 17 July.

At least 292 pairs of Brent geese, 11 Red-breasted Geese and 10 King Eiders were breeding on Bird Islands, including Bakennye Islands. On Bakennye Islands we found 47 nests of Red-throated Divers. On Verkhny Island there were 267 nests of Brents. On Farwaternye Islands we found three breeding pairs of Brent Geese, 61 breeding pairs of White-fronted Geese and two nests of the Arctic Skua. In the 5 km^2 census plot on Vostochny Cape there were six breeding pairs of White-fronted Geese and no Brent Geese.

Nest success was estimated according to the Mayfield method. The daily nest survival of all waders on Vostochny Cape, including the nests outside of the 5 km^2 plot, was 0.985 (SD=0.04). Assuming an average incubation period of 21 days this means a hatching probability of 72%. The Mayfield daily nest survival of White-fronted Geese on Vostochny Cape and Farwaternye was 0.995 (SD=0.04). Assuming an average breeding period of 28 days this means a hatching probability of 86%.

We counted 1753 nests of (Taimyr) Herring Gull and 20 nest of Glaucous Gull on Bird Islands, including Bakennye Islands.

As expected, there were moderate numbers of Siberian Lemmings, after the lemming population crash of 2006. The relative abundance of Siberian Lemmings was approximately 1.7 animals per 100 trap-nights. One Collared Lemming was captured, while in 2004-2006 they were not recorded. Not a single Rough-legged Buzzard was seen, and only one Snowy Owl recorded. They did not breed. However, one pair of the Pomarine Skua bred.

Within the 5 km^2 wader census plot on Vostochny Cape no Arctic Foxes were seen. The nearest fox burrow with young was along the Spokoinaya River at a distance of about 10 km from Vostochny Cape. Around the Wysokaya hill, near our wader study plot, most fox burrows were used, but there was no permanent occupancy by foxes. There were no foxes on Farwaternye Islands. Daily nest survival rates of wader (0.985) and geese nests (0.995) were high, probably because of the low number of Arctic Foxes.

During a cold spell between 7 and 17 July many chicks of various birds must have died. We found some dead young in nests.

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33. Severnaya Zemlya Archipelago, Russia (79°30′ N, 95°00′ E)

We made short-term visits on 10-17 August to the following localities on the archipelago: islands Golomyanny, Domashny, Smitdta, Zhuravleuva Bay and Sukhaya and Truba river valleys at the north of the Komsomolets Island, capes Massivny and Nekrasova on Oktyabrskaya Revolyutsiya Island. Aerial surveys and surveys from ships were conducted in adjacent areas of the Kara and Laptev seas.

According to the expedition report of the Arctic and Antarctic Research Institute, St. Petersburg, Russia (2008), the Arctic summer of 2007 was characterized by an atypical atmospheric circulation that led to steady transportation of air masses from the south and south-east over the Central and Eastern sectors of the Arctic. This resulted in a pronounced positive anomaly in air temperatures, an increase of sea surface temperatures to +5-7°C in the north of the Laptev Sea and farther east, and intensive breaking and rapid movement of sea-ice. The extent of sea ice in the Arctic basin was the lowest recorded for the last 100 years. The atmospheric processes resulted in unusually high frequency of fogs. The heaviest ice was recorded in the northern part of the Severnaya Zemlya Archipelago, in the vicinity of cape Arctichesky, while the situation in the Kara Sea was favourable, since heavy ice mostly concentrated in the north-eastern part of the sea. The sea-ice border-line passed near Schmidt Island and in the area of the Sedov Archipelago, offshore of the western Severnaya Zemlya. Ice broke in the channels of the archipelago, and disappeared in its western part. The Eastern Severozemelskaya polynia stretched along the eastern shore of the archipelago and was variable in size.

According to the data of the Golomyanny weather station, the Sedov Archipelago, July and the period from 1-20 August 2007 were relatively warm, without notable frost on Severnaya Zemlya. Air temperatures ranged from –1.0°C to +5.0°C in July, and the mean monthly air temperature (+1.1°C) was 0.4°C above the long term average (+0.7°C), and higher than in 2006. Mean daily temperature dropped to –0.4°C on 5 July, the coldest day of the month.

Air temperatures ranged from –1.9°C to +4.4°C in the first half of August, and mean daily temperature was +0.4°C for this period. An increased atmospheric pressure was associated with a relatively early decrease of temperatures at the end of summer in the region.

Collared Lemmings were not recorded during our landings on the coasts, although they occur at a low density on the Severnaya Zemlya Archipelago.

Mammalian predators, owls and birds of prey were not recorded. Pomarine and Arctic skuas were observed in small numbers, as singles and in flocks up to 10 birds, along the coasts. Glaucous Gulls bred on Sedov Archipelago, Komsomolets, Schmidta, and Oktyabrskoy Revolyutsii islands. Numbers of Ivory Gulls were high on Domashny Island for the second year in a row, and they had high reproductive success. Successful breeding was observed also at northern Komsomolets Island, but breeding failed completely on Schmidt Island.

Brent Geese bred on the Sedov Archipelago and Schmidt Island. Few single Purple Sandpipers were observed on the south-western and eastern coasts of Oktyabrskoy Revolyutsii Island. The scarcity of wader observations can be due to the late surveys.

Breeding conditions for seabirds seemed to be favourable in most places of Severnaya Zemlya in 2007.

A migration of waders in a general eastward direction was observed on 26–27 August when crossing the south-eastern part of the Laptev Sea on ship (78.7° N/134.6° E – 74.4° N/131.6° E). We recorded Curlew Sandpipers, Ruffs, small and medium-sized *Calidris* sandpipers, and *Pluvialis* plovers.

Surveys were carried out in the expedition of the Arctic and Antarctic Research Institute “Arctika-2007” in a framework of the Russian program of the International Polar Year.

M.V. Gavrilo

34. Verkhnyaya Taimyra River, mouth, central Taimyr Peninsula, Russia (74°08′ N, 99°34′ E)

Snow accumulation was apparently very high during the winter, which resulted in a delayed snowmelt. Snow had melted on 50% of the flat surface by 21 June. This was the latest date on record since the first visit to the study area in 2004. Snow completely disappeared on 27 June. The water table was highest during the spring flood. Mean daily air temperatures

in the second half of June were 0.75-0.79°C higher in 2007 than in 2004 and 2006, but 5.34°C lower than in the extremely early and hot season 2005. Mean monthly air temperature was +10.1°C in July 2007 which was 0.48-1.85°C lower than in other years. There was a period of adverse weather from 11-16 July, with air temperatures dropping to freezing on some days. Snow blanketed the ground for several hours on 11 July, when there was heavy precipitation and there was a strong wind on 3 days in a row. The total amount and frequency of precipitation increased from 2004 through 2007. Precipitation was record high in the second half of June and in July in 2007.

In total 799 lemmings were recorded by 4 observers during the period of field studies. This was the highest abundance since the start of the wader monitoring project in 1994 followed the record low abundance in 2006. Lemming abundance was high in June but declined dramatically in July. Siberian Lemmings prevailed among identified animals (97.6%).

Arctic Foxes bred at a density of 4 dens per 85 km^2, but adult animals were rarely seen in the study area. An Ermine or Least Weasel *Mustela nivalis* was recorded on 15 July, and Ermine on 18 July.

Snowy Owls and Rough-legged Buzzards were rare. Successful breeders in both species occurred at a density 0.07 nests/km^2. The Pomarine, Arctic and Long-tailed skuas bred at densities of 1.86, 0.04, and 0.36 nests/km^2 respectively, and chicks hatched in all species. A single pair of Peregrine Falcons nested in the study area in 2005–2007.

Rock Ptarmigans bred at a typical low desnity for the area. A nest of Willow Grouse was found on a small island with willow stands in a river channel. This is the northernmost breeding record for this species.

Nest success of birds was very high in 2007. In particular, waders demonstrated apparent nest success of 85.2±2.6% (n=189), which was record high for the period of wader studies on Taimyr since 1990. This can be compared with the second highest value of 81.7% observed in 1999 in south-eastern Taimyr. Hatching success of passerines was 95.1±2.4% (n=82), and of non-passerines, excluding waders was 82.4±2.8% (n=182). Snowfall on 11 July resulted in the death of freshly hatched wader chicks, and in chicks of various age in some nests of passerines. However, the overall impact of this weather was not large, due to the small fraction of nests affected. Predation pressure by Pomarine Skuas was low, at least up to the time of their hatching.

At least 9000 Reindeers passed through the study area on 24 July. A small fraction of nests was still active at this time, but very few nests were trampled. The impact of trampling on chicks was difficult to evaluate.

Generally, nest survival was very high, but survival of chicks could have been heavily affected by predation of common Pomarine Skuas when they were feeding chicks.

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35. Kalamissamo River, lower reaches, Taimyr, Russia (73°50′ N, 100°56′ E)

Snow covered 80% of the tundra surface at the start of studies on 14 June, and most species of birds had already arrived by this date. Ice melted in a 20-50 m wide belt along the riverbank, and locally there were pools on the ice surface. By 17 June snow cover was reduced to 50% on the tundra in the valley and 60% in the hills. Water levels increased and water covered the ice along the whole riverbed. Ice started to emerge from the bottom on 19 June. Snow completely melted on flat surfaces on 20 June, remaining only in depressions between hills. Daytime air temperatures were approximately +4°C on 14-20 June, and +7°C during the last 10 days of June. Drizzle occurred on 4 days in June. The temperatures were approximately +9°C in the first half of July. Precipitation occurred on 8 days. Particularly adverse weather occurred on 3 of those days, when rain combined with strong wind and wet snow. Air temperatures dropped to freezing in the morning and during the day on 12 July.

Lemmings were common before 10 June, but became very rare afterwards.

Arctic Foxes were not recorded in June and July, but 3 animals were observed in early August. An inhabited den was found late in the season. Arctic Hares were not seen. Reindeer females were not numerous. They were recorded in small flocks of 3-7 animals until the end of June. Adult males appeared again in July in small numbers, and mass fall migration was observed on 26 July, when at least 2000 animals passed by in the study area. Pomarine Skuas were numerous in the beginning of the study period and were common breeders. An area 18 km^2 was inhabited by 6-7 pairs, and nests were found in 4 of these pairs. Long-tailed Skuas occurred in much lower numbers, and Snowy Owls were not recorded. Breeding Herring Gulls were rare, with 4 nests found and at least 3 more pairs nesting, but wandering birds were relatively common. The Rough-legged Buzzard was not recorded, and a Peregrine Falcon was observed once.

Most birds started nesting from 15-25 June. White-fronted Geese were not numerous breeders. Bean Geese were very rare migrants and breeders. Broods of Red-breasted Geese were only observed on a river tributary. Among waders, Grey Phalaropes and Little Stints were particularly numerous. Dunlins, Pectoral Sandpipers and Curlew Sandpipers were considerably less abundant. Grey Plovers, Pacific Golden Plovers, Temminck's Stints and Bar-tailed Godwits were rare.

We recorded nest depredation in King Eider (n=2), White-fronted Geese (n=2), Pomarine Skua (n=1), Lapland Bunting (n=2) and White Wagtail (n=1). Probably the Ermine was the predator in the latter species. One nest of the Temminck's Stint was deserted. We observed a Pomarine Skua attacking a White-fronted Geese family and a Herring Gull successfully catching a chick of King Eider. A body of a White-fronted Goose chick was found in the period of Reindeer migration (a result of trampling?).

A.A.Gavrilov

36. Kharpicha and Dyupkun lakes, the upper reaches of the Kotuy River, Putorana Platheau, Russia (68°48′ N, 96°40′ E)

Weather conditions were highly variable in 2007, and frequent changes in the weather led in certain periods to pronounced deviations from the long-term average values. An unusually early warming in late April with extremely high, for this time of year, air temperatures (up to +3-5°C) lasted for approximately 10 days, which resulted in the sharp decrease of snow depth and appearance of snow-free patches. By the start of studies on 22 May snow cover reduced to approximately 50% in the lower part of the forest belt (below 400 m a.s.l.). Snow completely melted in the forest belt by 3 June and in the stony tallus belt (below 1100 m a.s.l.) by 16 June. Dry riverbeds became filled with water from 26 May to 15 June. The only period of sunny weather occurred in late May, and the weather in June and July was cold (+5-10°C), rainy, windy and variable. A few warm days (+15-20°C) occurred in late July. Stormy conditions prevailed on lakes, and there were two summer floods on rivers.

Needles on larch-trees and mosquitoes appeared earlier than average, on 8 and 19 June, respectively. The mass migration of reindeers ended on the usual dates, in late May – early June.

The numbers of rodents and insectivores were low, following the peak in 2006. A few single Northern Red-backed Voles and rare signs of activities of Wood Lemmings were recorded during the whole period of observations.

Wolves, Brown Bears and Wolverines were common everywhere in the upper reaches of the Kotuy River. In contrast, birds of prey were rare, as was breeding in the White-tailed Sea Eagle, Northern Goshawk and Rough-legged Buzzard.

A very weak spring migration was recorded, with rarely observed geese, ducks and waders, the latter flying singly or in flocks of 3-5 birds. Noteworthy are the first record of Long-billed Dowitcher *Limnodromus scolopaceus* for the Putorana Platheau, and observations of Little Curlews *Numenius minutus* on spring migration and in the nesting period.

A.A. Romanov, S.V. Golubev

37. Odikhincha mountain area, Anabar Plateau, Russia (70° 55′ N, 103°00′ E)

The vicinity of Odikhincha mountain, the highest peak in the northern part of the Anabar Plateau (645 m a.s.l.), was surveyed by the expedition of the Taimyrsky Nature Reserve on 10-14 August in the course of the rafting down the Kotui River. The river runs in the canyon near the mountain, although there is a small area of wetland on the terrace at a small distance downstream (Kysyl-Khaya locality). The area is located within northern taiga belt, but forest with closed canopy was not found, even in valleys. Fragments of sparse larch forests with dwarf shrub and moss as well as herb and dwarf shrub ground cover and with canopy projection of 0.1-0.2 were found up to the altitude 350 m a.s.l.; higher slopes were occupied by wet dwarf shrub-moss tundra, and above 550 m a.s.l this was replaced by a top mountain plateau with lichen-herb desert.

Weather conditions were described in the Kotuikan River report (No. 38).

Rodent abundance was low in 2007, and we failed to capture any mammals with a catching effort of 20 snaptrap-nights. However, pellets and droppings of Rough-legged Buzzard and Snowy Owl contained remains of lemmings. Northern Pikas *Ochotona hyperborea* were relatively numerous, but were limited to altitudes under 250-300 m a.s.l.

Avian predators were probably common in spring. We found 4 nests of Rough-legged Buzzards, which had been occupied this year, but the results of reproduction were not determined. Several records of juvenile Merlins were made. A single White-tailed Eagle was observed in the month of the Kyndyn River for 3 days.

We observed a Wolf and an Ermine. Fresh tracks of Arctic Foxes were rarely seen, but numerous old, probably, springtime tracks were recorded in the mountain tundra and on river bars.

Odikhincha mountain was interesting, because several tundra species found there in the upper tundra belt, were not recorded on Anabar Plateau either to the north, or to the south of the mountain. These birds included common Long-tailed Skuas with unclear breeding status, Rock Ptarmigans in flocks of 7-12 birds, including juveniles, Pacific Golden Plovers occurring at a density of 1-3 birds/km, including nearly fledged and fledged juveniles, and alarming Eurasian Golden Plovers. Shorelarks, Lapland and Snow buntings were numerous, and probably bred. Noteworthy is an observation of a Lesser White-fronted Geese brood of 3 chicks on the Kotui River at the same place as a pair of these geese was recorded twice in 2005.

I.N. Pospelov

38. Kotuikan River, Anabar Plateau, Russia (70°32′ N, 105°58′ E)

Observations were carried out from 13 June to 25 July in the mouth of the Merku River, and from 26 July to 4 August in the course of rafting down the Kotuikan River to its confluence with the Iliya River. The total surveyed area was ca. 700 km^2. The river was mostly running in canyons, incising the plateau of varying ruggedness with altitudes of 120-627 m a.s.l. Two vegetation belts, forest (up to 450-480 m a.s.l.) and mountain tundra, were at some places separated by a narrow belt of sparse forest. Forest was mainly represented by larch stands with dwarf shrubs and lichens with canopy projection 0.2-0.5. Herb-moss-dryad tundra was dominent on limestone plateaus, and mountain tops were occupied by desert-like landscapes with lichens and sparse herbs. Steep, almost bare slopes with stony tallus stretched from mountain tops to foothills. Shrub communities were found as a narrow riparian stripe in floodplain. Mires were represented on the terraces of the Kotuikan and Vyurbyur rivers, on small areas with the total size <10 km^2. Lakes were very rare, and were situated only on fragments of the river terrace.

The summer was wet and slightly cooler than usual. Mean air temperature for the summer period was +12.9°C. The period from 30 June – 7 July was the hottest, with mean daily air temperatures +21.8°C on 3 July, +22.2ºC on 4 July, and the record high value, +29.4°C, on 4 July. The lowest temperature (+0.1°C) was recorded on 12 July, when snow-fall occurred, and a 3-5 cm thick snow layer lasted for a period of over 24 hours at an altitude of above 150 m a.s.l. The total amount of precipitation was 99.8 mm, of which 9.74 mm were recorded on 24 July. Thunderstorms occurred on 4 days. High precipitation resulted in increased water level in the river in the period from 28 July to 5-6 August, and the freezing-over of the river in autumn occurred at a water level 1-2 m higher than normal. Windy days were rare, and the highest wind speed, 15 m/s, was recorded on 13 July.

Siberian and Collared lemmings are not probably typical for the area. In total 49 rodents and insectivores were captured with an effort of 528 trap-nights. There were 30 Middendorff's Voles *Microtus middendorffi*, 11 Northern Red-backed Voles, 2 Wood Lemmings, 4 Laxmann's Shrews *Sorex caecutiens* and 2 Tundra Shrews. Northern Pikas were common on rocks and stony tallus at all altitudes.

Arctic Foxes do not stay in this area permanently, and we did not observe them, but found some old tracks and fragments of carcasses. Fresh tracks of Wolves were seen almost daily, and one animal was seen outside of the study area, in the mouth of the Kotuikan River. The presence of Wolverine and Ermine was recorded.

Avian predators were rare. We did not record skuas, and very few Herring Gulls were observed. Judging by food remains in nests the diet of Rough-legged Buzzards included primarily Northern Pikas, small passerine birds, and juvenile Hares. The density of nesting buzzards was 6 pairs per 200 km^2, or 1 pair/10 km of the Kotuikan River canyon. Each of two Buzzard nests found in inaccessible places contained 3 chicks. Nesting of Rough-legged Buzzards was probably successful. A nest of Gyrfalcons with 4 fledglings contained numerous remains of Willow Grouse, which contrasted with the absence of our observations of the latter species. Merlins bred and a pair of Ospreys nested in the Chuostakh River mouth, but we did not examine the nests of these species.

In total 45 bird species were recorded in the study area, including 24 confirmed and 8 presumed breeders. Composition of bird fauna is a more northern boreal than an Arctic one, with a number of breeding species typical for taiga (the Siberian Jay *Perisoreus infaustus*, Capercaillie, Common Sandpiper, Osprey). At the same time, a nesting pair of Pacific Golden Plovers was recorded on the mountain plateau. Noteworthy is presumed breeding of the Bohemian Waxwing *Bombycilla garrulus*, White-winged Crossbill *Loxia leucoptera*, Spotted Redshank, Brambling, and observations of several House Martin *Delicon urbica* colonies in a natural environment. Almost all species occurred at low densities, with the exception of the Willow Warbler, Arctic Warbler *Phylloscopus borealis* and Common Redpoll in the forest, and Wheatear in mountain tundra. Several common northern species were not recorded, including the Lapland Bunting, Shorelark and skuas. Waterfowl were common only on migration. Among waders Common Sandpipers and Grey-rumped Tattlers *Heteroscelus brevipes* were recorded most often. The Arctic Tern was the most abundant species in river floodplain, and wandering Little Gulls were common downstream of the Emyakhsin-Yurykh River.

Hatching was recorded on 4 July in Common Sandpiper and Arctic Tern, on 8 July in Dusky Thrush *Turdus eunomus*, on 20 July in Black-throated Diver. Juveniles fledged on 4 July in White Wagtail, on 8 July in Common Redpoll and Little Bunting, and on 9-10 July in Willow Warbler, on ca. 14 July in Gyrfalcon, on 3 August in Rough-legged Buzzard.

Information on breeding success is scarce due to the small number of monitored nests (less than 20) and end of studies before fledging in most species. Loss of eggs and chicks was not recorded in monitored nests of the Black-throated Diver, Rough-legged Buzzard, Gyrfalcon, Common Sandpiper, Ruff, Arctic Tern, House Martin, Dusky Thrush, and Little Bunting. However, some broods, particularly in the mountains, could have been lost during the adverse weather period on 9-15 July. Chicks or fledglings were recorded in several species of birds: the Red-breasted Merganser, Capercaillie, Grey-rumped Tattler, White Wagtail, Siberian Jay and Willow Warbler.

I.N. Pospelov

39-40. Lena Delta, southern and eastern parts, Yakutia, Russia (72°48′ N, 129°19′ E) and mainland tundra to the south of the delta (72°00′ N, 126°00′ E)

Spring was unusually early and warm in the Lena River delta. Mean monthly air temperature was –2.4°C in May, which was 4.4°C higher than the long-term average. An unusual warming occurred from 11-16 May, when mean daily air temperatures were above freezing and reached +5.3°C on 14 May. This resulted in the mean air temperature of +0.4°C for the second 10-day period of May. A so high temperature has never been observed since the start of observations in the Lena Delta in 1976. Positive mean air temperatures, reaching +3.4°C, were then recorded on 24-25 and 29-31 May. This resulted in complete snow melt on the tundra by the end of May. Early spring onset was tampered by return of cold weather in early June. Mean air temperature for the first 10-day period of June was 1.1°C below the long-term average, and snow completely blanketed the tundra on 8-9 June. Air temperatures were not consistently above freezing until 10 June, which was 4 days later than normal. The second half of June was considerably (4.9°C) warmer than usual, and mean daily air temperatures reached +17.6°C on 22 June. Accordingly, in spite of the cold weather in the beginning of June mean monthly air temperature was 2.4°C above the long-term average.

Ice broke 4-7 days earlier than average in the different parts of the delta, and the river cleared unusually quickly. The water table was average. Ice-break occurred from 5-9 June on the Bykovskaya channel at the extreme south-east of the delta, while the mouths of channels at the north-east of the delta cleared only on 14 June.

Very low lemming numbers were observed in the Lena Delta for the second year in a row. Lemmings were not recorded at all during field trips on islands when searching for bird nests. Winter nests of lemmings were very rarely recorded, and their total number observed, primarily at the sites of winter snow packs, did not exceed 10 for the whole period of studies. A single lemming was captured in the period 26 June – 16 July in snap-traps (the total catching effort of 420 trap-nights). The abundance of Narrow-skulled Voles *Microtus gregalis* was high on the mainland plain and mountain tundra adjacent to the southern part of the delta, where 17 animals were captured on 28-31 July with the effort of 162 trap-nights.

Arctic Foxes were very rare and did not breed. Cases of death of Arctic Foxes from starvation were recorded during the winter. However, fox predation on clutches considerably affected the breeding success of birds on large islands. Ermines were rarely observed in the mainland tundra to the south of the delta.

Rodent-dependent birds of prey occurred in very low numbers. Pomarine Skuas were numerous only during spring migration, while a few non-breeding birds were recorded in the tundra after 10 June. Arctic Skuas occurred in lower numbers than previously and did not breed on control plots, but their sporadic breeding elsewhere in the delta was possible. The Long-tailed Skua bred only in the mainland tundra to the south and south-east of the delta. Observations of the Snowy Owl during the summer were restricted to a single wandering bird seen on 16 June in the mainland tundra to the south-east of the delta. Rough-legged Buzzards bred at a low density, reflecting the low lemming numbers. They only nested on the riverside rocky bluffs of the Prymorky Edge and Tuora-Sis Ridge in the southern part of the delta, as well as on high banks of islands in the ancient seaside plain.

