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

No. 12 • 2011

compiled by Mikhail Soloviev and Pavel Tomkovich

A WORD FROM THE COMPILERS

The current issue of the bulletin of the Arctic Birds Breeding Conditions Survey (ABBCS, http://www.arcticbirds.net) brings together information about the breeding conditions in the Arctic and Subarctic during summer 2009, and includes data on weather, predators and their prey and bird reproductive success. The geographic coverage of the survey in 2009 did not change considerably compared with the two previous years, with an exception of the data from the Russian Arctic, which followed an apparent pronounced decline since 2007 (Figure). Several factors contributed to the decrease, including termination of the International Polar Year, economic crisis and growing costs of transportation in this region.

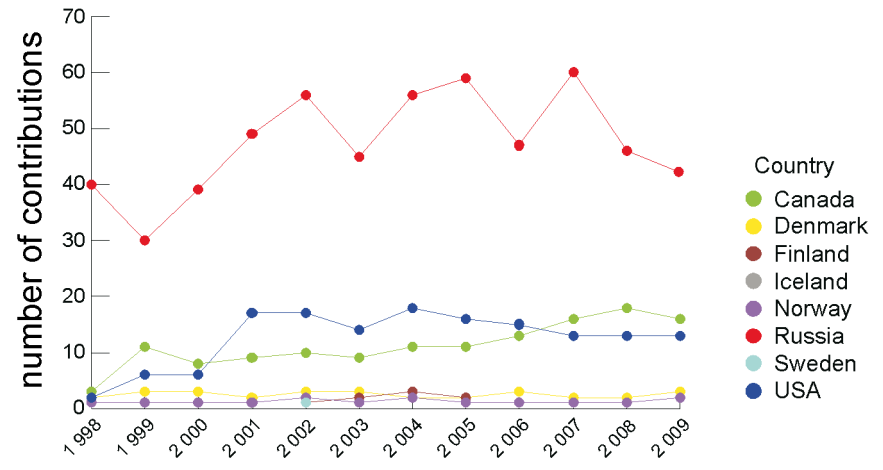

Figure. Number of contributions to the ABBCS in 1998–2009

The long-term monitoring of juvenile proportions in waders on the non-breeding grounds in Australia, carried out by researchers from the Victorian and Australasian Wader Studies groups, compensated partially for insufficient information on bird breeding conditions from certain key regions of the Russian Arctic (see the paper by Clive Minton *et al*. in this issue). However, it is well recognized that integrated monitoring of birds on entire flyway is essential for correct interpretation of factors affecting their populations, and the current trend in the Russian Arctic is alarming in this respect. Moreover, a recent milestone publication of the Arctic Species Trend Index 2010 (ASTI, http://www.asti.is), commissioned and coordinated by the Circumpolar Biodiversity Monitoring Program, showed that population trends of Arctic species differed across biomes, regions and taxa. The report's conclusion that more data "are needed to understand how the Arctic's ecosystems and the living resources they support are responding and will respond to growing and cumulative pressures" clearly indicated a need for a strengthening of monitoring and research activities in the circumpolar region, including its widest Palearctic portion.

A potential of ABBCS as an effective analytical tool for explaining flyway-wide trends in bird populations was recently demonstrated in a study by E. Rakhimberdiev with colleagues (http://onlinelibrary.wiley.com/doi/10.1111/j.1472-4642.2010.00715.x/abstract). A use of continent-wide qualitative ABBCS data on the abundance of the Ruff *Philomachus pugnax* on the breeding grounds and advanced statistical techniques led to a hypothesis of global population redistribution in this migrant wader. This approach is pending testing on other species of Arctic-breeding birds.

Unfortunately extensive plans of further ABBCS development, including data analyses, have been suspended due to the absence of basic funding for the project since 2008. "Arctic Birds" No. 11 was published in 2010 as a hardcopy and distributed with highly appreciated support of the CAFF International Secretariat. Collection of breeding conditions information from contributors has been continued and the reports have been published on the project websites. However, delays in translation of contributions have considerably impaired a value of ABBCS as a bilingual (in the English and Russian languages) monitoring resource, while delays in publication of "Arctic Birds" bulletin had apparent adverse impact on the promptitude of respondents to submit their data. The current state of affairs is dissatisfactory, and we hope very much for eventual success of ongoing fund-raising efforts and full-scale implementation of ABBCS.

CONTENTS

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

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

Please contact the project coordinators with queries, comments and proposals:

Mikhail Soloviev
Dept. of Vertebrate Zoology, Biological Faculty,
Lomonosov Moscow State University,
Moscow, 119991, Russia
e-mail: mikhail-soloviev@yandex.ru

Pavel Tomkovich
Zoological Museum,
Lomonosov Moscow State University,
B.Nikitskaya St., 6, Moscow, 125009, Russia
e-mail: pst@zmmu.msu.ru

*Our most sincere thanks to everyone who participated in the survey in 2009 and/or previous years,
in particular to V.G. Degtyarev, Y.V. Krasnov and R. Lanctot
who stimulated others to join the survey.
J. R. Wilson provided invaluable help by improving the English.*