The weather was favourable for birds, which arrived earlier than average. Most species of waterbirds had already arrived to the delta by late May. A vagrant Sandhill Crane *Grus canadensis* was recorded in the north-eastern part of the delta on 21 June. Based on transect counts abundances of waterbirds were high in the beginning of the breeding season. Brent Geese, King Eiders, Sabine *Xema sabini* and Ross's *Rhodostethia rosea* gulls occurred in higher numbers than in the previous years, which was in part favoured by the low predation pressure by Pomarine Skuas, which had departed early from the delta. However, successful nesting was observed mostly in birds forming colonies on small islands, inaccessible to Arctic Foxes. Thus, nest success of Brent Geese was 84.1%. Only very few nests were not successful in other birds nesting in colonies of Brent Geese. In contrast, all nests of Steller's Eiders in the typical breeding habitat on large islands (polygonal tundra bogs) failed due to predation. Also most nests of King Eiders, Willow Grouse (although rare) and White-fronted Geese on islands with similar habitats were destroyed. Approximately half of wader clutches was destroyed, but this was compensated by successful reproduction on small islands, and overall nest success was 70.6%. There were indications of replacement clutches in some Steller's and King eiders, Little and Temminck's stints, and Grey Phalaropes.

V.I. Pozdnyakov, Yu.N. Sofronov, Y. Verschueren

41-42. Ilin-Shar channel and Yana River delta, Yakutia, Russia (71º18′ N, 134º52′ E) and (71º05′ N, 136º03′ E)

The weather was sunny and predominantly calm in the period on 22-26 August, with day-time air temperatures approximately +18-20ºC. Wind speed reached ca. 5-7 m/s on a single day, 25 August. Dull weather with drizzle established from 26 August to 4 September, and wind speed 7-10 m/s from 28 August.

On the sea coast in the mouth of the Ilin-Shar channel apart from Tundra Shrews and Middendorff's Voles that were commonly captured, only a single Siberian Lemming was captured. More species were discovered to the south, near the fork of the Ilin-Shar channel and the Yana river. Tundra Shrews and Northern Red-backed Voles prevailed in numbers there, Tundra and Middendorff's voles were less abundant, while Laxmann's Shrews and Siberian Lemmings were very rare.

A single Arctic Fox was recorded on the coast, and a Red Fox was seen near the northern tree-line of sparse larch forest.

Amongst ducks Pintails, in flocks, were the most abundant birds, followed by White-winged Scoters and the least abundant ducks were Long-tailed Ducks. Arctic Redpolls *Acanthis hornemanni*, Rough-legged Buzzards and divers were common. Willow Grouse were rare, and only a single flock of 10-12 birds was recorded. A Snowy Owl was recorded once.

E.V. Kirillin

43. Bolshoi Lyakhovski Island, New Siberian Islands, Russia (73°20′ N, 142°20′ E)

According to reports of mammoth tusk collectors the Foxtail *Alopecurus* sp. grass cover has been constantly increasing in watershed habitats on New Siberian Island archipelago during the recent 5-7 years. They have also reported a migration of lemmings in spring 2007 over the ice of the Dmitry Laptev strait, from the mainland area near Oyugossky Yar to the New Siberian Islands. Dense aggregations of migrating lemmings were followed by flocks of numerous gulls and skuas in May – early June. Arctic Foxes were common and bred. Nests of Snowy Owls were frequently recorded in the period of our studies from 6 July to 3 September. Distance between nests usually ranged 0.5-2 km in landscapes with rugged relief. Fledging success of their chicks was high. The last recently fledged juveniles were recorded on 24 August in the mouth of the Chai-Povarnya River to the east of Svyatoy Nos Cape on the mainland. Several flocks of Snow Geese *Anser caerulescens*, of 20-80 birds were observed moving slowly eastward along the sea coast in the same area. There were also numerous feathers of moulting White-fronted and, probably, Bean geese.

A degree of the destruction of frozen banks in the course of permafrost melting was about average in 2007, while the de-

velopment of solifluction on tundra slopes was high. The latter normally occurs once in 15-20 years, and represents an indication of a "warm" year.

D.V. Dobrynin

44. Dzhukagirskoe Lake, "Kytalyk" Resource Reserve, lower Indigirka River basin, Yakutia, Russia (70º30′ N, 145º30′ E)

Spring was unusually early, and mean daily air temperatures rose above freezing already on 12 May. Mosquitoes appeared in late May, while normally they appear after 20 June. The weather turned cold on 2 June, when rain gradually changed to snow, westerly wind reached 6-7 m/s, with gusts up to 11-12 m/s, and air temperature dropped to –3.3ºC. There was warm weather from 6 June until the end of the period of studies on 21 June. We did not record the death of small birds during the period of adverse weather in early June.

Northern Red-backed Voles were common near and inside fishermen's cabins, but lemmings were not recorded, although signs of their winter activities (tracks and latrines) were encountered everywhere.

Arctic Foxes were common, but their reproduction was not confirmed.

Breeding Rough-legged Buzzards and Peregrine Falcons occurred in average numbers. Skuas and Glaucous Gulls were common, and Herring Gulls and Ross's Gulls were numerous. A few records of single non-breeding Short-eared Owls were made.

Among 7 nests of Siberian Cranes and 1 nest of Sandhill Cranes found, 5 clutches of Siberian Cranes *Grus leucogeranus* were laid in nests used in previous years. The first nest of Grey Phalaropes with 4 eggs was found on 12 June, and the following wader nests (all with 4 eggs) were found on 18 June on a 12-km long excursion: 2 of Red-necked Phalaropes, 4 of Grey Phalaropes, 1 of Ruff and 1 of Pectoral Sandpiper. Numbers of waders, in particular phalaropes, were apparently higher than in 2006. Willow Grouse nested in average numbers.

S.M. Sleptsov

45. Alaseya River, Kolyma Lowland, Yakutia, Russia (69°19′ N, 154°59′ E)

The weather was windy and rainy, with a few calm and sunny days, in the period of 1-18 September on the border-line between forest-tundra and tundra. Night frosts were recorded from time to time after 10 September, but snow cover did not establish. Water levels in the Alaseya River were over 3 m higher than average during the warm period, and most of the floodplain area was flooded.

Lemmings and voles were rare. Arctic Foxes were not recorded. Numbers of most species of birds were moderate, including swans, migrating geese, ducks, Rough-legged Buzzards, Willow Grouse, cranes, gulls, owls and Ravens.

D.G. Fedorov-Davydov

46. Akhmelo Lake vicinity, Kolyma Lowland, Yakutia, Russia (68°50′ N, 161°02′ E)

Short-term observations were carried out on 25-27 August, at the end of hot and relatively dry summer, in the area of conjunction of taiga, tundra and river floodplain. Heavy rains were recorded in the first half of August. The weather remained warm in late August – early September, with mean daily air temperatures above +10°C.

Lemmings, voles, Arctic Foxes and Rough-legged Buzzards were not recorded. Numbers of divers, ducks, Willow Grouse, gulls and Ravens were moderate; swans and passerines were rare, while waders and owls were not observed.

D.G. Fedorov-Davydov

47. Sredny Kayemvaam Stream, upper reaches of the Anadyr River, Chukotka, Russia (66°46′ N, 169°34′ E)

A total area of approximately 100 km^2 was surveyed in the "Kupol" gold-silver mining area during 16-30 August on foot, by car and by an all-terrain vehicle. The weather was unstable, and sunny days alternated with dull days with drizzle.

Based on captures with snap-traps the rodent abundance was high in 2007. Capture rates for Red-backed and North-siberian *Microtus hyperboreus* voles were 1 and 2% respectively in pebble herb-dwarf-shrub tundra, and 6 and 25% respectively in wet sedge-dwarf-shrub tundra. Capture rate for the Red-backed Vole was 17% in tussocky moss-sedge-cottongrass tundra. Large-eared Vole *Alticola lemminus* was relatively common. One Laxmann's Shrew was captured. The density of burrows of Arctic Ground Squirrels *Citellus parryi* was 10-15 per 1 ha, and most burrows were inhabited.

Mammalian predators were rare in the area. Observations and interview data indicated that there were few Red Foxes (including a brood of 3 cubs), Wolves (3 animals), Brown Bears (an adult animal and a female with 2 cubs), one Wolverine and one Ermine. There were 2 single Elks *Alces alces*, several Elk females with calves and small, up to 10-12 animals, herds of Reindeers.

Rough-legged Buzzards were common, and we often observed both adult birds and flying juveniles in late August. Workers at the mine found a nest of the Peregrine Falcon with 4 chicks on the same stony slope of the hill that had been previously used for breeding by falcons. A Gyrfalcon was recorded once. Long-tailed Skuas were not rare, presumably, due to the high abundance of small rodents. It is interesting that a pair of Snowy Owls probably bred in the area, as we found 2 flying juveniles and an empty owl nest. A Short-eared Owl was seen once, but the interview data indicated breeding of this species at the source of the Ozyornaya River.

Several broods of flightless duck chicks were found, including Pintail, White-winged Scoter *Melanitta deglandi*, Harlequin Duck *Histrionicus histrionicus*, Long-tailed Duck, and Red-breasted Merganser. We recorded 1 brood of Willow Grouse of 10-12 chicks and 5 broods of Rock Ptarmigans of 7-10 chicks, all accompanied by females. One pair of the Sandhill Crane probably nested, and another one was later found with

a flying young. Juvenile passerine birds were common and gathered in flocks. All indirect evidence indicated the successful reproduction of birds in 2007.

I.V. Dorogoi

48. Southern coast of the Chaun Bay and Kyttyk Peninsula, north-western Chukotka, Russia (69°00′–69°30′ N, 167°30′–168°30′ E)

The season was generally very warm and dry. Adverse weather events were not recorded. Data of the "Rauchua" and "Ayon" weather stations are available at http://www.infospace.ru.

In the study period from 21 July to 20 August we encountered sites with high and low abundance of rodents. Numbers of voles and lemmings were low on the northwestward route along the southern coast of the Chaun Bay to the Teyukuul River (western) at the west. Voles were first recorded in the Teyukuul River mouth, and then they were found everywhere farther on the transect to the northern extremity of the Kyttyk Peninsula. We found breeding Rough-legged Buzzards and common breeding Arctic Foxes there. Short-eared Owls bred on Kyttyk to the west of the Teyukuul River (western). Peregrine Falcons occurred at a high density. The Snowy Owl and Pomarine Skua were not recorded. This could be due to the insufficient abundance of voles for these species, or a late increase in rodent numbers,after the end of the spring migration of owls and skuas in the area. Sandhill Cranes and Willow Grouse bred in average numbers.

Warm spring and hot summer led to earlier breeding and moulting of geese and swans. Juvenile geese fledged already in mid August, but it was not possible to evaluate geese breeding success. Reproduction was successful in waders, based on commonness of juvenile Pectoral Sandpipers, Red-necked Phalaropes and Long-billed Dowitchers on the mudflats of the Kyttyk Peninsula.

D.V. Solovieva, S.L. Vartanyan

49. Chaun-Palyavaam River delta, north-western Chukotka, Russia (68°50′ N, 170°30′ E)

The local people reported that the spring was very early. The weather was extremely warm, dry and settled in the study period from 11 June – 21 July. Snow melted completely on the tundra surface and air temperatures were consistently above freezing in the third 10-day period of May (data of the "Rytkuchi" weather station are available at http://www.infospace.ru). Ice broke on 3 June on large rivers. The water table was average and a high flood was not recorded. Strong warm winds from inland occurred rarely, which was not typical for the study area. Adverse weather events, such as snowfalls or returns of cold weather, were not observed. Early spring and warm weather favoured the early appearance of mosquitoes. Reproduction by birds also started early; for example, Spectacled Eiders *Somateria fischeri* started nesting in the last 5 days of May, and not in June as usual.

Rodent numbers were very low, and neither voles, nor lemmings were recorded, even near human settlements. A few records of single Arctic Foxes were made, and they did not breed. Finding of carcasses in winter coats indicated that Arctic Foxes probably died *en masse* in the winter. A brood of 3 cubs of Red Foxes was recorded.

Avian rodent-specialists (birds of prey, owls and Pomarine Skuas) did not breed, and most species were not recorded.

Pacific Divers *Gavia pacifica* bred at an average density, Black-throated and Red-throated divers were rare breeders, and nesting of White-billed Diver *Gavia adamsii* was probable but unconfirmed. Bewick's Swans started nesting early. They occurred at the usual high density of the Chaun-Palyavaam River delta. Among ducks, Pintail, Greater Scaup, Long-tailed Duck, Spectacled and King eiders nested. Spectacled Eiders nested at a density of 2.60 nests/km^2, and had low breeding success (15.4%). Other species of ducks bred successfully, although we do not have quantitative data on their breeding performance. Among small gulls, Sabine's Gulls nested in lower numbers, as well as Arctic Terns. Ross's Gulls, which had bred in 2003, did not nest in 2007. Sandhill Cranes were common breeders as usual. Willow Grouse were rare, but some of them succeeded in raising chicks.

Among waders, Grey Plover, Turnstone, Red-necked and Grey phalaropes, Pectoral and Curlew sandpipers, Dunlin and Long-billed Dowitcher nested.

D.V. Solovieva, S.L. Vartanyan, O.A. Lyatieva, L.L. Bove

50. Pevek City area, north-western Chukotka, Russia (69°45′ N, 170°20′ E)

The season 2007 was characterized by early snow melting and phenology. When we arrived at Pevek on 30 May almost no snow was present on the flat surfaces of the lowlands, while the slopes of the surrounding low mountains were 40-50% snow covered. There was cool, dull weather with rains, snowfall on 4 June and strong southerly winds during the first week of June. This was followed by a clear, warm period that lasted until late June, and, according to reports of local people, this continued almost the whole summer. From 1 June strong winds started to break up and move ice northward in the Chaun Bay and the Bay was completely cleared of ice on 25 June. Thus, the weather was generally favourable for birds in June and caused the extremely early development of vegetation. The absence of precipitation resulted in the drying out of most bogs and many streams and the lowering of the water level in lakes and rivers by July.

Bloom of dwarf willows (e.g., *Salix pulchra, S. chamissonis*) started already in late May in the city, and flying bumblebees were also observed. Greening of grasses and dwarf birch started locally on 2 June, and some meadows acquired a green appearance by 9 June. Spring flowers (Pasqueflower *Pulsatilla multifida*, Alpine Bearberry *Arctostaphylos alpina*, blueberry, Anenone *Anemone sibirica*, Forget-me-not *Myosotis asiatica*) were in full blossom on 8-9 June at warm places, as well as the first flowers of dryad *Dryas spp*., Diapensia *Diapensia obovata*, Arctic bell-heather *Cassiope tetragona*, Woolly Lousewort *Pedicularis lanata* were recorded. "Sum-

mer" flowers were recorded flowering from 14-15 June, including Foxtail Grass, Cloudberry, Labrador Tea *Ledum palustre*, Locoweeds *Oxytropis* sp. and *Astragalus* sp., Arctic Camomile *Matricaria grandiflora*, Poppy *Papaver* sp., Ragwort *Senecio arcticus*, etc. Overwintering mosquitoes appeared on the first dates of June; the new mosquito generation was recorded on 10 June and became abundant on 14 June. Chironomidae midges emerged on 7 June, and imago of crane-flies *Tipulidae* were also recorded on that date.The first butterflies appeared on 8 June. Warm weather resulted in a heavy crop of mushrooms and berries (Cloudberry, Bog Bilberry, Clusterberry) in the second half of the summer.

Signs of winter activities of voles were common on waste lands in the city and in the tundra. However, only 2 animals were observed during June. The abundance of rodents was, probably, average and had been decreasing by the time the snow disappeared. We recorded more patches with rodent burrows in the end of summer than in June. Arctic Ground Squirrels and Northern Pikas were relatively common in suitable habitats, although Ground Squirrels were not recorded in the alpine belt of the mountains. There was an abundance of winter droppings of hares, but single animals or groups were only rarely seen in the mountains.

We got an impression that mammalian predators were rare in the area. A single Red Fox was seen in early May by I.E. Menyushina (pers. comm.) in hills near the city, and two Red Foxes were recorded in late summer by tourists. A Snowy Owl was recorded in early May by I.E. Menyushina, and Peregrine Falcons were observed on two occasions in June and late August. Three pairs of Rough-legged Buzzards were found breeding in June and two clutches contained 3 and 4 eggs. Chicks fledged from at least one nest. Long-tailed and Arctic skuas were regularly observed at the seaside plain in the vicinity of the airport, and a nest of the former species was found. Wandering Herring and Glaucous gulls were observed everywhere, including the alpine belt of the mountains.

The abundance of breeding birds was low in the hilly and mountain tundra of the area. The highest densities were recorded in the seaside lowland with numerous lakes at the lower Apapelgin River area. Several breeding species (Wood and Terek sandpipers, House Martin, Buff-bellied Pipit *Anthus rubescens*, Willow Warbler, Little Bunting, House Sparrow *Passer domesticus*) were previously not known to nest that far north in this part of the Arctic. However, we did not observe the Dotterel, which was previously found by researchers in considerable numbers in this area.

Predation pressure on bird clutches ranged from low in habitats with low bird density to moderate in places of bird breeding aggregations. All 5 monitored nests of different species of waders and passerines in the Pevek city survived. During two weeks of observations in the lower Apapelgin River area we documented depredation of 2 of 4 nests of Common Eiders, 1 of 2 nests of Rough-legged Buzzards (placed on a hillock in a plain), 2 of 4 nests of Temminck's Stints, and 1 of 2 nests of Pacific Golden Plovers; clutches in 2 nests of Ringed Plovers and 1 nest of Red-necked Phalaropes were not predated. Fledglings of common passerine birds (wagtails, pipits, Snow Buntings) appeared in late June, as well as chicks in waders. The commonness of adults alarming near broods indicated successful reproduction of tundra birds.

P.S. Tomkovich

51. Tundrovaya River valley, Wrangel Island, Russia (71°18′ N, 179°48′ W)

The 2007 spring breeding population of Wrangel Island Snow Geese numbered 140,000 birds (the second highest on record since 1970), an increase over the 130,000 to 135,000 birds counted in the previous year. Due to heavy winter snowfall that persisted into late May breeding conditions in 2007 were less favourable than those of the previous two years. The main colony had approximately 35,000 nests (down from 48,000 in the previous year), with mean clutch size 4.0 eggs and nest success of 85%, which is above the long-term average. This represents an unprecedented run of 10 consecutive good breeding years on Wrangel Island.

V.V. Baranyuk

Canadian Wildlife Service Waterfowl Committee. 2007. Population Status of Migratory Game Birds in Canada: November 2007. CWS Migr. Birds Regul. Rep. No. 22.

52. Neizvestnaya River, middle reaches, Wrangel Island, Russia (71°20′ N, 179°30′ W)

Snow accumulation was high during the winter 2006/2007. Accordingly there were winter conditions when the first birds arrived. Snow Buntings appeared on 16 April in the Ushakovskoe settlement, Glaucous Gulls and Black Guillemots on 21 April at coastal rocks on the east of the island, Snow Geese on 19 May in inland tundra, Red Knot on 22 May, Lapland Buntings on 24 May, Turnstones and Pectoral Sandpipers on 25 May, Grey Plovers on 26 May, Dunlins and Arctic Redpolls on 28 May, Long-tailed Skuas and Sabine's Gulls on 30 May. By the time of start of melting the tundra surface was almost 100% snow covered in the area of the "Middle Neizvestnaya" field station. Rapid warming in the end of May led to intensive snow melt. Ice on islands in the rivers (Gusinaya, Tundrovaya and Neizvestnaya) broke simultaneously on 1 June. This resulted in a very high flood with water levels reaching record high values compared with previous years in the station area. The water table in the river started to decrease on 12 June and dropped to the normal summer level already on 15 June. Waterbirds arrived to inland parts of the island already after the ice-break on the rivers; the first Common Eiders and Buff-breasted Sandpipers *Tryngites subruficollis* were recorded on 2 June, Brent Geese, Pintails, Long-tailed Ducks and Grey Phalaropes on 6 June, King Eiders on 7 June.

In 2007 air temperatures did not drop below freezing during the whole summer until late September. This was a unique situation for the area. Not a single period of cold weather was recorded in the central part of the island during the breed-

ing period. Dry and clear weather prevailed in June, with a particularly warm period from 19-23 June, when day-time air temperatures were above +20°C, according to a subjective evaluation. During the whole month intermittant rain and drizzle occurred on 5 and 6 June, and were accompanied by fog associated with snow melting. Warm, dry, clear weather prevailed in the central part of the island also in July and August. Minimum night temperatures varied from +1.5-13.7°C in July, and from +5.7-10.3°C in the first half of August. Maximum day-time temperatures exceeded +20°C on 10 days in July and on 8 days in the first half of August, and only dropped below +10°C on a single days during this period (+7.6°C on 20 July). Precipitation occurred on 6 days in July and on 6 days in the period from 1-23 August, but was only heavy on 19 July and 18 August. The dry weather resulted in the drying of most bogs, many streams and decrease of the water level in lakes and rivers by July. The warm weather caused melting of the permafrost. This, in spite of the absence of notable precipitation, resulted in appearance of water in depressions and some streams from the second half of July.

Flowering of dryad was already over in the first week of July, and there was mass flowering of forbs in the second 10-day period of the month. Warm weather led to appearance of mosquitoes, which were generally uncommon on the island. They were observed from 4 July and were annoying on some nights during the second week of July. Butterflies were common until mid July, but almost disappeared by August. Yellowing of horsetail *Equisetum arvense*, sedges *Carex spp*. and grasses was recorded in some depressions on the first days of August, which were the first indications of phenological autumn. However, a repeated flowering of several species of early summer plants (Purple Saxifrage *Saxifraga oppositifolia*, locoweeds *Oxytropis spp*., Nakedstem Wallflower *Parrya nudicaulis*, louseworts *Pedicularis spp*., cinquefoils *Potentilla spp*., etc.) occurred in the second week of August. Milk Mushrooms *Lactarius resimus* appeared in the dryad tundra in early August, while the growth in various other mushrooms, including champignons, was observed until mid September. Plants with berries are practically absent on the island.

The distribution of lemmings was uneven across the island, and their abundance was low. Lemmings were observed at several sites, but regular encounters were made only in the vicinity of the buildings of some field stations in the reserve. Lemmings were recorded several times in the area of the "Srednaya Neizvestnaya" field station, and their multiyear burrows in the river floodplain and on the slopes of hills were not cleaned out by animals in July. At this time inhabited burrows were found only on the Northern Plain (Tundra of Academy), but in August we begin to encounter them also in the foothills, which indicated some reproduction and dispersion of lemmings in summer.

Arctic Foxes were either seen, or heard daily. They apparently occurred in the area at a high density. They bred, and most of the dens were inhabited. Several Snowy Owls stayed in the station area during the whole summer, but the clutch of a single breeding pair was destroyed. One Peregrine Falcon was recorded. Pomarine Skuas were absent, while Long-tailed Skuas were common and bred successfully at a density of 1 pair/km^2 (only one pair out of 5 in the station area failed to raise chicks). Wandering Glaucous Gulls were only regularly observed near waterbodies in the Tundra of Academy and they rarely visited the upland parts of the island.

Grey Plovers and Turnstones were the most numerous waders in the hillocky tundra of the study area; the former nested in the study plot at a density of 3.6 pairs/km^2. Based on brood counts densities of Red Knots and Buff-breasted Sandpipers were the same at 0.85 pairs/km^2, with local densities up to 2.5 and 2.1 pairs/km^2, respectively). Dunlins and Pectoral Sandpipers were common waders in the Tundra of Academy.

We monitored 1 nest of Red Knots, 2 nests of Buff-breasted Sandpipers and 19 nests of Grey Plovers in the vicinity of the "Srednaya Neizvestnaya" field station. Chicks hatched in all nests of Red Knots and Buff-breasted Sandpipers, and in 12 nests of Grey Plovers (63%). Three nests of Dunlins were checked again 10 days later, yet prior to hatching, and all of them were still active. All eggs in 2 clutches of Grey Plovers (2 and 4 eggs) were unfertilized or contained dead embryos, and chicks did not hatch from another 4 eggs in 13 clutches (including 1 nest at the "Nizhnaya Tundrovaya" field station). Thus, the rate of embryonic failure estimated for a sample of 15 clutches with 58 eggs was unusually high in the Grey Plover (17.2%).

Four of 19 Grey Plover clutches (21%) were destroyed by avian predators and Arctic Foxes during incubation, and chicks in two nests were predated after hatching. Overall failure due to predation was 31.6%. Wader catching and ringing activities could have attracted predators and, thus, affected nest success; however, two of the predated nests were not visited by observers for a long time after finding and no catching was undertaken there. Predation pressure on clutches of waders and Long-tailed Skuas can be evaluated as low in 2007. Generally good reproductive performance by waders on the island was also indicated indirectly by the commonness of juvenile waders of all common species in late July – early August. Regular observations of broods of the Common Eider on rivers, broods of the King Eider and Long-tailed Duck on lakes in the Tundra of Academy, and high abundance everywhere of broods of the Snow Goose indicated successful reproduction of these birds also.

P.S. Tomkovich, A.G. Dondua

53. Neizvestnaya River, upper reaches, Wrangel Island, Russia (71°14′ N, 179°20′ W)

The summer was unusually warm and freezing air temperatures started only in early October. Mosquitoes were unusually abundant for the island. In the end of the summer and even in September many plants started flowering again.

Populations of both lemming species increased. Abundance of the Vinogradov's Lemming *Dicrostonyx vinogradovi* was evidently higher than that of the Siberian Lemming *Lemmus*

sibiricus portenkoi, in a ratio of approximately 3:1. Overall lemming abundance was estimated to be low to medium. In the best habitats the number of both species was locally medium, sometimes even high, but in habitats preferred by the Siberian Lemming numbers were rather low. At a transect of 59.3 km 87 winter nests and 307 inhabited lemming holes were counted. The mean of 1.48 nests/km reflects a low density and does not represent the real situation during the summer. According to other parameters such as frequency of lemming carcasses in nests of Snowy Owls (1.24 lemmings per observation, *n*=51 observations) and frequency of encountering of inhabited lemming holes (5.2 holes/km) the population of lemmings was at medium or locally even high level. This upper evaluation was also supported by size of Arctic Fox litters and Snowy Owl broods.

Predators were represented by the Arctic Fox, Snowy Owl and Long-tailed Skua. The Pomarine Skua did not breed on the island this year.

The abundance of Arctic Foxes was low, but reached medium level in some areas. The majority of foxes were breeding. 46% of 68 monitored dens were inhabited. The density of fox litters in the monitoring area of 60 km^2 equalled 0.1 per 1 km^2. Distances between the litters varied from 2-7 km (mean 4.6 km). The first pups were recorded from the fist days of June to 23 June. Litters were of 5-9 pups (mean 5.5, *n*=10). Fox mortality in winter was low, as only two carcasses of Arctic Foxes in winter fur were found. Summer mortality was probably of about the same level. Wolves had a significant influence on Arctic Foxes: one fox was probably killed by wolves in the end of May – early June (it was found dead on a den), another one, a lactating female, was killed by Wolves on her den in early July and her litter of 14 pups died. Footprints of a Wolf were recorded near one more den in July simultaneously with disappearance of the female Arctic Fox; her brood of 7 pups was moved away by male. Death of juvenile foxes after attacks of wolves was recorded in early September. A further population increase of Arctic Foxes is expected next year.

The number of Snowy Owls was low and most of them were breeding. There were 49 breeding records. Nest density in the main area of monitoring was 0.18 nests/km^2. Each female laid 5-10 eggs (mean 6.9 eggs, which is high; *n*=19). Most of the nests (89%, *n*=47) were successful. Brood size after fledging was 2-6 young (mean 3.57; *n*=23). The sex ratio was equal in chicks, while males slightly prevailed over females in adults. All age classes including young birds (23%, *n*=22) were represented in the population. Lemmings (63%, *n*=65) were the main diet of breeding Snowy Owls in July and August according to count of prey items found on owl nests; the rest of the prey items (35%) were remains of eider females, chicks of Snow Bunting, Long-tailed Skuas and waders. Warm weather allowed Snowy Owls to feed on lemmings through September and October, but most birds left the island in the middle of October.

I.E. Menyushina
http://www.arctic-predators.uit.no/News.html

54-55. Belyaka Spit (67°04′ N, 174°37′ W) and Kolyuchin Island (67°27′ N, 174°37′ W), Chukotsky Peninsula, Russia

An unusually warm and dry weather with weak southerly winds prevailed during the whole period of our stay on the Belyaka Spit from 1-7 July. Air temperatures frequently increased above +20°C in the day, and dropped to +2-3°C at night. Low water levels for early July in coastal lakes and the abundance of flying insects indicated warm weather with a small amount of precipitation in June. Ice conditions were unstable: a considerable amount of broken ice was recorded in the sea belt, 8-15 km wide, between the Belyaka Spit and Vankarem settlement, but the area of the Chukchi Sea to the north of this belt, the Kolyuchin Bay and lagoons were almost already ice-free by 1 July. This also indicated warm weather in June and early spring phenology.

Lemmings and voles were not observed. Arctic Ground Squirrels were common and bred successfully in coastal dry tundra and on coastal sandy ridges with Lyme Grass, other grasses and driftwood.

Arctic Foxes were common in coastal part of the Belyaka Spit, but less numerous than in 2002 and 2005. Reproduction of Arctic Foxes was confirmed neither for the Belyaka Spit, nor for nearby Yuzhny Island, but an inhabited den was found on Kolyuchin Island ca. 40 km to the north. Tracks of Wolverine were observed on Yuzhny Island.

A single Peregrine Falcon was the only bird of prey observed. Owls were not recorded. Pomarine and Arctic skuas, and Ravens were common, and several flocks of Long-tailed Skuas were recorded; none of the above species bred. Glaucous and Herring gulls nested on small lakes, but their abundance was lower than in previous years.

We did not collect detailed data on bird reproduction because our stay in the area was brief. Among waterfowl nesting was confirmed in White-billed Diver, Common Eider and Pintail, but Red-breasted and Pacific divers, Emperor Goose *Anser canagicus*, Long-tailed Duck and Sandhill Crane probably also bred. Almost all common species of waders usually recorded for the area were found nesting, with chicks hatching in some nests in early July. However, most species of waders occurred in the coastal tundra at lower densities compared with the same period in 2005, when nest success was high. This could be due to the departure of failed-breeders from the area. As before, grouse were not recorded. Reproductive success of birds probably did not exceed the average value, despite moderate abundance of predators and presumably favourable weather conditions.

I.A. Taldenkov

56, 57, 58. Beringovsky (63°04′ N, 179°22′ E) , Meinypilgyno (62°33′ N, 177°05′ E) and Khatyrka (62°04′ N, 175°17′ E) settlements, Chukotka, Russia

The period of observations in Beringovsky settlement from 10-20 August, was characterized by air temperatures ranging from +6-19°C, frequent fog and rains. During the stay at

Khatyrka from 21 August – 7 September day-time air temperatures rarely dropped below +10°C, reaching +20-21°C on the hottest days, while rare precipitation occurred as fog or drizzle. Weather conditions at Meinypilgyno on 8 – 28 September were warm but wet, with daytime air temperatures +10-14°C and frequent rain and fog, particularly after 18 September.

Voles occurred at low densities, and lemmings were not recorded. Arctic Ground Squirrels were common, and locally numerous in the settlement vicinity. Kamchatka black-capped Marmots *Marmota camtschatica* were recorded 6 times in the area of seabird colonies at Barykov Cape.

Observations of mammalian predators were very rare. Red Foxes were seen on a spit of Mallen Lagoon and near Khatyrka, and a single female bear with cub was recorded at the latter locality.

Long-tailed Skuas were common at all visited sites, while Arctic Skuas were less abundant. Rough-legged Buzzards were common near Khatyrka, where one Kestrel and one White-tailed Sea Eagle were also recorded. Hunting Gyrfalcons and Peregrine Falcons were seen regularly at Mallen Lagoon, and Merlins were recorded twice there. Pekulneyskoe Lake and Meinypilgyno area was used as a hunting territory by a Gyrfalcon, and an adult Golden Eagle was recorded once. Steller's Sea Eagle *Haliaeetus pelagicus* was observed on the sea coast between Khatyrka and Meinypilgyno on 8 September.

Common birds of the post-breeding period in the Beringovsky vicinity included the Teal, Wood Sandpiper, Ringed Plover, Temminck's Stint, Kittiwake, Herring Gull, Slaty-backed Gull *Larus schistisagus*, Glaucous Gull, Long-tailed Skua, Bluethroat, Buff-bellied Pipit, Little Bunting and Snow Bunting. Pintail, Eurasian Wigeon *Anas penelope* (75% of juveniles), Common Gull, Turnstone, Dunlin, Wheatear, Redpolls, Lapland Bunting were less abundant. A few records of single birds were made of the Red-necked Phalarope, Western Sandpiper *Calidris mauri*, Common Tern, Glaucous-winged Gull *Larus glaucescens*, Arctic Skua, Arctic Warbler. Three Semipalmated Plovers *Charadrius semipalmatus* and 2 Mallard females were recorded in the vicinity of the Beringovsky seaport. 5-6 broods of Willow Grouse were recorded on a ca. 20 km long transect to Alkatvaam settlement.

An observation of a flock of 12 Snow Geese flying over Meinypilgyno settlement on 27 September is noteworthy.

Pelagic Cormorants *Phalacrocorax pelagicus*, Harlequin Ducks, Herring Gulls, Glaucous Gulls and Kittiwakes were common in the Khatyrka delta area. Sandhill Cranes were observed frequently to the north-west of the settlement in groups of 4-8 birds, and we also recorded an American Wigeon *Anas americana* and a Magpie there. Flocks of Turnstones appeared from 27 August, and we counted 500-600 birds in a concentration at a 300-400 m long stretch of a river bank.

Juvenile Western Sandpipers were common from 3-6 September on the spit of Mallen Lagoon where they occurred in flocks of 10-70, totalling 250-300 birds, and formed mixed concentrations with Dunlins. An area of the channel from the lagoon was inhabited by approximately 2000 Harlequin Ducks, 300 Emperor Geese (including no more than 10-15% juveniles), and less than 100 White-fronted Geese. One Grey-tailed Tattler was recorded.

A.A. Kuzmich

57. Meinypilgyno settlement vicinity, Chukotka, Russia (62°33′ N, 177°05′ E)

According to local reports snow accumulation was low in winter, and spring was early in timing, with a rapid snowmelt. Snow completely melted on flat surfaces by the start of our studies on 14 June, but it was present until 20 June on slopes lying in shadow and in depressions. Ice cleared on the rivers before the start of observations, and on Pekulneiskoe Lake by 14-15 June.

The second half of June was warm and sunny with less than 5 days of dull weather. Mean monthly day-time temperature was +12°C in June. Short-term thunderstorms occurred on 24 and 25 June. Dull weather occurred on 15 of 25 days in July, but generally the month was warm with mean day-time temperature +16°C. Sea fog occurred frequently, but not on all days of the study period. No wind occurred on 3 days, while moderate and occasionally strong south-western and southern winds were recorded on other days. The entrance channel from the sea to the lagoons was blocked during autumn storms, which resulted in an unusually high water level in the rivers and lakes in mid June. The water level continued to increase until 21 June and reached approximately 2 m above average. A rapid decrease of water level continued from 21 June to mid July, after a new channel has been excavated. The resulting situation was unusual because areas in the vicinity of the lakes and lagoons were flooded or very wet, while dry conditions prevailed elsewhere due to the small amount of precipitation during the winter.

Lemmings were not recorded, and voles were rare, particularly, in willow stands on river banks, exposed to flooding. Numbers of Arctic Ground Squirrels were high, both on coastal spits and on moraine hills, but were considerably lower than in previous years, especially in areas adjacent to the lake-river system. As previously, Ground Squirrels were an important prey for Brown Bears, Red Foxes, gulls and Ravens.

Red Fox was recorded once, 10 km to the north of the settlement in moraine hills. Brown Bears were regularly seen on coastal spits and in moraine hills, including close to the vicinity of the settlement. Bears fed primarily on last year berries of Crow-berry and Clusterberry and on Ground Squirrels before the period of mass spawning of salmons, but then most bears switched to fish. The number of bird clutches destroyed by bears was lower in 2007 than in previous years, but this was due to the low numbers of breeding birds rather than to a decreased activity of predators. Ermine took an incubating Spoon-billed Sandpiper *Eurynorhynchus pygmeus* and its clutch, as indicated by casts in the nest.

Breeding of birds of prey was not recorded. We rarely observed solitary Golden Eagles, juvenile White-tailed Eagles were recorded twice, Peregrine Falcons twice and Gyrfalcon once. Arctic Skuas were rare on spits before early June, and a single breeding record was made in moraine hills. Arctic Skuas became more common on spits after the mass hatching of chicks in Ringed and Mongolian *Charadrius mongolus* plovers, and these skuas were observed catching chicks of Dunlin, Red Knot and Ringed Plover. Long-tailed Skuas were tenfold less abundant than Arctic Skuas, and they did not breed. Large gulls were numerous and occurred everywhere, breeding on the islands of Vaamychgyn and Pekulneiskoe lakes and at marginal areas of sea spits. Herring, Glaucous and Slaty-backed gulls occurred at an approximate ratio of 10 : 2 : 1. Gulls nesting on islands suffered from egging by humans, while all their clutches at the marginal areas of spits were destroyed by bears. Ravens nested successfully in the settlement and in moraine hills.

Sandhill Cranes were numerous in moraine hills, but rare on spits, where only two broods were recorded. White-fronted Geese were common in moraine hills and chicks successfully hatched, even close to the settlement. Broods contained 1-3 chicks, but their survival was not evaluated. Among ducks, breeding was indicated by observations of broods in Pintail, Greater Scaup and Common Eider. Predation pressure on eider clutches was high as usual, on sea spits primarily due to skuas and large gulls and near settlement due to humans and dogs. White-winged and Black scoters did not breed on spits due to the high water level.

Well flying juveniles of the Skylark *Alauda arvensis* were recorded. Numbers of this species increased tenfold compared with 2005, and it was possible to record up to 5 singing males from one point at a southern border of the moraine. Two breeding cycles could be expected in the Skylark at southern Chukotka. Successful reproduction was recorded in White Wagtails, Wheatears, Snow and Lapland buntings. The breeding success of Common Redpolls was not evaluated.

Wader numbers were generally lower than in 2005, which could be due to different hydrological regime in the beginning of the summer. The decrease was the least pronounced in species not associated with the waterbodies of the lake-river system. Thus, Dunlins were common and locally abundant in moraine hills, and Ringed Plovers were common as usual on spits. Breeding numbers of Pacific Golden Plovers and Mongolain Plovers did not change considerably, and at least 3 pairs of Red Knots nested. The abundance of Red-necked Stints *Calidris ruficollis* increased, and nests of this species were found both in moraine hills and in depressions between hillocks on gravel spits.

A decrease in the number of breeding pairs was recorded in the Red-necked Phalarope, and one nest of the latter species was found in an unusual locality – in the centre of a 20-30 cm high willow scrub. Breeding numbers of Spoon-billed Sandpipers halved, and some territories which were flooded until the end of June were not occupied or were used for nesting with a two-week delay. Chicks hatched at the usual dates only in pairs nesting in the close vicinity of the settlement or in moraine hills. In some cases Spoon-billed Sandpipers nested in more damp habitats than normal, with higher and denser vegetation. In such a habitat a predation of incubating Spoon-billed Sandpiper by Ermine was recorded, and a destroyed nest of Red-necked Phalarope was also found 10 m away. Wood Sandpipers did not nest, and a single Temminck's Stint was observed in the beginning of the breeding season. Flying juveniles were recorded in the Ringed Plover, Dunlin and Red Knot, while chicks of other wader species had not fledge by the end of the studies on 25 July.

Generally, conditions were unfavourable for breeding of birds in 2007, primarily due to the unusual hydrological regime. This caused reduction of area of habitats suitable for breeding of several species (Spoon-billed Sandpiper, White-winged and Black scoters). Also the flooding, probably, resulted in decreased numbers of voles and, to a lesser extent, of Ground Squirrels and an associated increase of predation pressure on birds. Hence, low survival of juveniles occurred in numerous species of birds. As usual, birds, their eggs and chicks were preyed upon by Arctic Skuas and Ravens. Eggshells of over 40 eggs belonging to 6 species of waterfowl were found under one nest of Ravens.

N.N. Yakushev

59. Meinypilgyno lake-river system, Chukotka, Russia (62°46′ N, 176°48′ E)

Snow melted by the end of May. The flood was not torrential, but the water table remained high in lakes until mid-June, and nesting habitats of birds in lowlands remained under water. A channel from the lakes to the sea was cleared on 19 June, and then the water table in the lakes decreased quickly. Also the flood on the rivers was only short-term because there were small amounts of snow accumulation during the winter. A water table typical for late July – early August established on Pekulneiskoe Lake 15-20 days earlier than usual. According to our observations, which started on 16 June, the summer was warm and dry, and grass had started to whither by late August. Short-term rains in early September did not cause a noticeable increase of water level in rivers, as most water was taken up by the ground. September was warm and wet due to short-term rains, and a second round of flowering of some tundra plants (Alpine azalea *Loiseleuria procumbens*, Dandelion *Taraxacum* sp., Chukotka locoweed *Oxytropis czukotica*) occurred in the middle of the month. Early October was warm as well, and the first frost on the ground was delayed by 5-7 days. However, freezing of Vaamochka and Pekulneiskoe lakes occurred on the usual dates due to temperatures decreases on clear nights. Vaamochka Lake froze on 15 October.

Voles were relatively rare in the coastal part of the area. Numbers of Arctic Ground Squirrels remained at an average level, similarly to 2006.

Arctic Foxes were not recorded. Local people, as well as Brown Bears, were taking eggs in nesting colonies of Herring Gulls and Common Eiders on Peremytaya and Dar'ina

spits of Pekulneiskoe Lake, and on the island on Vaamochka Lake. Consequently, we found eider clutches of 2-3 eggs at early stages of incubation on Peremytaya Spit until late July, and a nest of Common Eiders with a clutch of 3 eggs was found on a sea spit even on 19 August. The abundance of the Brown Bear has been increasing annually, and they preyed on eggs of gulls and eiders in colonies even during the period of mass spawning of Pacific salmons.

Rough-legged Buzzards were common, but their reproduction was not confirmed. Owls were not recorded. Herring Gulls occurred in high numbers during the whole breeding season, and they did not move in mass to the sea coast in late June – early July, because the abundance of spawning of Far-eastern Capelin *Mallotus villosus* was low. Nesting of gulls was successful in colonies on the rocks of Pekulneiskoe Lake. Ravens also bred successfully, and 4 fledglings, that left their nest on 18 July stayed in the area until mid-August.

Poachers increased their pressure on premigratory aggregations of Whooper Swans in October in the Vaamochka-Belokamennaya delta. At least 12 birds (adults and juveniles) were shot in 2007, compared to 2-3 swans in previous years.

Numbers of White-fronted Geese were high in 2004, and decreased at least five-fold in 2005. While numbers did not increase in 2007, they did not appear to be rare. Numbers of geese were very low in moulting flocks on Pekulneiskoe Lake in early August, and the size of premigratory aggregations also decreased. A flock of 52 adult Brent Geese was recorded in the south-western part of Pekulneiskoe Lake on 14 August. Broods of the Red-breasted Merganser, Harlequin Duck and Greater Scaup were regularly observed during 7-12 August in the basin of the Pekulveem River.

Willow Grouse occurred in moderate numbers and bred successfully.

Hatching occurred on the usual dates in Ringed Plovers, and their broods with chicks unable to fly were most often recorded in mid July, with the latest date 2 August. An adult Red Knot accompanied by 2 juveniles was observed on the southern shore of Pekulneiskoe Lake on 25 July. Flocks of juvenile Red-necked Stints, Dunlins and Red-necked Phalaropes were common in the same area in mid-August. Fledging occurred on 7 and 9 August in 2 nests of White Wagtails.

Generally, nesting of most species of birds was successful, according to observations of broods of Sandhill Cranes, ducks, waders and passerines. Broods of White-fronted and Emperor geese were rare, and breeding success of these species was not evaluated.

E.V. Golub, A.P. Golub

60. Meinypilgyno Ridge, Koryak Highlands, Russia (62°58′ N; 176°54′ E)

A return trip on a quadbike was conducted across the Meinypilgyno Ridge, the main axis of the Koryak Highlands in its north-eastern part, from 28 August to 1 September, in search for a convenient route to Mainits Lake.

Microtine rodents were not recorded and signs of their activities were very rare on the southern macroslope of the ridge, in the valleys and upper floodplains of the Rynnatanmelgyn and Kavtae rivers. Small rodents were recorded on the northern macroslope in the valley of Tergynveem River from its source to the junction with the Kenkereveem River, rarely at the former, but with increasing numbers on approach to the upper border-line of Siberian dwarf pine *Pinus pumila* stands. The crop of the latter was high, and rodents, presumably voles, were very abundant in the dwarf pine stands. Voles were also numerous on the northern bank of Mainits Lake near headstream of the Gytgyveem River, running out of the lake (63°20′ N; 176°42′ E); the abundance of rodents decreased in the river valley 2-3 km from dwarf pine stands, but they were still common there.

The high abundance of microtine rodents was probably related to the good crop of Siberian dwarf pine. However, we could not verify this hypothesis by visiting the upper reaches of the Vaamochka River on the southern macroslope where there are stands of Siberian dwarf pine and a high crop of pine cones were reported by local people from this area.

E.V. Golub, A.P. Golub

61. St. George Island, Pribilof Islands, Alaska, USA (56°34′ N, 169°35′ W)

The season was late, cold and dry. Snow was still present in mid May on flat surfaces on the island. Three snowfalls occurred in the second half of May.

Approximately 20 Brown Lemmings *Lemmus trimucronatus* (the only species of rodents on the island) were encountered during the season, which was considerably higher abundance compared with previous years, when 1-2 lemmings had been seen. Lemmings were recorded not only in spring, but during the whole summer, and their abundance was evaluated as average.

Arctic Foxes were common and bred.

Birds of prey and skuas were not recorded, but we observed single Snowy and Short-eared owls, and Ravens. A Snowy Owl with brood patch was photographed, but neither nest, nor chicks were found. Glaucous-winged Gulls and Glaucous Gulls occurred in small numbers; seabird colonies were used for nesting by auks, Pelagic Cormorants, Kittiwakes and Red-legged Kittiwakes *Rissa brevirostris*. Northern Fulmars *Fulmarus glacialis* and Red-faced Cormorants *Phalacrocorax urile* were numerous. Waterfowl were rare non-breeders, with the exception of Harlequin Ducks, common on the sea. Breeding waders included common Rock Sandpipers *Calidris ptilocnemis* and rare Semipalmated Plovers.

N.B. Konyukhov

62. Alaska Peninsula, Alaska, USA (56°06′ to 56°40′ N and 159°05′ to 160°23′ W)

It was a very cold winter, but as we have intermittent snow through the winter, snow thawing is not a definitive indicator in this area. According to observations on 15-29 May the

season was average in timing. The ice on the Naknek River at King Salmon (250 km north of this study area), broke on 1 April (3 days later than 16 year mean). The average March air temperature was 8.3°C below the 50 year average. In King Salmon April temperatures were above average, but the rest of the season was near average. It was a little warmer in August and September and a little drier in August and wetter in June and September.

This year's work is part of an ongoing shorebird inventory started in 2004. The inventory includes 64 plots in two strata systematically dispersed across lowland areas of the Alaska Peninsula from the Naknek drainage to the end of the peninsula. Point transects are conducted on the plots. All shorebirds and avian predators are recorded. To date 792 points have been surveyed on 52 plots. Distance estimation is being used with hopes of generating density estimates. The work is still in progress. Point counts are also being done for all other birds. Habitat data are collected at each point. Incidental records are kept on mammal, invertebrate observations and conditions.

Voles were rare and no signs of lemmings were found.

The Red Fox, but not Arctic Fox was recorded. The Rough-Legged Buzzard, skuas and owls were rare without signs of breeding.

During this year's survey we found eleven shorebird species, ten of which demonstrated evidence of breeding. Nests were found of the Pacific Golden-Plover, Dunlin, Least Sandpiper *Calidris minutilla*, and Wilson's Snipe *Gallinago delicata*. The presence, behaviour and nests of the Pacific Golden-Plover present evidence for a range extension of this species. Numbers of breeding Ptarmigans were low. We did not remain at any one plot long enough to evaluate breeding success. We have not visited these plots previously so no between-year changes could be noted.

S. Savage

63. Naskonat Peninsula, Yukon Delta, Alaska, USA (60°58′ N, 165°05′ W)

Snow melt and habitat availability in 2007 was at least 10 days earlier than in 2006 and was comparable to the early spring phenology in 2003 and 2004. We were present at the study site from 29 May to 7 June which preceded hatching of waterbirds. All waterfowl clutch sizes were on average larger in 2007 compared to 2006 and hatching of primary species was predicted to be 5-7 days earlier than in 2006 (i.e. the Emperor Goose 7-8 June, Cackling *Branta hutchinsii minima* and Brant geese 9 June, Spectacled Eider 10 June). Early seasonal phenology and a favourable climate prior to hatching predicted good waterbird productivity.

Flowering dates for sedges *Carex* spp. (30 May), Arctic Butterbur *Petasites frigidus* (29 May), Canadian Dwarf Cornel *Cornus canadensis* (5 June), and Cloudberry and Sourdock *Rumex arcticus* (29 May) were 6-17 days earlier than in 2006. Green-up of Mare's-tail *Hippuris vulgaris* (4 June) was 12 days earlier than in 2006 and the first large mosquito emergence in 2007 was 1 June compared to 17 June in 2006. *Chironomidae* midges appeared 15 days earlier in 2007 (30 May) than in 2006 (14 June).

As in 2006, no microtines were observed in 2007 and there was little evidence of over-winter or spring activity adjacent to uplands and none in lowland marshes. Microtine have suffered from storm surge flooding in recent years, evidence of which was common throughout the study area.

Arctic Fox tracks were scarce but more common than in 2005 and 2006. One active Arctic Fox den was observed with six Cackling Goose carcasses present; otherwise fox predation on eggs and adult waterbirds appeared low.

Other notable species and habitat observations in 2007 include the Grey Phalarope and Ruddy Turnstone which continue to be of concern due to low numbers. These species are well below historic levels based on subjective observations by long-term field biologists. Fifteen breeding plumage Red Knots were observed migrating northwesterly through the study area on 6 June. Cackling Geese were commonly observed nesting at atypical sites in open marshes and along slough borders, habitats preferred by Emperor and White-fronted geese. Brants were also found nesting atypically along tidal sloughs. Both of these species prefer insular sites in shallow ponds and these sites are declining due to erosion.

C.P. Dau, F. Broerman

64. Yukon-Kuskokwim Delta coastal zone, USA (61°10′ N, 165°10′ W)

Spring arrived earlier in 2007 than in 2006. Spring weather conditions in 2007 were similar to recent years with earlier than average snow melt and river breakup. The Kuskokwim River at Bethel broke-up on 23 May 2007, nearly three weeks earlier than the previous year, and a week earlier than the 23-year average (mean 11 May for 1985-2007; NOAA 2007). Following a winter of relatively low snow cover, little snow remained on the nesting grounds by May.

In general, 2007 was a year of very good potential production for geese and eiders. Depredation and nest abandonment rates were low for all species. Recent 10-year trends in nests populations are positive for all waterfowl except Cackling Geese and Brant, whose numbers have generally declined since 1998. We estimated 4,399 Spectacled Eider nests (corrected for nest detection rate) on the Yukon-Kuskokwim Delta coastal zone in 2007. While the estimate of nests was 9% below the 1985-2006 average, high nest success resulted in egg production slightly higher than the 1985-2006 average. The early spring arrival on the YKD in 2007 resulted in most species nesting a week earlier than average.

J.B. Fischer, R.A. Stehn, G. Walters. 2007. Nest Population Size and Potential Production of Geese and Spectacled Eiders on the Yukon-Kuskokwim Delta, Alaska, 2007. http://alaska.fws.gov/mbsp/mbm/waterfowl/surveys/pdf/YKD_Nest_Plot_Report_2007.pdf. Accessed 7. Nov. 2008.

65, 66. Tutakoke River (61°15′ N, 165°37′ W) and Old Chevak (61°26′ N, 165°27′ W) Yukon Delta, Alaska, USA

On our arrival to the Tutakoke Field Camp on 14 May the Tutakoke River was still largely covered with ice but it was breathing with the tides. Many of the pools in the area were largely frozen, but there was little snow cover. Weather was generally fine and sunny for the first week, but with strong, cold northerly winds. By the morning of 19 May the river was free of ice up to the camp and the afternoon tide cleared ice as far as the main river bend above the camp, but water in cooking pots was still freezing at night. On about 20 May the last of the land snow melted and pond ice was all gone by 24 May. All sea and river ice was gone by 25 May. There was a short sleet shower on the morning of 21 May. On 24 May the wind was from the south-southwest and on 25 May from the east. There was rain throughout most of 27 and 29 May.

In Old Chevak on 1-5 June weather was mostly fine with overcast and sunny days. The days were mild to warm, with temperatures probably +10-15°C.

In general, spring conditions were considerably earlier than those in 2006, when ice on the Tutakoke River did not start to move until 30 May, and there was still 75% snow cover at the Brant Pools area on 22 May. This was reflected in the timing of flowering and insect appearance. Large emergence of brine flies (Ephydridae) took place on 21 May, the first bumblebee was seen on 26 May, flowering of Arctic Butterbur *Petasites frigidus* was first recorded on 25 May and of sedges *Carex* sp. on 28 May. On 27 May Oval-leaf Willow *Salix ovalifolia* leaf break was recorded. The whole area around camp was looking generally green by 30 May.

One vole was seen at Tutakoke and there was evidence of vole excavation at Old Chevak.

Three different Arctic Foxes were seen around Tutakoke, despite trapping by USGS in March. At Old Chevak where we made observations on 1-5 June, two Arctic Foxes were seen on 2 June and one River Otter *Lutra canadensis* on 4 June. No Mink were observed.

At Tutakoke one pair of Arctic Skua between the camp and the rivermouth point seemed to be trying to set up territory, but no nests were found; several other Arctic Skuas were seen. Long-tailed Skua were only seen on 4 days at Tutakoke, but several pairs of these birds were present at Old Chevak including 2 nests with one egg each. Two Short-eared Owls were recorded on 15 and 16 May and one on 24 May. One pair of Short-eared Owls was seen copulating at Old Chevak on 3 June. No other bird predators were seen.

In accordance with the early spring in 2007 birds started egg laying several days earlier than in 2006. First nests with eggs were found on 15 May in Tundra Swans *Cygnus columbianus*, on 19 May in Glaucous Gulls, on 20 May in Brants, on 21 May in Cackling Geese and Common Eiders, on 22 May in Sandhill Crane, on 23 May in Emperor Geese, on 24 May in Red-throated Loon (a bird on nest seen), White-fronted Geese and Spectacled Eider, on 25 May in Sabine's and Common gulls, on 26 May in Dunlins, on 27 May in Semipalmated Sandpipers *Calidris pusilla*, on 28 May in Northern Pintails, Black Turnstones *Arenaria melanocephalus* and Red-necked Phalaropes, and on 30 May in Pacific Divers, Willow Ptarmigans and Arctic Terns.

At Tutakoke we found 2 nests of Willow Ptarmigans. Not more than 3 pairs were present in the surveyed area.

On arrival at Tutakoke there were about 4000 Red Knot present in the study area. Numbers appeared to be fairly stable until 24 May when numbers started to decline and flocks of departing birds were recorded.

At Tutakoke Bar-tailed Godwits were already paired and holding territories on 14 May. We estimate about 8-10 pairs in the study area of approximately 12 km^2. At Old Chevak Bar-tailed Godwits were present with possibly 6 pairs on the Church Island, and 2 or 3 pairs across the creek by the Fishing Camp. It was difficult to determine territorial boundaries, although extensive aerial displays and chases were seen, birds not infrequently travelled more than a kilometre and included areas both on the Church Island and the other side of watercourses. A nest with a single egg was found on 3 June. No data on bird nest survival is available.

A. Riegen, D. Melville, T. Donnelly

67. Andreafsky Wilderness, Yukon Delta National Wildlife Refuge, Alaska, USA (62°27′ N, 163°11′ W)

A research team of six biologists was present at this site on 17-24 June in order to investigate the migration ecology of Bristle-thighed Curlews *Numenius tahitiensis* (http://alaska.usgs.gov/science/biology/shorebirds/btcu.html). The site is comprised of low, rolling hills blanketed by tussock tundra in lowlands and dwarf shrub tundra on ridges and hilltops, with small creeks draining the larger valleys. Bristle-thighed Curlews were the only wader that we detected breeding at the site; moreover they are breeding there in relatively high densities. The Wilson's Snipe were observed winnowing at the study area each day, but no other evidence of breeding was noted. The Whimbrel, Bar-tailed Godwit, Solitary Sandpiper *Tringa solitaria*, and Pacific Golden-Plover were also detected at the site, but only as passing birds.

We observed no voles or lemmings during our stay, and observed very few avian predators. We detected Long-tailed Skua, Common Raven, and Bald Eagle *Haliaeetus leucocephalus* during our stay, but in very low numbers. The remains of a Curlew, apparently killed by a falcon, were found at the site as well.

Due to our short duration of stay at the site, we are unable to comment on the seasonal phenology of the region in 2007 or to assess site conditions this year relative to other years.

D. Ruthrauff, L. Tibbitts, R. Gill

68. Woolley Lagoon, Seward Peninsula, Alaska, USA (64°53′ N, 166°25′ W)

Our 2007 field season (9-21 June) marked our fourth year investigating the breeding biology of Ruddy Turnstones. We

have also monitored our Alaska banded turnstones at two wintering sites in Hawaii. To date we have individually colour-banded 20 adult turnstones and 16 chicks in Alaska.

The turnstone hatch at our study site in 2007 began on 18 June and was 80% completed by 20 June. Long-tailed and Parasitic Skuas in flocks as large as 75 birds were a constant threat.

Red Fox were also regularly observed in the area. Despite these predators we lost only one nest. The exceptionally aggressive attacks on predators by turnstones have been reported in the literature as a reason why other shorebirds often nest near turnstones in order to take advantage of the defence they provide.

We had our first record of Ruddy Turnstone mate retention in 2007. This pair was initially banded in 2004. The female first returned in 2006 and used a nest made by another pair in 2005. Her mate that year was her 2004 neighbour's chick. Her 2004 mate returned to the study site for the first time in 2007 and they established a new nest 15 m from her 2006 nest and 110 m from their original 2004 nest.

A second 2004 male also returned for first time in 2007. This male has been observed at Kona, Hawaii every winter from 2004 to 2007. He did not over-summer at Kona in 2005 or 2006. Assuming he bred in those years then it was not at our study site. A 2005 male returned in 2007 to his breeding territory for the third consecutive season. Each year he had a new mate which we subsequently banded. His breeding territory covers a linear distance of 180 m and is the longest turnstone territory at our study site.

P. Bruner, A. Bruner. Alaska Shorebird Group. Summaries of ongoing or new studies of Alaska shorebirds during 2007. January 2008. No. 6. http://alaska.fws.gov/mbsp/mbm/shorebirds/pdf/2007_summaries_ASG.pdf. Accessed 7. Nov. 2008.

69. Barrow, Alaska, USA (71°17′ N, 156°38′ W)

This report represents the conclusion of five years of intensive breeding ecology work on shorebirds at Barrow. Relative to previous years, snow melt occurred relatively early and June and July were relatively warm and dry with little rainfall. On flat areas snow cover reduced to 50% on 8 June and was completely gone on 13 June. No severe storm took place during the field season that lasted from 3 June to 31 July.

Lemming numbers were much lower in 2007 relative to the very high year in 2006, but these rodents were more common than 2003-2005. 30-40 Brown Lemmings were seen per day in June, and in mid-20s/day in July. Tundra Voles were observed on 2 days during the 60 day field season. There was no capture data.

Arctic Foxes were common, but their numbers were reduced by removal (killing) from the study area in spring as part of a Steller's Eider Recovery Management Action. One dead Red Fox was seen.

There were few Snowy Owls and Short-eared Owls in the area and they were not breeding. Also Skuas were not breeding, and among three skua species only Arctic Skua was common. Glaucous Gulls were abundant and breeding. Northern Harrier, Rough-legged Bazzard and Golden Eagle were recorded.

We located and monitored nests in six 36-ha plots in 2007. All six plots were the same as those sampled in 2005 and 2006. We used the same search intensity and methodology as from 2004 to 2006. The breeding density of all shorebird species on our study area was 52.1 nests/km^2 in 2003, 66.6 in 2004, 63.0 in 2005, 150.5 in 2006, and 88.9 in 2007 (overall average density across years was 84.2).

In 2007, we recorded the highest breeding density of two of the four most abundant shorebird species that nested in the area during the five years of our study. These included Dunlin (19.0 nests/km^2) and Semipalmated Sandpiper (11.1). American Golden-Plovers *Pluvialis dominica* were also more abundant in 2007 than in any previous year with a density of 4.2 nests/km^2. Red Phalaropes and Pectoral Sandpiper nest density was 1/2 and 1/3 of the density found in 2006, with 27.3 and 13.4 nests/km^2. Interestingly, virtually all of the monogamous species present on our study area had the highest nest densities ever recorded, whereas the polyandrous and polygynous species had below normal numbers (based on our 5-year running average). A total of 192 nests were located on our plots and another 143 nests were found outside the plot boundaries. Nests on plots included 29 Pectoral Sandpiper, 59 Grey Phalarope, 41 Dunlin, 24 Semipalmated Sandpiper, 24 Long-billed Dowitcher, 6 Red-necked Phalarope, and 9 American Golden-Plover. Baird's *Calidris bairdii*, Buff-breasted, White-rumped *Calidris fuscicollis*, and Western sandpipers were not observed on our plots in 2007.

The first shorebird clutch was initiated on 3 June and the last on the 2 July in 2007 (on or within 1 day for both dates in previous years). Peak initiation date was the 8 June and median initiation date was the 11 June; this is within 1-2 days of median dates in earlier years. The median nest initiation dates for the more abundant species were the 9 June for Dunlins, 8 June for Semipalmated Sandpipers, 10 June for Red Phalarope, and 14 June for Pectoral Sandpipers. These dates are either the earliest or equal to the earliest dates of nest initiation documented during our 5-year study.

Predators destroyed only 11.1% of the nests in 2007 compared to 8.3% in 2006, 11.2% in 2005, 67.9% in 2004, and 42.6% in 2003. Like 2005-2006, hatching success of shorebird nests was extremely high in 2007, compared to the dismal levels observed in 2003 and 2004. This is most likely because Arctic Foxes were removed from the study area. Among the more abundant species, hatching success (No. hatching at least one young/total number of nests) was highest in Red-necked Phalarope (100%, n=9), followed by Dunlin (92.9%, n=70), Red Phalarope (84.6%, n=65), Semipalmated Sandpipers (84.6%, n=39), Long-billed Dowitchers (56.5%, n=23), and Pectoral Sandpiper (84.4%, n=45).

We also investigated the propensity of the Dunlin to lay replacement clutches by experimentally removing the first clutch of eggs. Of the 20 pairs, 17 females (85%) initiated a replacement clutch. Fifteen females that laid a replacement clutch were found with their original mate and laid their replacement clutch on average 232 m from their initial clutch (range 70-398 m). Conversely, one female laid her second clutch 7.2 km away and did not keep her original mate. The average number of days from first clutch collection to initiation of the replacement clutch was 6.7 days (range 3-15 days). The high rate of replacement clutch laying we found in this study calls into question assumptions commonly used when estimating shorebird productivity and population size.

R. Lanctot

70. Arctic Coastal Plain, Chukchi Sea/Beaufort Sea Coastline, Alaska, USA (69°09′ N, 163°30′ W to 69°38′ N, 141°00′ W)

During coastal aerial surveys from 22-24 June 2007, ice conditions in the Chukchi Sea were similar to 2006 with open water and little shore fast ice. In the Beaufort Sea from Point Barrow to the Colville River, ice cover was similar to 2006 with extensive shore fast except near river mouths. Sea ice was broken and often covered with melt water and overflow indicating rapid disintegration. West and central Beaufort Sea estuaries were mostly ice covered (i.e. Elson Lagoon 98%, Dease Inlet 60%, Kogru Inlet 70%, Simpson Lagoon 50%, Stefansson Sound 70-80%) and open water offshore was 50-1500 meters in width. Eastern Beaufort Sea estuaries had variable ice cover and Arey Lagoon was ice free. From Barter Island eastwards estuarine ice cover ranged from 20-95 percent.

Most Beaufort Sea barrier islands, which are favoured nesting sites of numerous waterbird species (e.g. Common Eiders, Glaucous and Sabine's gulls and Arctic Terns), were accessible by ice to terrestrial predators. Lesser Snow Geese on Howe Island were incubating suggesting a less than one week delay in nest chronology from 2006 and less delay from 2005. No indication of the hatching of Lesser Snow and Greater White-fronted geese along the Chukchi Sea coast was a further indication of a delay in nest chronology in 2007.

Snow was absent in onshore habitats throughout the survey area as in 2006. Some larger lakes along the Chukchi Sea coast had remnant ice and smaller ponds were ice free. Lakes and pond were ice free along the Beaufort Sea coast.

Snowy Owl and Pomarine Skua numbers were very low in 2007 indicating low microtine populations. Snowy Owls were abundant throughout the survey area in 2006 and Pomarine Skuas were locally common in the Barrow area indicating high microtine numbers.

C.P. Dau

71. Prudhoe Bay Oilfield, Alaska, USA (70°17′ N 148°42′ W)

Daily temperature information is available on-line at http://www.wunderground.com. This years' early season (20 May to 30 June) average air temperatures were cold, similar to 2003 and 2005 (within ~1°C) while in 2006 and 2004 temperatures were noticeably warmer (by >1.5°C). Despite the colder air temperatures in 2007, snow melt was complete earlier than in the 4 previous years (approximately 5 days earlier than in 2006). We believe snow depth at the site was lower this year so, despite colder temperatures, snowmelt occurred earlier because less snow covered the ground. On 4 June, when we initially began monitoring snow cover, it was at 30%, and it completely disappeared approximately on 9 June. The Sagavanirktok River broke prior to 2 June. This year was relatively dry with little precipitation. Water levels in all water bodies (rivers, creeks, ponds, etc.) were lower than usual and was particularly noticeable as the season progressed. There were no major snow storms during the field season. The first mosquitoes emerged in mid-late June.

We discovered and monitored all nests on (or near) 12 10-hectare study plots. Nests were monitored every 3-6 days until nesting fate was determined. We discovered 81 nests of 10 species from 10 June to 15 July. Of the 81 nests, 7 were discovered off-plot. Thirty-three nests successfully hatched/fledged and 37 failed. We were unable to reliably assess the fate of 11 nests. Nest predation was the most important cause of nest failure (35 of 37 nest failures, 95%). Other sources of nest failure were abandonment (n=1) and Caribou trampling (n=1). Mayfield estimates of nesting success for the four most common species were: 63.4% in Semipalmated Sandpiper (n=25), 14.0% in Lapland Bunting (n=15), 20.4% in Pectoral Sandpiper (n=12) and 44.9% in Red-necked Phalarope (n=10). For three of the four most common species, these estimates of nest survivorship were less than 50% which contrasts with 2006 when 7 of 10 species had nest survivorship exceeding 50%.

We conducted point count surveys for potential nest predators on each plot at eight different times during the course of the season. A total of eight potential predators were detected (n= number of detections): the Glaucous Gull (n=98), Arctic Skua (n=65), Arctic Fox (n=17), Long-tailed Skua (n=7), Arctic Ground Squirrel (n=5), Common Raven (n=2), Peregrine Falcon (n=2), Short-tailed Weasel (n=1).

We also conducted incidental surveys for lemmings (i.e. tallied lemmings the entire time we were on our study plots on predator count days). We detected only one lemming this year compared to 3 seen in 2005, and 19 seen in 2006. Thus, in 2007 lemming abundance returned to low levels from the high observed in 2006 (from 0.085 to 0.002 lemmings encountered per 30 minutes). We did not capture lemmings.

Correspondingly, Pomarine Skua abundances were also much lower than in 2006 and were not seen at the site after early June. We found no evidence that they or Snowy Owls that were rare, nested at this site this year. Arctic Foxes were common breeders; also a Red Fox was recorded.

In 2007, we documented the second lowest overall nest density and the highest nest predation rates we've observed since we began monitoring at this site in 2003. Overall nest densities declined significantly from 2006 to 2007 (59.8 vs.

101.6 nests/km^2). Nest densities declined most precipitously from 2006 to 2007 for Lapland Buntings (25.0 to 11.7 nests/km^2) and Greater White-fronted Geese (10.0 to 2.5 nests/km^2). We did not find any plover nests this season. Despite the lower densities for most species, nest density for Semipalmated Sandpipers remained consistent between years. Willow Grouse and Rock Ptarmigan were both common on breeding.

J.R. Liebezeit

72. Teshekpuk Lake – Olak, Alaska, USA (70°26′ N 147°06′ W)

This years' early season (20 May to 30 June) average air temperatures were similar to 2005 (within ~0.5°C) but was noticeably colder than in 2006 (by ~3.5°C). Despite the colder temperatures, snow melt was complete approximately 1 day earlier than in 2006. We believe snow depth at the site was lower this year so, despite colder temperatures, snow melt occurred earlier because less snow covered the ground. Very little snow was present (on flat areas) when we arrived at the site on 5 June (<10%). Snow melt was complete approximately four days later in 2005 (16 June) and two days later in 2006 compared to 2007. The stream next to our camp broke prior to our arrival at the site on 5 June (at least a few days earlier than in the 2 previous years). This year was relatively dry with little precipitation. Water levels in all water bodies (rivers, creeks, ponds, etc.) were lower than usual and this was particularly noticeable as the season progressed. There were no major snow storms during the field season. The first mosquitoes emerged on 21 June, about 10 days earlier than in 2005 and 1 day earlier than in 2006.

We did not capture lemmings but we conducted incidental surveys for lemmings (i.e. tallied lemmings the entire time we were on our study plots on predator count days). We detected 26 lemmings (Brown and Greenland *Dicrostonyx groenlandicus*) this year compared to 7 seen in 2005 and 159 seen in 2006. Thus, in 2007 lemming abundance returned to low levels from the high observed in 2006 (from 0.33 to 0.03 lemmings encountered per 30 minutes).

Correspondingly, Pomarine Skua numbers were also much lower than in 2006 and were not seen at the site after 11 June. We found no evidence that they or Snowy Owls (both species were rare) nested at this site this year. We conducted point count surveys for potential nest predators on each plot at eight different times during the course of the season. A total of eight species of potential nest predators were detected (*n*= number of detections): the Parasitic (*n*=70) and Long-tailed (*n*=31) skuas, Glaucous Gull (*n*=38), Arctic Fox (*n*=17), Arctic Ground Squirrel (*n*=12), Peregrine Falcon (*n*=3), Red Fox (*n*=2), lemming (*n*=2). Arctic Foxes were common and denning.

Overall nest densities were noticeably lower this year than in 2006 (100.1 vs. 132.4 nests/km^2). In particular, Pectoral Sandpiper and Red Phalarope nest densities declined significantly from 2006 (20.0 to 9.4 nests/km^2 and 15.0 to 7.5 nests km^2, respectively). Willow Grouse were numerous and Rock Ptarmigans were common this year in the area.

We discovered and monitored all nests on (or near) 16 10-ha study plots every 2-6 days until nest fate was determined. We discovered and monitored 191 nests (23 of these were discovered off plot) of 16 species from 11 June to 16 July. One hundred nests successfully hatched/fledged, 70 failed and 21 nests were of unknown fate. Nest predation was the most important cause of nest failure (90%). Other sources of nest failure included abandonment (*n*=4) and predation due to observers (*n*=3). Mayfield estimates of nesting success for the 4 most common species were: 0.568 for Lapland Bunting (*n*=67), 0.646 for Pectoral Sandpiper (*n*=15), 0.504 for Grey Phalarope (*n*=13), and 0.707 for Semipalmated Sandpiper (*n*=18). Nesting success was lower at this site compared to 2006 but was still relatively high with most species having Mayfield nesting success estimates greater than 50%.

J.R. Liebezeit

73. Canning River Delta, Arctic National Wildlife Refuge, Alaska, USA (70°10′ N, 145°51′ W)

From 2002 to 2006, the Arctic National Wildlife Refuge (Arctic NWR) worked with several partners to investigate the relationship between nest survival of tundra-nesting birds and predator populations on Alaska's Arctic Coastal Plain. As part of this collaboration, field studies were conducted at the Canning River Delta on the Arctic NWR from 2002 to 2006. We returned to the field site in 2007 to collect samples, to screen for the presence of avian influenza from breeding shorebirds, and to capture, band and radio tag birds for studies on post-breeding shorebird ecology. Although not part of our objectives in 2007, we did collect data on shorebird nest survival from nests where birds were captured.

This was our 6th year at the study site. There was a weather system that produced steady northeast winds, cool temperatures and fog for most of the study period. We arrived at the study on 18 June 2007, later in the season than previous years, so the timing of snow melt was unknown. It seems that in general the season was average in timing and rather cold.

In 2006, lemming and predator abundance were higher at the Canning River Delta than previously observed. In 2007, the lemming populations had crashed and predator activity was lower. We observed only one Greenland Lemming during the entire season that lasted until 14 July.

Arctic Foxes were common, but not as abundant as the previous year and they did not appear to be breeding near the study site. There were no Snowy Owls and few Pomarine Skuas present (these species bred at the site in 2006). Arctic Skuas and Glaucous Gulls were common, Long-tailed Skuas rather abundant. The Rough-legged Buzzard, Peregrine Falcon, Herring Gull, Raven and Sandhill Crane, were all rarely seen and there were no signs of breeding.

Nest survival data collected in 2007 were from nests where birds were captured. In the previous years these data were collected only from nests found using standardized search

methods and monitoring methods and none of the nesting birds were captured. Thus direct comparison to previous years is not possible.

At the Canning River Delta in 2007 we located and captured birds on 84 nests of 6 shorebird species. Mayfield (1975) estimate of nest success was 0 in the American Golden Plover (*n*=1), 2% in Ruddy Turnstone (*n*=4), 26.8% in Semipalmated Sandpiper (*n*=23), 2.4% in Pectoral Sandpiper (*n*=22), 0 in Dunlin (*n*=11) and Buff-breasted Sandpiper (*n*=2). Thus nest success on the sampled nests was low for all species in 2007.

Rock Ptarmigans were rare and breeding was not confirmed.

S. Kendall

74. Herschel Island, Yukon Territory, Canada (69°35′ N, 139°05′ W)

Observations were carried out from 26 May to 26 September 2007.

A generally late snowmelt was observed in the northern Yukon, which proceeded very quickly (within 10 days) once the warmer weather arrived. One snow transect in wet lowland of 25 stations, 10 m apart was run from 29 May through to full melt (8 June). Substantial areas of the well incised topography had very deep drifts with snow lasting well into July.

Abundant and diverse arthropod fauna is characteristic of the area. The Arachnid abundance seemed to be in advance of fledging. Arachnids dominated early, with coleopterans, dipterans and crane flies dominant in July. There was an increasing rate of capture, with strong variability related to weather from 15 June to 5 August.

For small mammal abundance two upland 9 ha grids and one 2 ha alluvial fan grid were trapped in mid-June, mid July and early September. Also winter nests were counted on all grids. Relative abundance index lines from 2006 were re-trapped in June, and yielded low catches. New "Upland" index lines were established in early July, and yielded moderate catches. All lines re-trapped in mid September showed increased catches. Shrew population was growing during summer. Lemmings and voles were abundant in spring, decreasing in mid summer, but often increasing thereafter: upland grids had from 6 to 9 animals/ha and from 8 to ca. 11 animals/ha; alluvial fan grid had from 15 to ca. 12 animals/ha. 2006/2007 winter nest densities were high compared to other data sets collected historically. A relatively high proportion (15-30%) of winter nests were found with signs of weasel predation.

VHF radio-telemetry was applied on 25 adult females (mix of small mammal species) to quantify September survival and home range use (prior to snow fall). Moderate mortality rate recorded was due to fox and weasel activities.

Only two fox dens appeared active. One close to camp being used by two adult Arctic Fox (reproduction uncertain); the second was far from camp and species unknown. Dynamic balance between fox species is ongoing – Arctic Fox was occupying a den used by Red Fox in 2005. Remains of at least 3 Arctic Foxes and 1 Red Fox were found, having died in winter. Fox density appeared quite low in the eastern half of island. Seven Least Weasels were captured in June in lemming traps on small mammal grids. These were adults and recently weaned juveniles. Five Weasels captured in September on small mammal grids gave evidence of summer breeding. Quick numerical response of winter breeding Weasels to lemming abundance may have curtailed an increase in lemming populations. But Weasels were unable to curtail summer population growth of lemmings despite continued breeding. Direct observations indicate some Wolverines were resident. There were also indications that at least one Grizzly Bear was present on the island periodically, but the animal was not observed. One Polar Bear *Ursus maritimus* was observed in September apparently investigating lemming burrows.

The eastern half of the island (c. 50 km^2) was searched for nests of avian predators. There were found 4 nests with eggs of the Rough-legged Buzzard, 5 of the Peregrine Falcon, one of the Short-eared Owl, and 4 of the Long-tailed Skua. Two nests of Rough-legged Buzzards and one of Peregrine Falcons failed. Snowy Owls did not breed, although 80 birds were estimated on the island, which suggested that lemming densities had not been high enough. Apparently, the island is a good area to sustain owls in years without breeding opportunities elsewhere. Peregrine Falcon densities are on increase historically, and may have influence on densities of other raptors.

The majority of the island is not productive shorebird habitat, and very few shorebirds were nesting in the upland areas (only the American Golden Plover on two plots established). Most upland nesters were Lapland Buntings, Savannah Sparrows *Passerculus sandwichensis* and Buff-bellied Pipits, with scattered Greater White-fronted Geese and Rock Ptarmigans. The alluvial fan habitat was the most productive for shorebirds (but no plot was monitored this year); the Semipalmated Plover and Semipalmated and Baird sandpipers were breeding there. A sample of at least 70 shorebird and passerine nests were tracked from some time during incubation through hatching, and some to fledging. Data indicated earlier mean hatching dates for prominent species (*e.g.*, the Semipalmated Sandpiper and Lapland Bunting) compared to mid-1980s.

Foxes had a high local impact on bird nesting success, based on direct observations at the alluvial fan and a spit near the camp. Wolverine should be also considered a potentially powerful ungulate, small mammal, and avian nest predator.

Ch. Krebs, A. Kenney, D. Reid

Arctic WOLVES – 2007 Project Field Report
http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2007.pdf

75. British Mountains and Shingle Point lowlands, Yukon Territory, Canada (68°30′ N, 138°00′ W)

Aerial surveys in late June of a sample stretch of drainages in the British Mountains, and a transect on the coastal plain

were undertaken to quantify Gyrfalcon nesting density and occupation, as well as ptarmigan abundance. Of 25 Gyrfalcon aeries, 16 were occupied but only 8 productive (1.4 young per productive nest), thus both numbers of productive nests and nest productivity were low. Ptarmigan were at moderate to low densities.

D. Mossop

Arctic WOLVES – 2007 Project Field Report
http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2007.pdf

76. Taglo Tower, Fish Island, Kendall Island Bird Sanctuary, Mackenzie River Delta, Canada (69°13′ N, 134°32′ W)

The season was early and warm, with long periods of air temperatures exceeding +20°C. Water levels were quite low and the area dried out quickly this year, probably due to the absence of flood after the break-up of the ice.

During the study period from 7 June to 21 July Brown Lemmings were encountered every couple of days.

Arctic Foxes were rare without signs of breeding.

There were 2 nests of Arctic Skuas and a nest of Ravens in the area. Pomarine Skuas were rare non-breeders. Rough-legged Buzzards and Northern Harriers were common and bred. Short-eared Owls were common non-breeders. Snowy Owls were not seen. A detailed study was conducted to determine shorebirds and passerines nesting within 5 plots (400 × 300 m). Nest success of the Whimbrel was monitored by a graduate student. Breeding success of birds was quite low, apparently due to the probable very high activity of predators.

V.H. Johnston

77. Anderson River, NWT, Canada (69°46′ N, 128°54′ W)

An aerial survey in spring 2007 of the two mainland nesting areas of Lesser Snow Geese, with more detailed ground counts at Anderson River, indicated that although nesting was about a week later than usual, the nesting effort was good compared to many years in the late 1990s and early 2000s. However, as has happened frequently during the past decade, most nests at Anderson River were destroyed by Grizzly Bears, so production of young there will be low.

Canadian Wildlife Service Waterfowl Committee. 2007. Population Status of Migratory Game Birds in Canada: November 2007. CWS Migr. Birds Regul. Rep. No. 22.

78. Walker Bay, Kent Peninsula, NT, Canada (68°21′ N, 108°05′ W)

During the period of studies from 17 June to 3 July we were able to live-trap only one of the 9-ha grids (former exclosure). Lemmings were moderately abundant – approximately 5 animals per ha in the former exclosure. Eleven of 12 "micro-plots" contained lemmings. Both species were present on 4 of these grids. Greenland Lemmings were much more abundant overall than were Brown Lemmings (63 vs. 12 individuals). Most lemmings were large (50-90 g), and the vast majority were in breeding condition. Densities were somewhat lower than during our most recent survey (2004) when the population appeared to be in decline. Although densities were comparable to those at Herschel Island, historical peak densities at Walker Bay are much higher and we expect that densities should peak either in autumn 2007 or (hopefully) during 2008.

We also conducted winter nest surveys on the same large 9-ha former exclosure and on all twelve 0.36 ha "micro-plots". Only about 50 or so nests were discovered, and none had been used by Weasels. There was no evidence of a recent high in lemming numbers.

We conducted visual raptor surveys every second evening, but lemming field work made it impossible to standardize the timing of the 10 minute observation periods. Few "raptors" were seen during these surveys.

Incidental observations included Weasels, one tundra Wolf, one Grizzly Bear, two Arctic Foxes (one of the two nearby dens had been used but there was no evidence of breeding), one pair of Rough-Legged Buzzards, several Sandhill Cranes, a handful of skua sightings and numerous Glaucous Gulls. Grizzly Bear "digs" in lemming habitat were relatively numerous. One pair of Rough-Legged Buzzards nested on the research cabin but abandoned their 3-egg clutch when the helicopter arrived. No Snowy Owls were seen during 2007.

We recorded all waterfowl nests encountered, but these were few in number (mostly Canada Geese *Branta canadensis*, a few Greater White-fronted Geese, 2 King Eiders, and 1 Tundra Swan). We also recorded all shorebird and songbird nests encountered. The vast majority were Lapland Buntings with a few Savannah Sparrows and Shorelarks.

D. Morris, D. Moore, B. Dippo, V. Danco

79. Karrak Lake, Queen Maud Gulf Bird Sanctuary, Nunavut, Canada (67°14′ N, 100°15′ W)

A large area of the central and eastern Canadian Arctic experienced a much colder than average May. Persistent snow cover and additional snowfall delayed nesting in the Queen Maud Gulf, McConnell River, Southampton Island, and other areas. Extensive aerial surveys during 17–22 June found the Queen Maud Gulf about 5% snow covered on average, but most lakes and ponds still ice-covered. Mean Ross' *Anser rossii* and Greater White-fronted geese nest initiation at Karrak Lake was ca. 8 days later than average and the latest on record since 1991. Although nest success there is expected to be high, overall production will be well below average.

U.S. Fish and Wildlife Service. 2007. Waterfowl population status, 2007. U.S. Department of the Interior, Washington, D.C. U.S.A. http://www.fws.gov/migratorybirds/reports/status07/status%20of%20waterfowl%202007.pdf. Accessed 7. Nov. 2008.

Arctic WOLVES – 2007 Project Fied Report
http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2007.pdf

80. McConnell River, the west coast of Hudson Bay, Canada (60°50′ N, 94°25′ W)

The nesting chronology of Lesser Snow Geese at the McConnell River in 2007 appeared to be two weeks later than the five-year average. This estimate was consistent with local traditional knowledge and the late nesting resulted in a low nesting propensity and clutch size. A cold, late spring may also have had a negative impact on nesting success this year.

Canadian Wildlife Service Waterfowl Committee. 2007. Population Status of Migratory Game Birds in Canada: November 2007. CWS Migr. Birds Regul. Rep. No. 22. http://www.cws-scf.ec.gc.ca/publications/status/nov07/nov07_e.pdf. Accessed 7. Nov. 2008.

81. Wapusk National Park, the La Pérouse Bay, Canada (58°00′ N, 93°00′ W)

We have monitored nesting phenology and nest density of Lesser Snow Geese since research began at La Pérouse Bay in 1969. Nests within a 50 m radius circle of a pole are enumerated annually about 10 days into the 24 day incubation period. We also determine the float status of eggs to estimate the dates of nest initiation and projected hatch date.

Unlike in 2006, there was some heterogeneity in the projected dates of initiation and hatching for Lesser Snow Geese across the region. This probably reflects differential availability of nesting habitat. In one site at least 30% of the potential nesting habitat was still under water on 30 May when we collected data there. The presence of a substantial number of clutches containing 6 or more eggs is also consistent with restriction of available nesting habitat (modal clutch size for this colony is 4 eggs). In such circumstances, females that can not find a suitable nesting site will parasitize the nests of females with sites. Even in the face of this heterogeneity, this season appeared to be about one week earlier than our 38 year running average.

Coupled with this year's below average temperatures during late May and early June and the delayed growing season, this advance in the hatching date does not bode well for the success of the goslings. There was no growth of above-ground vegetation (as of 12 June 2007) so there was little if anything for the goslings to feed on.

There has been a general decline in nesting density at all three of our long-term sites since 1996. In 2005, there was a dramatic increase at all three sites. In 2006, density declined at all three sites. In 2007 trends were both positive and negative between the sites. Perhaps the most important point is that nesting densities have not returned to the levels seen before the Canadian and US Governments began a program in 1997 to reduce the size of the Mid-continent Population of Lesser Snow Geese.

This year's banding operations commenced on 21-27 July. We were confronted with some of the hottest and driest weather recorded in the region. Over the banding period there was little wind and no rain. The air temperature averaged 25.7°C and topped 30°C on 4 days. This is 8.4°C above the 30-year average. Even under these conditions we were able to process and release a total of 5,079 Lesser Snow Geese (including a few Ross's Geese), and suffered only 6 site fatalities (~0.1%). We had a higher than average number of yearlings, probably reflecting a substantial recruitment from 2006. This will be in contrast to recruitment from this year which is quite low – gosling/adult ratio = 0.54. This most likely reflects the year's phenology when hatching preceded growth of forage graminoids by at least a week.

We decided to develop a helicopter based aerial survey that would provide an index of local Arctic Fox abundance and activity. The index could be monitored through time and evaluated in consort with indices for plant and herbivore abundance both locally and across the various sites in the overall program. Arctic foxes are primarily found on the north/south remnant gravel beach ridges in the eastern portions of the Wapusk National Park. Owing to both urine and faeces left by the foxes, as well as carcasses and remnants of prey items, the dens are generally surrounded by lush growths of Lyme Grass *Leymus arenarius* that are especially visible by mid-August. We stopped at a selected number of dens, that we all felt were active, to make a preliminary assessment of the foods being consumed. Foxes at all of the active dens we visited make extensive use of goslings and adults of both Lesser Snow and Canada geese. A more complete evaluation of diet will be made by examining fox scat collected at the dens. A cursory examination of scats indicated the presence of both goose feathers and hair, likely from lemmings or other microtines, at some dens.

R.F. Rockwell

Arctic WOLVES – 2007 Project Fied Report http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2007.pdf

82. Akimiski Island, James Bay, Canada (53°00′ N, 82°00′ W)

Breeding conditions in southern Hudson and James bays were very early again in 2007, with snowmelt occurring a full month earlier than usual, similar to the previous two years. Below-average winter snowfall contributed to the third consecutive year of early nesting phenology of geese.

Surveys in 2007 were conducted with the traditionally used aircraft and within the target period. The survey indicated a spring population of 98,000 (±26,300) Canada geese. The estimate of breeding pairs was 32,400 (±9,100). Transect level analyses of this year's breeding pair estimates on Akimiski Island appeared similar to the previous 5 years, but the 2007 estimates on the mainland appeared lower than the previous 5 years (p=0.052). On Akimiski Island, a record-high number of nests were found and clutch sizes were above average. Nest success there appeared to be near average.

Canadian Wildlife Service Waterfowl Committee. 2007. Population Status of Migratory Game Birds in Canada: November 2007. CWS Migr. Birds Regul. Rep. No. 22.

U.S. Fish and Wildlife Service. 2007. Waterfowl population status, 2007. U.S. Department of the Interior, Washington, D.C. U.S.A.

83. Ungava Peninsula, Canada (58°30′ N, 69°30′ W)

Spring temperatures in 2007 were colder than average, and coastal areas remained snow-covered until early June. The mean nest initiation date at six monitored sites around Ungava Bay was 12 June, which is 21 days later than in 2006; in fact, 2007 was the latest year since the beginning of the survey in 1996, the average being 28 May. The proportion of indicated pairs observed as singles was 42%, well below the 15-year average, and suggested a poor breeding effort. The total number of nests found and the mean clutch size for the five sites surveyed along Ungava Bay were 64 and 3.2, respectively. Clutch size in 2007 was the second lowest on record. Productivity of Atlantic population Canada Geese on the Ungava Peninsula was poor in 2007.

Canadian Wildlife Service Waterfowl Committee. 2007. Population Status of Migratory Game Birds in Canada: November 2007. CWS Migr. Birds Regul. Rep. No. 22.

U.S. Fish and Wildlife Service. 2007. Waterfowl population status, 2007. U.S. Department of the Interior, Washington, D.C. U.S.A.

84. East Bay, Southampton Island, Nunavut, Canada (63°59′ N, 81°40′ W)

Snow cover reduced to 50% on 15 June and completely melted on 4 July. Spring was late, the summer cold and rainy. A very large snowfall occurred in early June, and another less intensive one, that left a few feet of snow in places. Later light precipitation, cloudy and cold weather kept the snow around later than normal. This also meant the ground remained saturated for most of the season. Water levels were higher than normal, and vegetation was clearly behind schedule.

Although no lemmings were trapped, they were observed frequently in June, while in July many freshly dug burrows were recorded. We also had several lemmings in our camp, including a pair that nested in our kitchen tent. Collared Lemmings *Dicrostonyx richardsoni* occurred in higher than average numbers, while the abundance of Brown Lemmings was low.

Arctic Foxes were rare, and their breeding was not confirmed. Arctic Skuas were common and bred, Long-tailed Skuas were rare non-breeders, and Pomarine Skuas were not recorded. Among birds of prey the Peregrine Falcon was a rare non-breeder. Rough-legged Buzzards and owls were not recorded. Herring Gulls, Sabine's Gulls and Arctic Terns were abundant and nested successfully. Red-throated and Pacific divers were common and nested. Reindeer were numerous in the area.

Detailed studies of all shorebird species were made. We studied terns, gulls and waterfowl less intensively. All parameters of basic breeding ecology were recorded, such as nest success, nesting densities, timing of peak lay and hatch, etc. Nest success was higher than usual, with approximately 50% success over all shorebird nests. We found 4 Sanderling *Calidris alba* nests (of which at least one was successful), a species not previously recorded nesting at East Bay.

P. Smith

85. Bylot Island, Nunavut, Canada (73°08′ N, 80°00′ W)

In 2007, we continued our long-term study of the population dynamics of Greater Snow Geese and of the interactions between geese, plants and their predators on Bylot Island. Field work was conducted during the period from 16 May to 20 August over a total study area of ca. 400 km^2, where we had 2 camps as usual, the Camp-1 (Base-camp) and the Camp-2, 30 km away. Most activities were conducted on foot in two core areas of about 50 km^2 around each camp.

We retrieved weather data from our 3 automated recording stations without problems. The early spring was cool but from mid June to our departure in August we had exceptionally sunny, warm and dry weather. Our snow-depth transects showed that snow-melt was nonetheless early, in part because the snow-pack was thin at the end of the winter, and we had warm temperatures starting after the first week of June.

Our different indices of lemming abundance yielded variable results. Live-trapping at Camp-1 indicated a very low abundance of lemmings, comparable to 2006. Snap-trapping in July suggested a moderately low abundance of lemmings at both camps, higher than in 2006. Winter nest surveys also indicated moderate lemming abundance. Field impressions suggest that lemmings were quite abundant at snow-melt but relatively scarce by late summer. However, the most noteworthy was that in both snap-trapping and live-trapping, Greenland Lemmings were much more abundant than Brown Lemmings. These data suggest that the former reached a peak this year but not the latter, which is unusual (in previous peaks, both species were synchronous, and Brown Lemmings far outnumbered Greenland Lemmings in a peak year). The failure of Brown Lemming to peak this year apparently explains why overall abundance of lemmings was at best moderate this year.

We found 60 out of 99 fox dens with signs of activity and 17 of them were used for reproduction. Ten litters of Arctic Fox were produced, ranging from 3 to 12 cubs (a total of 67 cubs were observed). Four litters were moved between dens, some of them several times. We captured 22 adult and 50 juvenile Arctic Foxes. Four adults had already been captured and tagged in 2003-2006. No Red Fox was observed. All dens with reproduction were located at least 18 km south of Camp 1, most of them around the goose colony or further south. Argos collars show that foxes are still on their territories by the end of September.

We found 17 Snowy Owl nests but none near Camp-1, which is usually a prime nesting area for them; most nests were scattered over a large area between Camp-1 and Camp-2 (up to 300 km^2). We were able to trap 12 female owls at the nest and to mark them with ARGOS transmitters. By the end of September, all transmitters were still operational, 9 had left Bylot Island, and at least 7 of them were clearly migrating south (up to 700 km away from Bylot Island). Nesting success of owls was relatively low with a lot of clutch attrition, both before and after hatch, and several total failures during chick-rearing. We also found 9 Rough-legged Bazzard nests but these were scattered over a very large area and few

of these nests could be monitored. We found 22 Glaucous Gull nests, 29 Long-tailed Skua nests and 1 Arctic Skua nest. Nesting success (proportion of nests successful in fledging at least one young) was moderate for owls (60% vs. 95% in 2004) and gulls (40% vs. 38% in 2006) but was low for skuas (9% vs. 0% in 2006). Average clutch size was 6.4 eggs for owls (vs. 7.1 eggs in 2004), 2.3 eggs for gulls (vs. 2.1 eggs in 2006), and 1.9 eggs for skuas (no data available in 2006).

We surveyed about 400 nests of Snow Geese in the colony (Camp-2) and monitored their reproductive success. Snow Goose arrival was one of the latest on record, possibly due to harsh conditions encountered during the spring migration in northern Quebec where the spring melt was very late this year. Geese started nesting immediately upon arrival but the peak laying date was delayed compared to the long-term average. The nest density in the colony was slightly higher than last year (3.0 nests/ha in 2007 compared to 2.57 nest/ha in 2006) but slightly below the long-term average. The average clutch size was 3.91, which is higher than the long-term average. Predation rate on nests was low, especially by foxes, and thus nesting success was very high (82%, a value well above the long-term average). Survival of young during the summer was apparently good because the young/adult ratio in our banding drives in August was above the long-term average. Overall, these results indicate a good production of young on Bylot Island by the end of the summer.

We documented the presence of 8 shorebird species. Twenty-seven shorebird nests of 5 species were monitored. The most abundant nesting birds were the Baird's and White-rumped sandpipers. Nest density was low and arrival and lay dates were late relative to previous years. This was likely caused by harsh weather conditions encountered in the low arctic during the spring migration. In addition to the monitoring of natural nests, 160 artificial nests were deployed. Predation pressure on natural and artificial nests was low probably due to an increase in the abundance of lemmings on the island. The Arctic Fox was the only shorebird egg predator (identified using remote camera). Nesting success of the Baird's and White-rumped sandpipers was much higher in 2007 (78% and 73%, respectively) compared to the previous two years. We also found 78 nests of Lapland Buntings, whose nesting success (proportion of nests successful in fledging at least one young) was high (62% vs. 9% in 2006).

M.-C. Cadieux, G. Gauthier, C. Gagnon, E. Levesque, J. Bety, D. Berteaux. Monitoring the environmental and ecological impacts of climate change on Bylot Island, Sirmilik national park. 2004-2008 final report. http://www.cen.ulaval.ca/bylot/files/NEI_Final_Report_2008.pdf

G. Gauthier, M.-C. Cadieux, J. Lefebvre, J. Bety, D. Berteaux, A. Reed. Population study of Greater Snow Geese on Bylot and Ellesmere Islands (Nunavut) in 2007: a progress report. http://www.cen.ulaval.ca/bylot/files/Report_Bylot_2007.pdf

Arctic WOLVES – 2007 Project Field Report, http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2007.pdf

86. Fosheim Peninsula, Ellesmere Island and Axel Heiberg Island, Canada (79°50′ N, 84°30′ W)

Field work was conducted on Ellesmere Island and surrounding areas during 2 periods, 21-27 June and 1-7 August. In June, we searched for nesting geese during reconnaissance flights on the Fosheim Peninsula on Ellesmere Island, and along the coast of Axel Heiberg Island. In August, nests were revisited to determine success. Near Eastwind Lake on the Fosheim peninsula, goose exclosures were installed to evaluate the aboveground primary production and to assess the grazing impact. At this site, small-mammal snap-trapping was also conducted in both mesic and wet meadow habitats. Goose banding took place using the same technique as on Bylot Island. Finally, plant biomass was sampled inside and outside exclosures, again using the same technique as on Bylot Island.

A total of 28 Greater Snow Goose nests (15 on Ellesmere Island and 13 on Axel Heiberg Island) were found, a relatively small number but more than three times the number of nests found in 1971 in the same area by Richard Kerbes. Most of these nests were widely scattered. The peak hatching date was 16 July, which is about 3 days later than the hatching date observed in 1971, with an average clutch size of 5.04, lower than the average clutch size observed in 1971. The nesting success (proportion of nests hatching at least one egg) was 63% this year, a value similar to the long-term average on Bylot Island. Family groups were smaller and more scattered than on Bylot Island, which forced us to conduct 22 banding drives, all on Ellesmere and Axel Heiberg Islands.

G. Gauthier, M.-C. Cadieux, J. Lefebvre, J. Bety, D. Berteaux, A. Reed. Population study of Greater Snow Geese on Bylot and Ellesmere Islands (Nunavut) in 2007: a progress report. http://www.cen.ulaval.ca/bylot/files/Report_Bylot_2007.pdf

87. Traill Island, Karupelv Valley, Greenland, Denmark (72°30′ N, 24°00′ W)

Observations on snow melt chronology in June indicated that it occurred a few days earlier than in 2006, and this was in line with the trend becoming apparent from our long-term observations.

Compared to 2006, the figure of 214 lemming winter nests recorded was less than one third compared to that registered in 2006. This was regarded as typical for classical lemming lows, and this figure matched well with the output of the trapping session started in the end of June. The density, evaluated as being of the order of 1 to 2 lemming /10 hectare, was well reflected in the response of the predators. The most striking was the complete absence of Snowy Owls. Long-tailed Skuas were present according to their usual migration pattern, but birds observed in the restricted study area apparently gave up territorial behaviour soon after their arrival, as large flocks (nearly hundred birds) were seen during the earliest surveys. The rarity of lemmings as their main prey is further reflected in the fact that of 8 Arctic Fox dens checked, only one showed evidence of reproduction, but a single pup observed early in

the season was not recorded later. The extreme rarity of direct observations of foxes also deserves mentioning, and could be related to increased mortality in the previous winter.

The pattern exhibited by Ermines is of special interest in two major respects. The 34 lemming nest taken over and used are the highest absolute figure ever recorded during this long-term monitoring and also the relative proportion of one Ermine nest/per 6 lemming nest is the highest ratio recorded. Therefore, the situation experienced by lemmings in their subnivean retreat could have hardly produced any other density.

Breeding proved among Rock Ptarmigans (at least 4 cases) also deserve a special mention when compared to previous years. Waders were breeding more or less in average numbers but non-systematic observations late in the season suggest poor breeding success.

Observations made by another team in adjacent areas in August (around Kong Oscars Fjord) suggest that these areas shared similar lemming and predator patterns to those recorded on Traill Island.

B. Sittler

88. Zackenberg, Greenland (74°28′ N, 20°34′ W)

Little snow fall over winter resulted in early snow melt (contrary to 2006). Summer was quite stable and dry. Snow cover decreased to 50% on flat areas on approximately 13 June as estimated from notes and photos (was not determined by the analysis method usually used at Zackenberg due to calibration problems with the cameras).

According to observations undertaken between 25 May and 30 October 2007, more Greenland Lemmings were seen than in 2006, but the number of winter nests within the lemming census area (n=265) suggests that it was a medium year in terms of population size, although on the rise.

The number of encounters of Arctic Foxes was very high, and their breeding was recorded in three dens.

Snowy Owls were absent in Zackenberg, but recorded in a neighbouring valley. Ravens were breeding outside of the census area and a Gyrfalcon was observed several times. Contrary to recent years, many pairs of Long-tailed Skuas bred this season. Of 17-25 territories, 13 were found breeding. Average clutch size was 1.7. In total 11 chicks hatched in 7 nests, but only 3 chicks were alive when ringed at 7-8 days of age.

Sanderlings were recorded in high numbers. The Dunlin remains the most numerous wader species. The Common Ringed Plover numbers fluctuate markedly through the years, with 2007 being a low year.

Egg laying in 25% of all wader nests was initiated before 10 June and just over 93.3% before 1 July. Median first egg dates were on 15 June or earlier in five focal species.

The Dunlin had reasonably high nest success, while nest success was low in the Turnstone and very low in the Sanderling. The all-wader-predation rate was 81.7%, which is very high. In most cases of nest loss, Arctic Fox was the suspected culprit. A research project on Sanderling breeding behaviour (leader Jeroen Reneerkens – e-mail: J.W.H.Reneerkens@rug.nl) meant more than usual traffic in the territories. It is uncertain to which extend this might have contributed to the higher predation rates on Sanderling nests, but some effect must be expected. Chick survival was assumed to be low, but we no longer conduct low tide counts, that we used to use for estimation of chick survival.

Inside the census area, 2 Rock Ptarmigan pairs were encountered during the census period. Early observations suggest that the Rock Ptarmigans were in higher numbers than in recent years, although lower numbers than in 2006. This year much fewer ptarmigan remains were recorded at Arctic Fox dens.

The number of Snow Bunting territories was high, although lower than the record numbers of 2004 and 2005, and even lower than 2006. The reason for the short "blooming" of the population is unknown. It possibly relates to the warm summers in recent years. Possibly, the colder 2006 summer is partly responsible for the reduction in numbers.

A record of the Pectoral Sandpiper is of some interest.

Erratum:

In the account for Zackenberg in 2006 ("Arctic Birds" # 9, page 36), two mistakes were made. The correct date of ice break up was 14 July (not 12 June), and there were 21-30 Long-tailed Skua pairs (not 14-31 pairs).

J. Hansen

INFORMATION PROVIDED BY RESPONDENTS
WAS EDITED AND TRANSLATED INTO ENGLISH (IF NECESSARY)
BY PROJECT COORDINATORS

BIRD BREEDING CONDITIONS IN THE ARCTIC IN 2007

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In total 39 filled questionnaires and 33 free-form contributions were received from ornithologists and other researchers who had visited the circumpolar Arctic region in summer 2007. Additional information from 16 sites or wider geographic regions was obtained from the web sources. Thus, we have data from 88 localities with the following distribution: 1 in Norway, 59 in Russia (16 in European Russia, 12 in West Siberia, 9 on Taimyr, 8 in Yakutia and 14 on Chukotka), 13 in Alaska, 13 in Canada and 2 in Greenland.

Thus, the total number of surveyed localities slightly increased in 2007 compared with 2006, but remained still insufficient to reflect adequately the situation in several Arctic regions. In some regions sparse coverage was due to the small number of sites where ornithological studies had been carried out (for example, in Greenland), but in other regions insufficient data flow was related to a low degree of involvement by researchers in the Arctic Birds Breeding Conditions Survey (Canada, Iceland and Norway).

Weather and other abiotic factors

Weather conditions are one of the most important environmental factors in the Arctic, influencing timing of breeding, breeding effort and bird reproductive success. Breeding results can be strongly affected by weather anomalies, such as prolonged rains, off-season flooding, summer snowfalls and drought.

The summer months were characterized by mostly warm weather in 2007, judging by the maps of air temperature deviations from the long-term average in June and July (Fig. 1 and 2 on page 59). Mean monthly temperatures were above the long-term average across most of the Arctic region in June and, particularly, in July. June was particularly warm in the north of Yakutia and on Chukotka. The areas with temperatures below average included the belt along the Arctic Circle in Northern Europe east of Sweden, the western part of West Siberia, south-western Alaska and a considerable part of the Canadian Arctic, with a particularly cold region to the west of the Hudson Bay.

Above average mean monthly air temperatures were widespread in July and reached high values. Relatively small areas of low temperatures occurred in southern Alaska, in the eastern Canadian Arctic, in the centre of eastern Greenland and in the east of Fennoscandia, while a single extensive region of cold weather stretched in July from eastern Taimyr to central Yakutia.

Reports from researchers about spring phenology and summer season temperatures (Fig. 1 and 2 on page 59) were generally in agreement with prevalence of increased air temperatures during the summer. As usual discrepancies were observed for some Subarctic regions (the White Sea area and south-western Alaska), where spring normally starts in May, and indications of an early season did not agree with low temperatures in June in these areas. Respondents reported an unusually early start of spring in 2007 in West Siberia, but returns of cold weather occurring until mid June resulted in a general evaluation of the spring timing as average or even late. In spite of increased air temperatures in June large accumulations of snow on Taimyr and Wrangel Island caused a delay of spring in the former region and rapid snowmelt in the latter. An early onset of spring was recorded at localities north of the Arctic Circle from Putorana Plateau in northern central Siberia to the east across extensive area to the Mackenzie Delta in the north-west of Canada, and in several localities in eastern Canada and in Greenland. Apart from Taimyr, the spring was late in some sites in the European Arctic, on Pribiloff Islands and in many sites of northern Canada. In the latter region the delay occurred in spite of small accumulations of snow during the winter, and was caused primarily by low air temperatures in spring.

The impressions of respondents about summer weather generally agreed with July air temperatures (Fig. 2 on page 59), as reports of warm summer apparently prevailed. The discrepancies were found at several sites in the north of Alaska and on western Taimyr.

Prevalence of high temperatures across extensive areas during the breeding season in 2007 were so extreme that they can be described as a weather anomaly, as described in detail in the account # 33 on the Severnaya Zemlya Archipelago. These temperature conditions could have been favourable for reproduction of birds in the Arctic from a purely energetic perspective, but, on the other hand, they could have resulted in a shortage of food for chicks in certain species due to insufficient wetness of habitats and/or loss of synchrony between hatching of chicks and mass emergence of insects. We have no exact data on impacts of the anomaly on birds. Among other factors of possible importance for bird reproduction, high water levels were reported in the centre of the Kola Peninsula, West Siberia (Ob River and rivers of the Yamal Peninsula) and on the Alaseya River in Yakutia. Birds should have been

adversely affected by rapid drops of temperatures with short-term snowfalls that were recorded in spring in the Lena River delta and on Southampton Island in Canada, and in the first half of July in the Pyasina River delta and on Anabar Plateau in the north of central Siberia. Loss of chicks was observed in the Pyasina delta during the cold weather period and on central Yamal during heavy rains in late July.

Rodent abundance

Microtine rodents represent an important food resource for a variety of birds and mammals, whose numbers, distribution and breeding performance depend on rodent abundance. When there are high numbers of microtine rodents available for rodent-specialist birds and mammals, there is less predation pressure on other tundra birds, and thus they potentially have better breeding season.

There was low rodent abundance at most sites of the Arctic in 2006, and the spatial pattern of distribution of lemmings (*Lemmus* and *Dicrostonyx* genera) and voles (primarily *Microtus* and *Clethrionomys* genera) was patchy in summer 2007 (Fig. 3 on page 60). High abundance of rodents was observed only in Eurasia, from Norway to Chukotka, with clusters of several points with high numbers in the north of Scandinavia, Gydan Peninsula, and Northern Taimyr. Elsewhere localities with high abundance were interspersed with moderate or low numbers. It is noteworthy that rodent numbers increased during the summer at two sites on the Kola Peninsula, on Wrangel Island, St. George Island in the Bering Sea, in the Walker Bay area in Canada and in north-eastern Greenland. Numbers of Greenland Lemmings were expected to peak on Bylot Island in Canada, but the abundance was at best moderate.

Rodent numbers decreased considerably in 2007 in northern Alaska, which had been a single extensive region with high abundance of lemmings in 2006. Rodent numbers remained low in the mainland tundra close to the Polar Ural Mts and on south-western Alaska. Patterns of abundance were a mosaic elsewhere, although there was insufficient data from some areas. Apart from the above-mentioned northern Alaska and north-eastern Greenland, a general increase in the abundance of rodents occurred in 2007 compared with 2006.

Predators

Arctic Fox is one of the principal Arctic predators, having strong impact on the breeding success of ground-nesting birds. Generally, the abundance of Arctic Foxes was not high in 2006, and they were common breeders in only a few localities: north-eastern Europe, northern Alaska, north-eastern Greenland, Wrangel and Southampton islands. The situation changed in 2007, and apart from

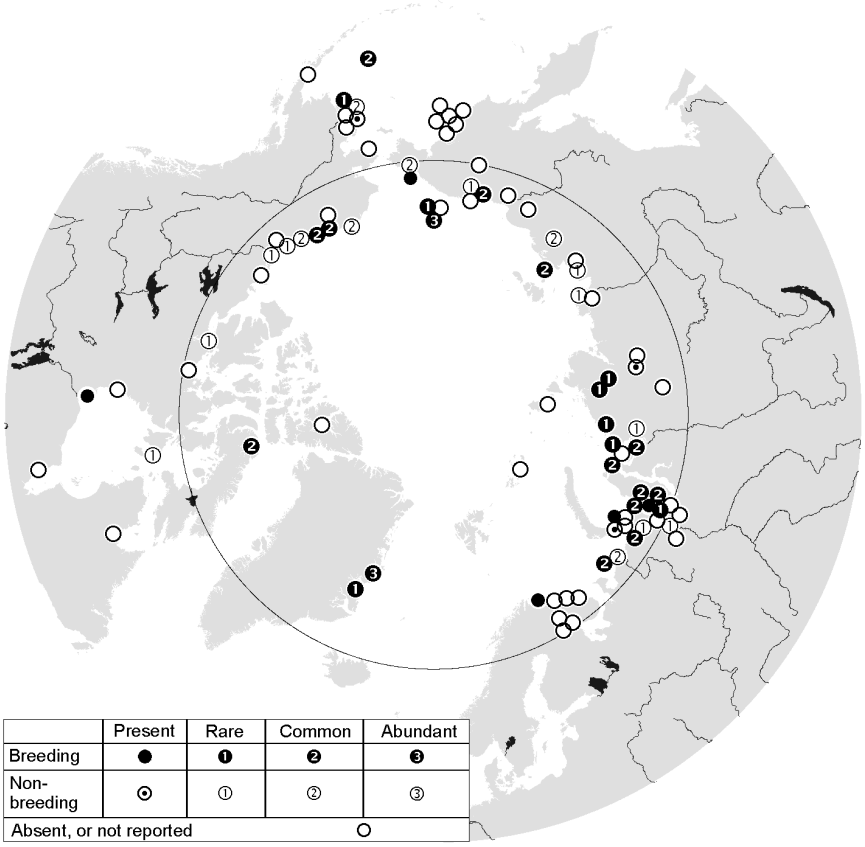

Figure 1. Abundance of Arctic Foxes in the Arctic in 2007

above-mentioned sites Arctic Foxes also bred in considerable numbers also in northern Norway, West Siberia, New Siberian Islands, north-western Chukotka and Bylot Island (Fig. 1 on page 44). Arctic Foxes bred at 28 sites of 47 sites where they were recorded in 2007, which represented an increase to 60% from 38% in 2006. Winter mortality of Arctic Foxes was recorded at 4 sites; in summer fox numbers were low at 3 of these, and breeding was not observed there.

Compared with Arctic Foxes Red Foxes were observed generally in more southerly localities, and they were recorded not only in the forested areas, but in the southern tundra as well. Similarly to 2006, Red Foxes were reported from 13 sites.

Ermines were observed at 8 sites of the Old World Arctic, and Least Weasels at 3 New World localities. American Mink was not encountered in the Yukon-Kuskokwim Delta, where their abundance had been high in some previous years when they strongly affected survival of bird clutches, but minks were recorded at two sites on the Kola Peninsula. As usual several researchers reported Wolf, Wolverine and Bears. Records of destruction of nests of the Golden Eagle by Brown Bears on Yamal is noteworthy.

Distribution of breeding owls usually correlates with distribution of areas with increased abundance of rodents. Snowy Owls were numerous breeders in 2007 in a single area, on the mainland near the New Siberian Islands, where lemming populations peaked. This species was a relatively common breeder in 3 other sites: north-western Taimyr, Bylot Island in Canada and the north-east of Norway. Breeding in small numbers was reported for central Taimyr, Wrangel Island and the mountains of interior Chukotka. Wrangel Island was the only site that supported owl breeding when there was a low, but increasing, abundance of lemmings. Numbers of Snowy Owls were considerable on Herschel Island in Canada near the border with Alaska, but they did not breed there. The latter locality was one of the only two where breeding of Short-eared Owl was recorded in 2007; another was at the Kyttyk Peninsula, north-western Chukotka. In total observations of owls, including accidentals, were made at 41 sites, of which they bred at 11 (Fig. 2 on page 45). Snowy and Short-eared owls were seen at the same number of localities.

Pomarine Skuas were similar to Snowy Owls in that they bred at localities with average or high lemming abundance. These localities included one site on central Yamal, one on the Gydan peninsula, all sites on northern and central Taimyr, and one in the lower Indigirka River area (Fig. 3 on page 46). Thus, in accordance with the increase in lemming abundance breeding Pomarine Skuas were found in 2007 in more localities than in 2006. Pomarine Skuas did not nest at sites with high or average abundance of voles. It is noteworthy that both Pomarine Skuas and Snowy

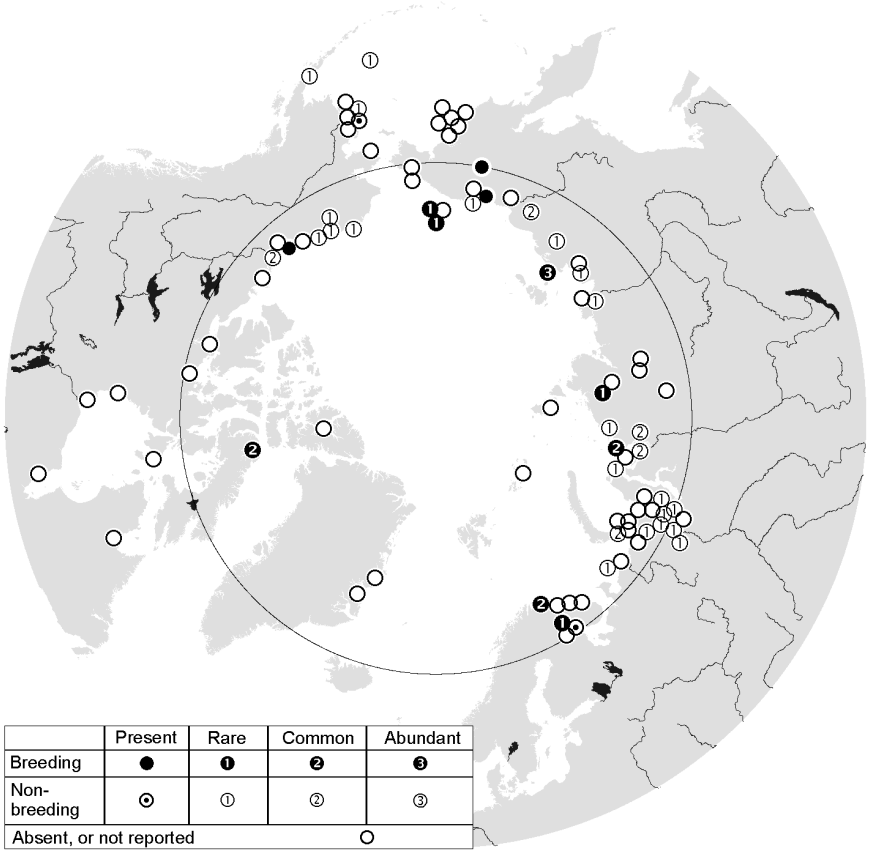

Figure 2. Abundance of owls in the Arctic in 2007

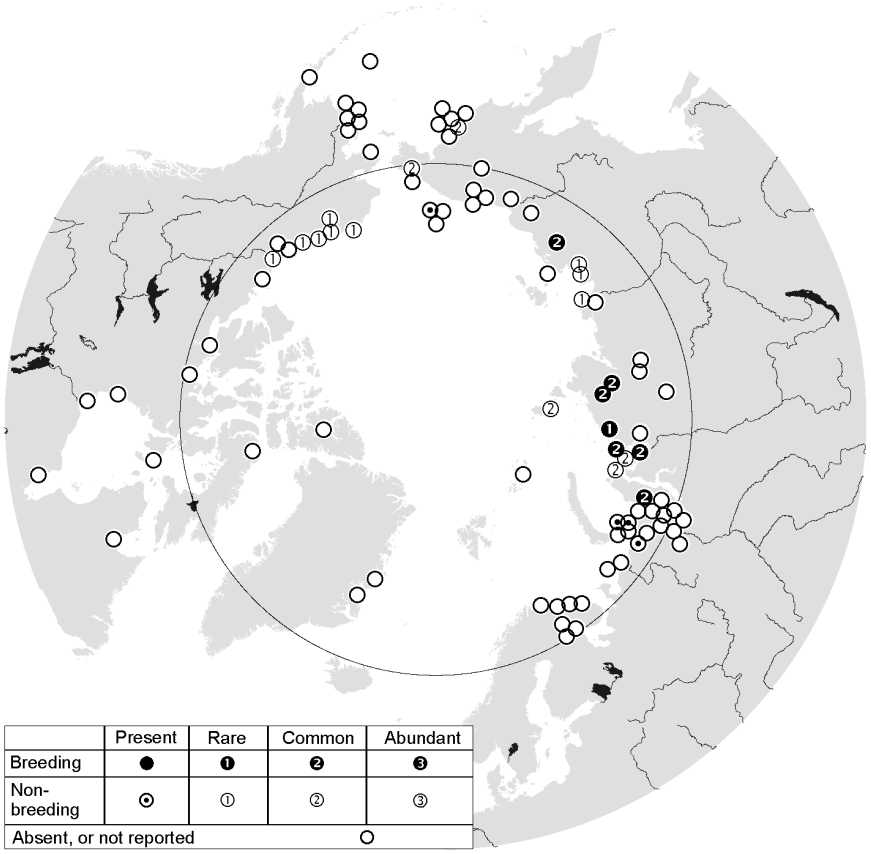

Figure 3. Abundance of Pomarine Skuas in the Arctic in 2007

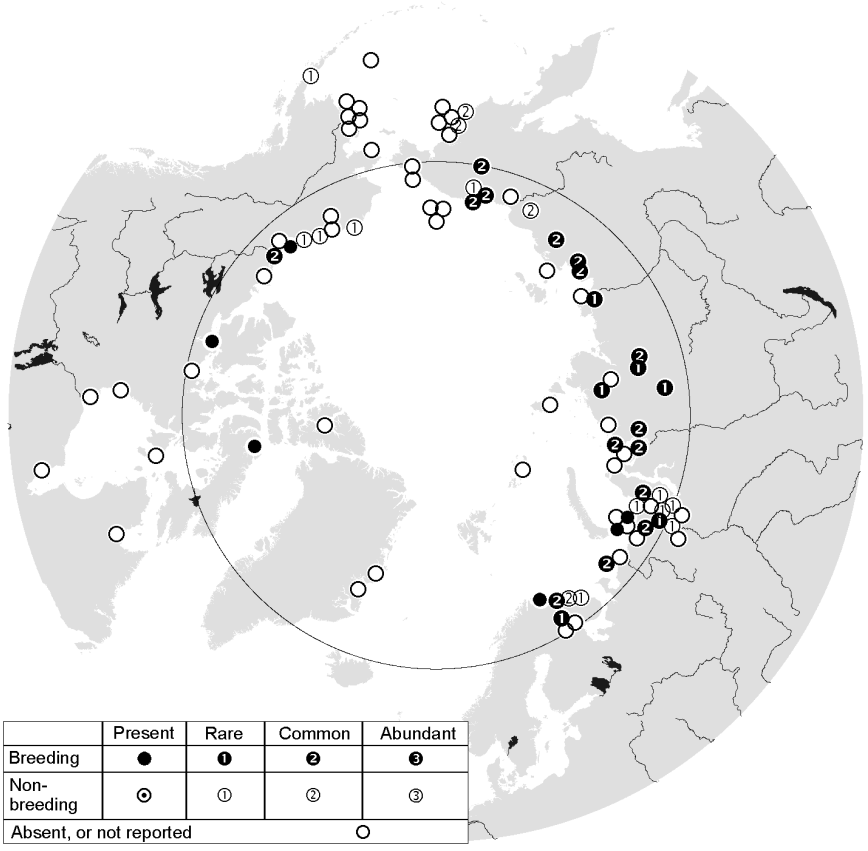

Figure 4. Abundance of Rough-legged Buzzards in the Arctic in 2007

Owls bred only at two sites on Taimyr. Reasons for mutual exclusion of these two species on the breeding grounds in 2007 are not well understood, and might be an interesting research subject.

Unlike Snowy Owls and Pomarine Skuas Rough-legged Buzzards often nest when there is average abundance of lemmings and/or voles, and sometimes when there is low abundance. Accordingly they were widely spread as breeders from northern taiga areas in the south to the southern Arctic tundra in the north (Fig. 4 on page 46). Buzzards were not numerous anywhere, but they were common breeders at least at 15 localities. Clutch desertion by Buzzards due to low rodent abundance was reported from a single area, Bolshezemelskaya Tundra.

Other avian predators, in spite of their relatively high species diversity, in 2007 showed neither notable change in distribution and/or abundance in response to environmental factors, nor did they have a strong impact on the breeding success of tundra birds.

Distribution and numbers of tundra birds

A number of interesting observations on the distribution of bird species was reported by the survey contributors. Breeding record of Barnacle Geese on the Sem' Ostrovov Archipelago in the north of the Kola Peninsula indicated continuing expansion of the breeding range of this species. The first breeding record of the Ringed Plover on the Franz Jozef Land Archipelago confirmed the expansion of this species into the polar desert. Several other reports documented changes in bird breeding ranges. Northward shifts of breeding ranges were recorded in the Pevek city area for the Wood Sandpiper, Terek Sandpiper, House Martin and House Sparrow. The appearance of a vagrant Pallid Harrier on Taimyr (the first record for the region), Sandhill Crane in the Lena Delta (western-most record of this expanding species), Eurasian Kestrel on south-eastern Chukotka (new species for the region), were the most interesting among reported observations.

A pronounced decline in numbers of breeding Pectoral Sandpipers and Grey Phalaropes occurred synchronously at several localities of northern Alaska in 2007. Information about changes in abundance of some other species was reported for many localities, but, with the exception of grouse, these data were not sufficient for conclusions about general patterns.

Available information about the abundance of Willow Grouse and Rock Ptarmigans, two conspicuous and widely distributed birds with long-term population dynamics, has enabled us to characterize current trends in some regions of the Arctic. A comparison of the 2007 reports (Fig. 5 on page 47) with the data on the grouse abundance in 2006 (see «Arctic Birds» # 9, pages 41) showed that numbers of Willow Grouse declined in two regions: the Polar Urals area on the border between Europe and Asia,

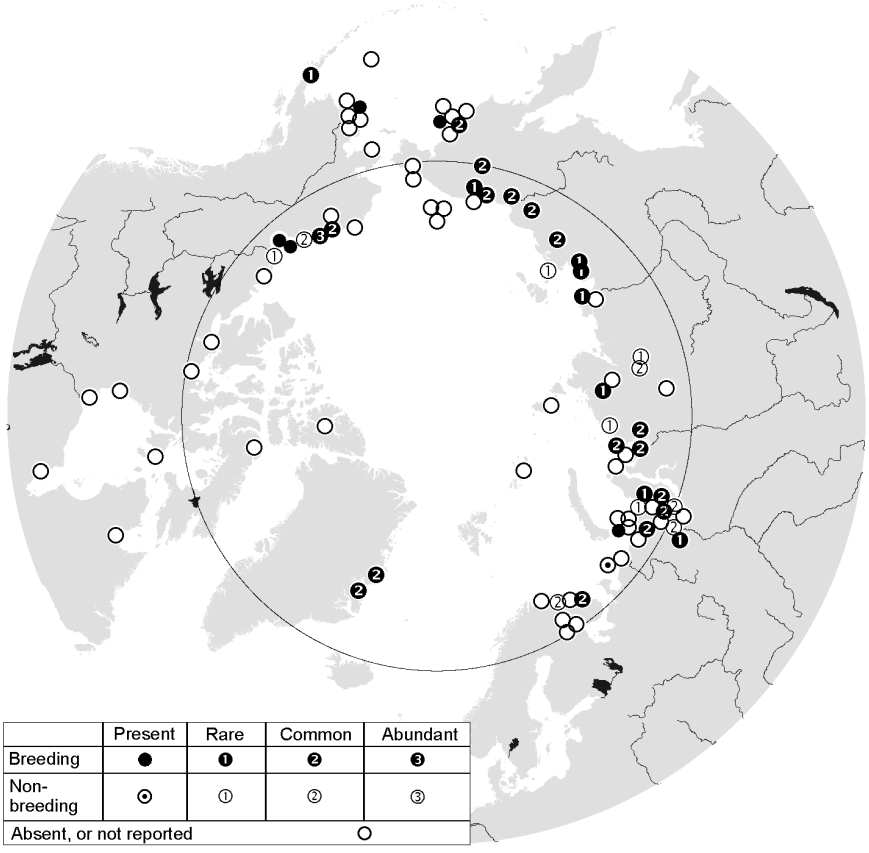

Figure 5. Abundance of grouse in the Arctic in 2007

and southern Chukotka. High grouse abundance was no longer observed there, and low numbers of these birds were reported at several localities instead. Numbers of Rock Ptarmigans in north-eastern Greenland declined in 2007 from 2006, when they were abundant, but were still higher than in other recent years. Changes in the abundance of grouse was not apparent elsewhere in the north of Eurasia and in northern Alaska, while data from other regions were not sufficient to make any conclusions.

Breeding success

As in the previous years, evaluations of the reproductive success by tundra birds were not numerous in 2007 (Fig. 4 on page 60). Moreover, in several cases these evaluations were based on a study of a single species at a site (most often waterfowl), and hence could fail to adequately reflect the situation for most other birds there. Breeding success evaluations are available from 40 localities out of 88 represented in the database in 2007. However, information from several localities available in each of several regions enabled us to judge the general patterns there.

Evaluations were the most homogeneous in the region adjacent to the Polar Ural Mts. from both east and west, i.e. the eastern part of Bolshezemelskaya Tundra and extreme north-west of Siberia. All respondents, who evaluated breeding success there, ranked it as average. There were high evaluations of bird breeding performance on Taimyr and farther east, perhaps to the Lena Delta. The area of successful reproduction of birds in 2007 can be probably further extended eastward at least to the Indigirka River, if we take into account average and high ranks of the rodent abundance in eastern Siberia.

Increasing lemming abundance and favourable weather resulted in high breeding success of birds on Wrangel Island. Several evaluations available from western Alaska were also high. Breeding success was declining on the North Slope of Alaska from Barrow eastward to the Canadian border, and there were low estimates farther into Canada. Tundra birds bred successfully at several dispersed localities in eastern Canada, but the low density of sites with known reproductive output did not enable us to make any judgement about the size and continuity of areas with good reproduction in the eastern Canadian Arctic in 2007. Nest success of waders was low in north-eastern Greenland due to strong predation pressure by numerous Arctic Foxes.

The situation with bird breeding success remained generally unclear for the western European Arctic, although high abundance of rodents in north-eastern Norway and central part of the Kola Peninsula, along with indications of average bird breeding success from other parts of the latter region, imply generally successful reproduction by birds.

Human activities had diverse impacts on birds at several sites. Elimination of Arctic Foxes in the Yukon-Kuskokwim Delta and Barrow area in Alaska as part of Spectacled and Steller's eiders Recovery Management Action resulted in decreased predation by foxes on birds. On the other hand, the pressure of egging on waterfowl and other waterbirds is reported from Vaigach Island in north-eastern Europe and in south-eastern Chukotka; illegal hunting of swans has been also reported from the latter area.

Comparison with predictions for 2007

Predictions of bird breeding performance in several Arctic regions for 2007 were made in the "Arctic Birds" No. 9 (page 42) based on the implied regularity of variation in rodent populations, and a corresponding variation in predation pressure on egg clutches of ground-nesting birds. We expected generally successful reproduction by birds in the western part of Eurasia, on Wrangel Island, south-western Alaska, and with a lesser certainty in the Canadian Arctic and north-eastern Greenland. Low breeding success of birds was predicted for northern Alaska.

The pattern emerging from the analysis of data collated in 2007 was fairly close to that predicted. A possibility was suggested that a local peak of vole numbers recorded in 2006 on the Kola Peninsula would have spread to larger areas and thus contribute to successful breeding by birds. While numbers of rodents were not over-abundant in the region in 2007, they still occurred at high densities at several sites, which implied favourable biotic breeding conditions for birds.

An increase in rodent abundance was expected in 2007 to the east of the White Sea, in the European Arctic, northern West Siberia and northern Central Siberia. Rodent numbers actually increased at several sites across this wide area, although not everywhere. There was a particularly pronounced increase in the north of the Gydan Peninsula and Taimyr resulting in average and high evaluations of nest success, respectively. A predicted successful reproduction by birds on Wrangel Island was also confirmed. Conditions were very heterogeneous in 2006 across the rest of north-eastern Asia, which led us to expect a mosaic pattern of bird breeding success in 2007 there. It was really the case in the Lower Kolyma area and Chukotka. However, direct and supplementary data indicated high rodent abundance at many sites of northern Yakutia from the Lena Delta to the lower Indigirka area, which most likely favoured successful breeding by birds, as was also confirmed by high proportions of juveniles in most species of Siberian waders on the non-breeding grounds in Australia (see Minton *et al*. in the current issue).

Birds nested successfully in south-western Alaska, as predicted, although this was probably more strongly related to the low abundance of predators, rather than rodent

numbers. In northern Alaska an anticipated collapse of lemming populations did not occur everywhere across the region, and lemmings remained common in the Barrow area. An unexpected successful breeding of waders was observed there and also at several sites to the east.

Lemming abundance increased at two sites of the Canadian Arctic, but cold weather across major parts of the region in 2007 did not favour successful breeding by birds on a wide scale.

Lemming abundance increased in north-eastern Greenland, but numerous Arctic Foxes destroyed numerous clutches of birds, which resulted in a low reproductive success, in spite of otherwise favourable breeding conditions.

Generally, wrong predictions for 2007 included that there would be low breeding success of birds in northern Alaska and high in the Canadian Arctic and north-eastern Greenland.

Predictions for summer 2008

Tendencies in the dynamics of rodent and predator populations, observed in some regions, enable us to suggest scenarios for the state of "prey-predator" systems in summer 2008 and to consider the anticipated impact of the predators on the breeding success of tundra birds.

The high abundance of rodents in 2007 on the Kola Peninsula and the extreme north-east of Norway can locally extend into summer 2008, or develop at other sites within the region. However, the rodent abundance will most likely decrease overall, resulting in stronger pressure of the abundant predators on clutches of ground-nesting birds and a decline in their breeding success.

Rodent abundance will, probably, continue to increase at some localities in the north-east of Europe and north-west of West Siberia, enabling predominantly high nest success of birds in these areas. Local areas of high rodent abundance that had appeared in 2007 in the wide region including northern Gydan Peninsula, Taimyr, western and central Yakutia, should further expand. However, this can happen in the end of 2007 or beginning of 2008, and be then followed by a crash of rodent populations. Thus, high rodent abundance is unlikely to occur in large areas of this region in summer 2008, while predators, numerous after successful breeding in 2007, may have a strong adverse impact on ground-nesting tundra birds.

With the prolonged periods of lemming cycles on Wrangel Island we predict a continuation of the growth phase in 2008, and consequently a high breeding success of birds once again. The situation with the abundance of rodents and predators will most likely remain highly variable between localities on Chukotka, and thus we cannot make general predictions regarding bird reproductive performance in large areas.

Vole populations in the Yukon-Kuskokwim Delta in Alaska, after several seasons of low numbers, should start to recover in 2008. Mammalian predators are not expected to be numerous, and a relatively high breeding success of tundra birds can be anticipated.

The spreading of the low phase of rodent populations over wide areas in northern Alaska seems the most likely scenario for that region. In this case the breeding success of birds in 2008 will depend to a considerable extent on the survival of Arctic Foxes during the winter, with the high fox survival resulting in strong predation pressure on bird clutches and low reproductive performance.

The scarcity of widely distributed localities with available information on the rodent abundance in Canadian Arctic do not enable us to make confident predictions for this extensive region. However, from the lack of localities with high reported abundance of rodents during recent years we would expect the continuation of the increasing trend observed at some sites in 2007 and peak values in a number of localities in 2008. This will result in favourable breeding conditions for birds. Lemming numbers can continue to increase in 2008 also in north-eastern Greenland, but Arctic Foxes were already abundant there in 2007, and it remains unclear how foxes will affect rodent populations and bird breeding success in 2008.

In summary, successful reproduction by birds is expected in summer 2008 in the region on the border of Europe and Asia, on Wrangel Island, Yukon-Kuskokwim Delta in Alaska and some areas of the Canadian Arctic. Low breeding success should take place on the Kola Peninsula, major part of Siberia (excluding its westernmost and easternmost areas) and northern Alaska. Data available for western Europe and north-eastern Greenland are too insufficient to make any predictions. As usual weather anomalies may result in important changes to these predictions, and their verification, or otherwise will be made based on contributions of the Arctic Birds Breeding Conditions Survey participants in 2008.

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2007 ARCTIC BREEDING SUCCESS, BASED ON JUVENILE RATIOS OF NORTHERN HEMISPHERE WADERS WHICH SPEND THE NON-BREEDING SEASON IN AUSTRALIA

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Introduction

Demographics are becoming of increasing importance given that nearly half the world populations of waders on which count data is available have shown marked declines over the last 20 years (IWSG 2003). Data on the reproductive success of waders, especially those breeding in the Arctic or remote parts of Siberia and Asia, is difficult to obtain, particularly on a long-term basis and on a wide variety of species. Collection of data on the proportion of juvenile/first year birds in catches of waders on the non-breeding grounds is at present the main method used for obtaining an annual breeding success index for wader populations which use the East Asian/Australasian Flyway.

Such information has been systematically collected from cannon-net catches of waders in Victoria and adjacent areas of south-east Australia (SEA) back to the 1978/1979 non-breeding season. On Red-necked Stint and Curlew Sandpiper (for scientific names see tables) the data set now covers 30 years, while on another five species it is more intermittent in the early years but almost continuous since the early 1990s.

In north-west Australia (NWA) annual monitoring in the core of the non-breeding season, when wader populations are relatively sedentary, was only commenced in the 1998/99 season. Some data exists from earlier years but much of the cannon-net catching was in the March/April and August/October migration seasons in the early years after catching was commenced there in August 1981. Eight species are now monitored annually, and several other species less frequently (because catching these species in adequate quantities cannot be achieved every year).

Data from previous years has been published annually in Arctic Birds bulletin since issue No. 2 in 2000 (Minton *et al.* 2000, 2005, 2007). This paper presents the data on the proportion of juveniles in catches made in the November 2007 to March 2008 period in both SEA and NWA. Results are compared with earlier years and an assessment made of the relative outcome of the 2007 breeding season for each species/population.

Methods

As usual, catching conditions were standardized as far as possible in order to maximize comparability of data between years. Only birds caught in cannon-net catches are included in the main tables (Tables 1-4), because catching method has been shown to have an effect on juvenile proportions, with mist-netting catches generally having a higher percentage of young birds (Pienkowski & Dick 1976, Goss-Custard *et al.* 1981).

Birds caught between 1st November and 20th March are incorporated into the NWA data. A slightly shorter period (16th November to 20th March – but February 28th for Curlew Sandpiper and Sharp-tailed Sandpiper) was used for SEA because juvenile birds take rather longer to reach their non-breeding destination and adults of some species set off on northward migration rather earlier.

Data from the south-east coast of South Australia and from King Island (Tasmania) is included with data from various locations along the Victorian coast in the information presented for SEA. In NWA the data is from Roebuck Bay, Broome, and 80 Mile Beach (combined).

Some mist-netting data from NWA is also included, for the record. This is for species which are not normally cannon-netted and is a much smaller volume (one mist-net catch only in 2007/2008).

In interpreting the results it needs to be borne in mind that the figures are only a proxy/index of annual reproductive success. This is partly because of the non-homogeneous distribution of the age groups of some species on the non-breeding grounds (especially Red Knot and Bar-tailed Godwit in SEA). It is also because the data is collected on average six months after young birds fledge, and therefore after completion of their first migration during which significant mortality may occur. There are also potential errors and biases associated with this assessment method, especially the vagaries of cannon-net catches at high tide roosts, and these have been detailed in earlier papers. Maximising the number of samples collected for each species each year is one method of trying to even out the effects, and also of quantifying the confidence limits of the estimated breeding success figures.

In SEA we have very long data sets (now 16 to 29 years) and therefore in Table 1 we present medians as the best measure of typical juvenile percentages in each species,

by eliminating the effect of way out extremely high or low figures. For NWA we only have data going back to 1998 and considered that data set is still too short for the median to be the best measure so we have presented the mean. We have given overall assessment of breeding success for each species, these categorisations being arrived at in a similar manner to those presented in Minton *et al.* (2005).

Results

The data for SEA for the 2007/08 season is given in Table 1. Also included are the **median** percentage juvenile figures for each species, derived from all years including the present one.

Good catch samples were obtained for all species except Red Knot. The Ruddy Turnstone sample size (599) was the highest ever, mainly because of an extremely successful visit to King Island during which 419 were caught over a six day period.

Attempts to catch Red Knot at both of their main locations in Victoria were unsuccessful, with only one bird being caught in the monitoring period. In lieu a detailed scan of the main flock of 600 Red Knots present at the main high tide roost in Corner Inlet was made in early March when adult birds were quite well advanced in their transition into breeding plumage and before any northward migration departures had occurred. Approximately 150 Red Knot were in partial breeding plumage. The remainder were still in non-breeding plumage. Catch data from previous years suggests that all of these would have been first-year birds, because even second-year birds which are going to remain on their non-breeding grounds assume at least a partial breeding plumage. Based on this scan therefore it is estimated that around 75% of the Red Knot population were juvenile/first year birds. This figure is used therefore for an estimate of 2007 breeding success.

The NWA results are given in Table 2. This includes only those species where at least 30 birds were cannon-netted. The highlight of this year's catching was achieving a total of 569 Curlew Sandpipers, a species which we have struggled to obtain in satisfactory quantities in many recent years. One catch was of 332, the highest single catch total for Curlew Sandpiper for nearly 20 years.

Percentage first-year figures for the last ten years of catches in SEA and NWA are given in Tables 3 and 4. These tables also give the **average** figure for each species over this ten-year period, with the figures from 2007/2008 also included.

Data from the single mist-net catch made in NWA is given in Table 5. Although information for five species is given, to compare with similar data from the previous year, only three of these species were caught in sufficient quantity for the percentage juvenile figure to be meaningful.

Discussion

South-east Australia (SEA)

It appears that the 2007 breeding season was generally a good one for wader populations which spend their non-breeding season in SEA. This is in contrast to the overall poor breeding season the previous year.

The highlight was undoubtedly the extremely high proportion of young birds (33.1%) in Curlew Sandpiper samples. This is the second highest ever in 29 years of monitoring. Only the phenomenal 1991 breeding season was better, with 45.3% juveniles in the 1991/1992 sampling season. It was most noticeable that Curlew Sandpipers were more numerous than in other recent years at most locations.

Bar-tailed Godwits, which are from the Alaskan population, also appear to have had a very good breeding season though some caution needs to be taken with the actual figures since only two catches were involved. In one of these the catch was only made after significant "twinkling". Previous experience has shown that such attempts to get birds to move into the catching area of a cannon-net quite often result in the departure of many of the older, wiser, adults resulting in a juvenile-biased catch sample. Note also that Bar-tailed Godwit figures are always exaggerated because a proportion of the young of the New Zealand Bar-tailed Godwit population spend their first year (or two) in Australia. Breeding success fluctuations are thus magnified. Scanning data on Bar-tailed Godwits in New Zealand has only shown one count in the October/November 2007 period when the proportion of juveniles was above 5.5% (Adrian Riegen, pers. comm.).

Ruddy Turnstone (19.4%) and Sanderling (14.4%) breeding success improved greatly over the abysmal outcome the previous season (1.3% and 0.5% respectively).

Sharp-tailed Sandpipers had yet another good breeding year. In five of the last six years the proportion of juvenile birds has been well above the long-term (16-year) median. This phenomenal run of good breeding success has now well and truly restored populations to levels prevalent 20 or more years ago before the serious decline of the 1990s and early 2000s occurred. Not only are Sharp-tailed Sandpipers seen in larger numbers at many places they are also now occurring at sites where they have rarely been present in many recent years.

Once again the Red-necked Stint is an enigma. It was the only species with a poor outcome from the 2007 breeding season. It is amazing how the breeding success fortunes of this species have varied over the last ten years. In four of the six seasons between 1998/1999 and 2003/2004 breeding success was well above the long-term median, and in the other two years it was close to the median. In the four seasons 2004/2005 to 2007/2008 the result in three

has been below this median and in the fourth was only at the median level. As previously mentioned for Curlew Sandpiper and Sharp-tailed Sandpiper marked variations in breeding success are reflected in population levels as determined by counts (and by general impressions). There was a huge peak in Red-necked Stint numbers coinciding with the period of high breeding success in the late 1990s and early 2000s. Now Red-necked Stint numbers have dropped right back to former, more normal, levels. This is apparent by reduced numbers in their core habitat areas and by a marked diminution of Red-necked Stint numbers in fringe habitats.

A key unknown is why some species have breeding outcomes in some years which are markedly different from most other species and why some species may have quite long runs of "good" or "bad" breeding seasons. Correlations between breeding success and key factors such as June/July temperatures on the breeding grounds (e.g., Soloviev *et al.* 2006), predator levels and date of snow melt need further investigation. But until it is possible to pinpoint breeding areas of each sub-population more exactly and until much more detailed meteorological and predator level data is available it will remain difficult to fully explain annual differences in breeding success between species.

North-west Australia (NWA)

The breeding outcome for the wader populations which spend the non-breeding season in NWA was also much better in 2007 than the very poor performance recorded for the 2006 breeding season.

As in Victoria the highlight was Curlew Sandpiper (28.8% juveniles). This suggests that it was an exceptionally good year for this species widely across the breeding range (though the exact breeding area of NWA Curlew Sandpipers is not known as there have been no recoveries or flag-sighting reports of birds from NWA on or near the breeding areas). It was most noticeable, particularly at 80 Mile Beach, that Curlew Sandpipers were far more numerous and widely distributed than for many years.

Great Knot and Bar-tailed Godwit had average, or slightly above average, breeding success. There is no indication yet that the Saemangeum Reclamation Project in South Korea has had any major adverse effect on reproductive rate for these two key potentially affected species.

Several other species had good breeding outcomes, including Grey-tailed Tattler for the second consecutive year. However, as in the 2006/2007 season, no juvenile Greenshank were captured in spite of reasonable samples being caught (39 in 2007/2008 and 70 in 2006/2007). It is possible that juvenile birds of this species may largely go

Table 1. Percentage of juvenile/first year waders in cannon-net catches in south-east Australia in 2007/2008

Species	No. of catches		Total caught	Juv./1st year		Long term median* % juvenile (years)	Assessment of 2007 breeding success
	Large (>50)	Small (<50)		N	%		
Red-necked Stint *Calidris ruficollis*	7	11	2502	259	**10.3**	13.7 (30)	Poor
Curlew Sandpiper *C. ferruginea*	1	7	299	99	**33.1**	10.0 (29)	Very good
Bar-tailed Godwit *Limosa lapponica*	2	0	124	70	**56.5**	16.5 (19)	Very good
Red Knot *C. canutus*	0	1	1	1	**(c.75)****	52.1 (17)	Good?
Ruddy Turnstone *Arenaria intepres*	4	10	599	116	**19.4**	9.9 (18)	Good
Sanderling *C. alba*	2	3	391	56	**14.4**	12.6 (17)	Average
Sharp-tailed Sandpiper *C. acuminata*	1	8	201	40	**19.9**	14.8 (27)	Good

All birds cannon-netted in period 15 November to 28 February except for Red-necked Stint, Ruddy Turnstone, and Sanderling, for which catches up to 21 March are included.

* Includes 2007/2008 figures; ** Obtained by scanning roosting flocks (see text)

elsewhere (e.g., to freshwater habitats), though catches of this species are too intermittent to be sure about this.

Little Curlew always seem to have an exceptionally high proportion of young birds. For a bird of comparable size (e.g., Bar-tailed Godwit) the average percentage of young birds in the population over the last ten years has been 8.8% whereas it is 40.6% for the five years in which adequate samples of Little Curlew have been obtained. Whether this species has an unusual reproduction rate/survival rate balance or whether the high juvenile proportions are a result of some differential migration of the sexes or other segregation in the non-breeding area is unclear.

It is interesting that the Red-necked Stint population in NWA seems to have had a much better level of breeding success in recent years than the Red-necked Stint population which visits SEA. In the last six years the proportion of young Red-necked Stints in SEA has only once been above that of NWA, and in each of the last three years it has been well below.

The mist-netting samples, all from a single catch in NWA, again show a high proportion of juvenile birds, as in the 2006/2007 season. It may be that those species which prefer freshwater habitats have a high annual production of young, but it is not possible at this stage to determine how much of the result may also be caused by the fact that the mist-netting technique tends to catch an unusually high proportion of juvenile birds.

The Future

Monitoring of annual reproduction rates of wader populations which spend the non-breeding season in Australia will continue to be a high priority of fieldwork catching and banding programs in the November to March period each year. The quite marked variations in recent years between overall annual breeding success, together with individual species being markedly different from the main trend, should hopefully improve the chances of future analyses determining the relative importance of the various possible causes of these variations. The improved wader monitoring count programs in Australia (Shorebirds 2020 Project) and the additional data emerging from censusing at key stopover locations in Asia should also permit better examination of the relative importance of reproductive rate in governing wader population levels. Parallel studies estimating survival rates from capture/recapture, engraved leg flag and colour-band resighting data – now under way – will be complementary to these reproductive rate studies in helping build up a fuller understanding of wader demographics in the East Asian/Australasian Flyway.

Table 2. Percentage of juvenile/first year waders in cannon-net catches in north-west Australia in 2007/2008

Species	No. of catches		Total caught	Juv./1st year		Assessment of 2006 breeding success
	Large (>50)	Small (<50)		N	(%)	
Great Knot *Calidris tenuirostris*	12	4	1506	188	**12.5**	Good
Bar-tailed Godwit *Limosa lapponica*	5	8	552	43	**7.8**	Average
Red-necked Stint *C. ruficollis*	3	1	264	54	**20.5**	Average
Red Knot *C. canutus*	0	11	138	32	**23.2**	Good
Curlew Sandpiper *C. ferruginea*	3	12	569	164	**28.8**	Very good
Ruddy Turnstone *Arenaria intepres*	1	1	70	8	**11.4**	Poor
Non-Arctic northern migrants						
Greater Sand Plover *Charadrius leschenaultii*	2	8	269	73	**27.1**	Good
Terek Sandpiper *Xenus cinereus*	2	6	173	22	**12.7**	Average
Grey-tailed Tattler *Heteroscelus brevipes*	3	4	231	57	**24.7**	Good
Common Greenshank *Tringa nebularia*	0	3	39	0	**0**	Very poor
Little Curlew *Numenius minutus*	0	1	38	18	**47.4**	Good

All birds cannon netted in period 1 November to mid-March

Table 3. Percentage of first year birds in wader catches in south-east Australia 1998/1999 to 2007/2008

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	*Average*
Ruddy Turnstone *Arenaria intepres*	6.2	29	10	9.3	17	6.7	12	28	1.3	19	*13.9*
Red-necked Stint *Calidris ruficollis*	32	23	13	35	13	23	10	7.4	14	10	*17.9*
Curlew Sandpiper *C. ferruginea*	4.1	20	6.8	27	15	15	22	27	4.9	33	*17.5*
Sharp-tailed Sandpiper *C. acuminata*	11	10	16	7.9	20	39	42	27	12	20	*20.4*
Sanderling *C. alba*	10	13	2.9	10	43	2.7	16	62	0.5	14	*17.4*
Red Knot *C. canutus*	(2.8)	38	52	69	(92)	(86)	29	73	58	(75)	*53.1*
Bar-tailed Godwit *Limosa lapponica*	41	19	3.6	1.4	16	2.3	38	40	26	56	*24.2*

All birds cannon-netted between mid November and third week in March (except Sharp-tailed Sandpiper and Curlew Sandpiper to end February only). Averages (for last ten years) exclude figures in brackets (small samples) but include 2007/2008 figures

Table 4. Percentage of first year birds in wader catches in north-west Australia 1998/1999 to 2007/2008

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	*Average (10 yrs)*
Red-necked Stint *Calidris ruficollis*	26	46	15	17	41	10	13	20	21	20	*22.9*
Curlew Sandpiper *C. ferruginea*	9.3	22	11	19	15	7.4	21	37	11	29	*18.2*
Great Knot *C. tenuirostris*	2.4	4.8	18	5.2	17	16	3.2	12	9.2	12	*10.0*
Red Knot *C. canutus*	3.3	14	9.6	5.4	32	3.2	(12)	57	11	23	*17.5*
Bar-tailed Godwit *Limosa lapponica*	2.0	10	4.8	15	13	9.0	6.7	11	8.5	8	*8.8*
Non-Arctic northern migrants											
Greater Sand Plover *Charadrius leschenaultii*	25	33	22	13	32	24	21	9.5	21	27	*22.8*
Terek Sandpiper *Xenus cinereus*	12	(0)	8.5	12	11	19	14	13	11	13	*12.7*
Grey-tailed Tattler *Heteroscelus brevipes*	26	(44)	17	17	9.0	14	11	15	28	25	*18.0*
Little Curlew *Numenius minutus*	57	33	-	36	30	-	(40)	-	-	47	*40.6*

All birds cannon-netted in the period 1 November to mid-March. Averages (for last ten years) exclude figures in brackets (small samples) but include 2007/2008 figures

Table 5. Percentage of juvenile/first year waders in mist-net catches in north-west Australia in 2007/2008

Species	No. of catches Small (<50)	Total caught	Juv./1st year	% Juv./1st year
Sharp-tailed Sandpiper – *Calidris acuminata*	1	102	9	8.8
Marsh Sandpiper – *Tringa stagnatilis*	1	4	0	(0)
Wood Sandpiper – *T. glareola*	1	19	7	36.8
Long-toed Stint – *C. subminuta*	1	17	14	82.3
Common Greenshank – *T. nebularia*	1	3	1	33.3

All birds mist-netted on Roebuck Plains near Broome on 26 November 2007

Acknowledgements

The principal credit for the collection of this huge mass of data on the ages of waders in the non-breeding populations in Australia goes to the very large number of people who have put in countless hours of time, much physical effort and at significant financial cost to themselves, to catch waders in SEA (Victorian Wader Study Group) and NWA (Australasian Wader Studies Group annual NWA Wader Expeditions and North West Wader Study Group). Their preparedness to so strongly support fieldwork, even at short notice and often under arduous climatic conditions, has been absolutely vital.

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MAP COLLECTION

Four maps below (pages 59-60) are provided to illustrate various aspects of bird breeding conditions in the Arctic in 2007.

Figures 1 and 2 represent an overlay of the map layers reflecting two different types of information. The first one is the deviation of the mean June/July temperature in 2007 from the mean June/July air temperature averaged for the period 1994-2003. This deviation indicates whether the respective month in 2007 was warmer (positive value) or colder (negative value) than average. The colour of the points at different study sites reflects a subjective evaluation by respondents of the spring as being early, average/moderate, or late (Fig. 1), and the summer as warm, average/moderate or cold (Fig. 2). Please note that, also referring to roughly the same period during the summer, the two types of information reflect essentially different phenomena that should not necessarily agree – for example spring could be early and cold. Temperature data were obtained from the National Climatic Data Center (USA, http://www.ncdc.noaa.gov/ol/climate/climateresources.html). Only stations with 26 or more daily records for a month were used for interpolation. The grid map was constructed using inverse distance interpolation in MapInfo Professional GIS software, with the following settings: cell size 50 km, search radius 500 km, exponent 1. The area covered by the grid includes the territory obtained from an overlay of Arctic boundaries, as defined by CAFF and AMAP, plus an additional 100-km buffer.

Figures 3 and 4 illustrate rodent abundance and bird breeding success, basically as these were reported by respondents. In some cases when respondents did not explicitly qualify breeding success or rodent abundance, but these were fairly obvious from other information supplied, the site was assigned to a respective category based on the judgement of the compilers.

Base maps were downloaded from GRID-Arendal's WEB site (http://www.grida.no/db/gis/prod/html/arctic.htm), projection – Lambert Azimuthal Equal-Area.

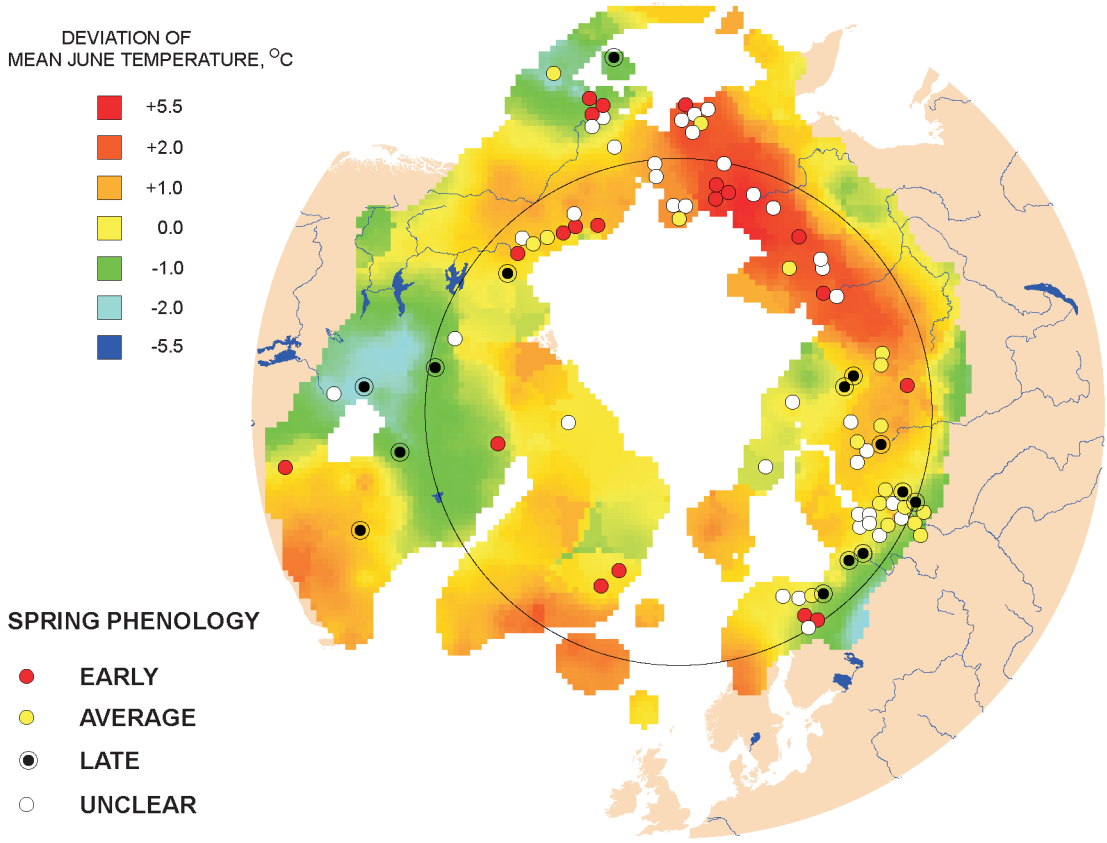

Figure 1. June temperature and phenological characteristics of spring in the Arctic in 2007. See text above for legend

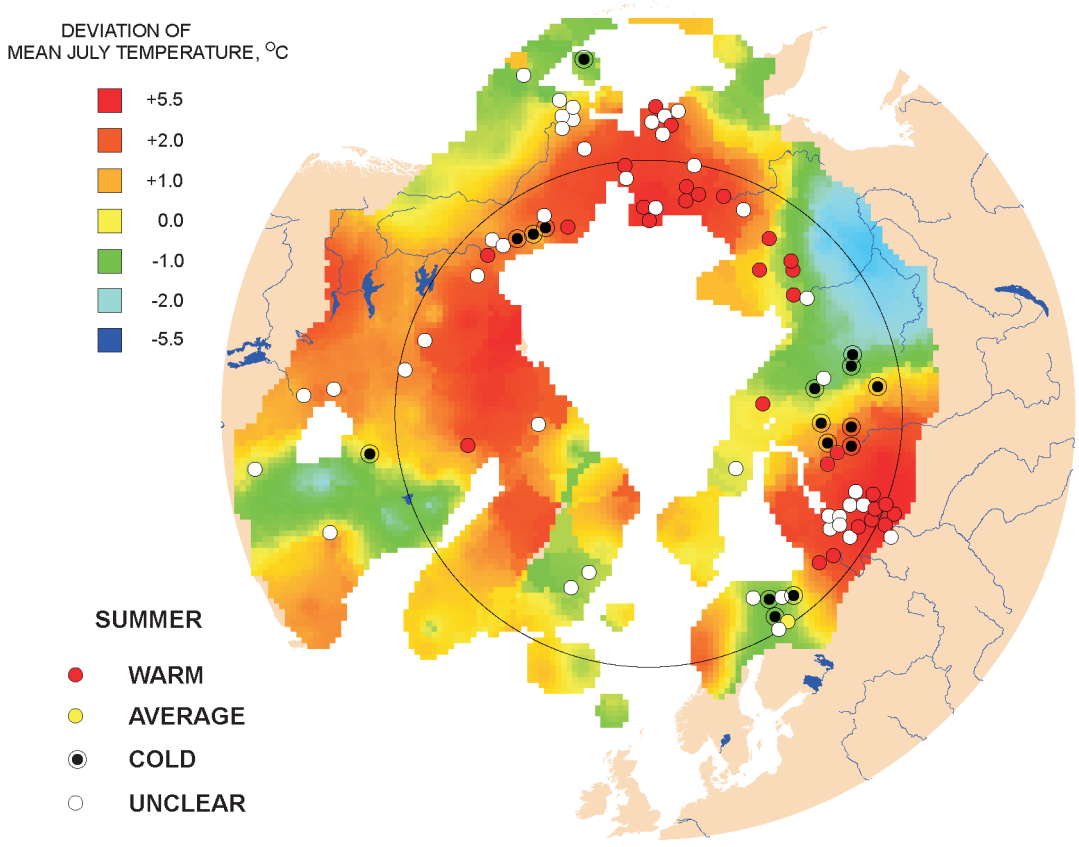

Figure 2. July temperature and phenological characteristics of summer in the Arctic in 2007

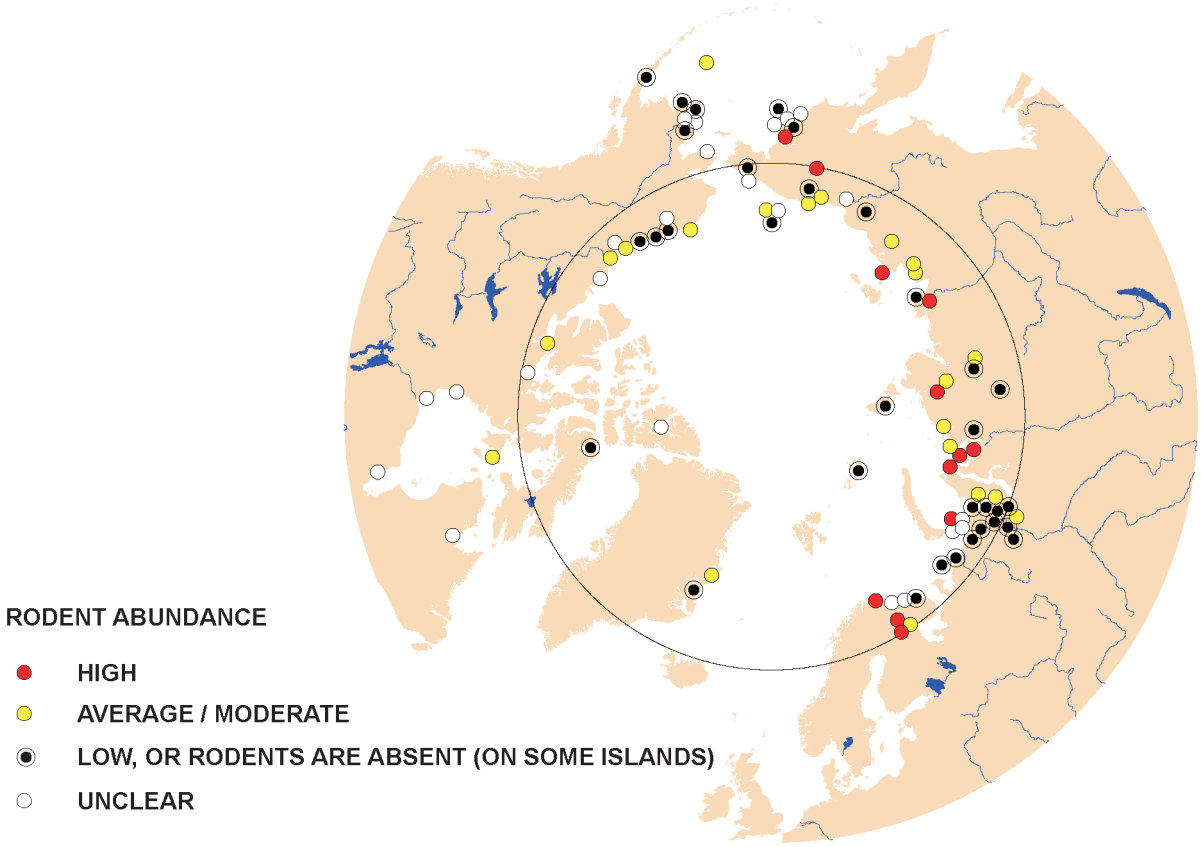

Figure 3. Rodent abundance in the Arctic in 2007

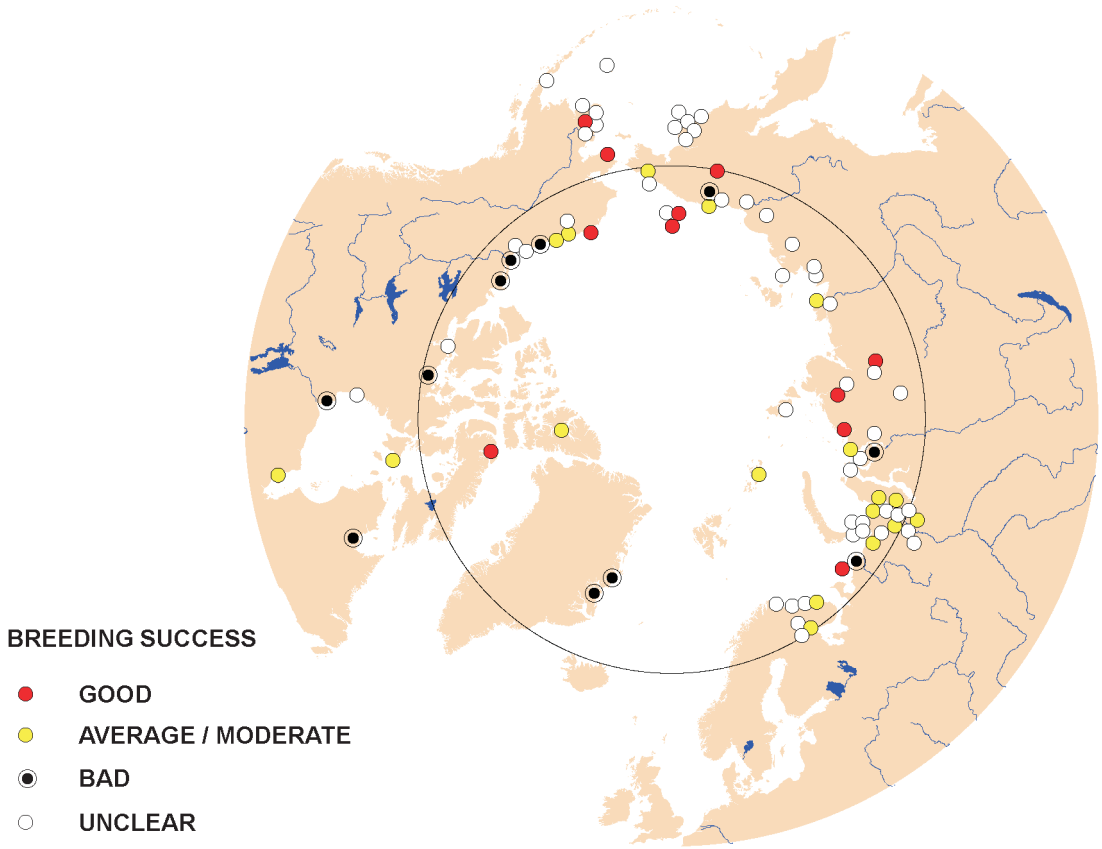

Figure 4. Bird breeding success in the Arctic in 2007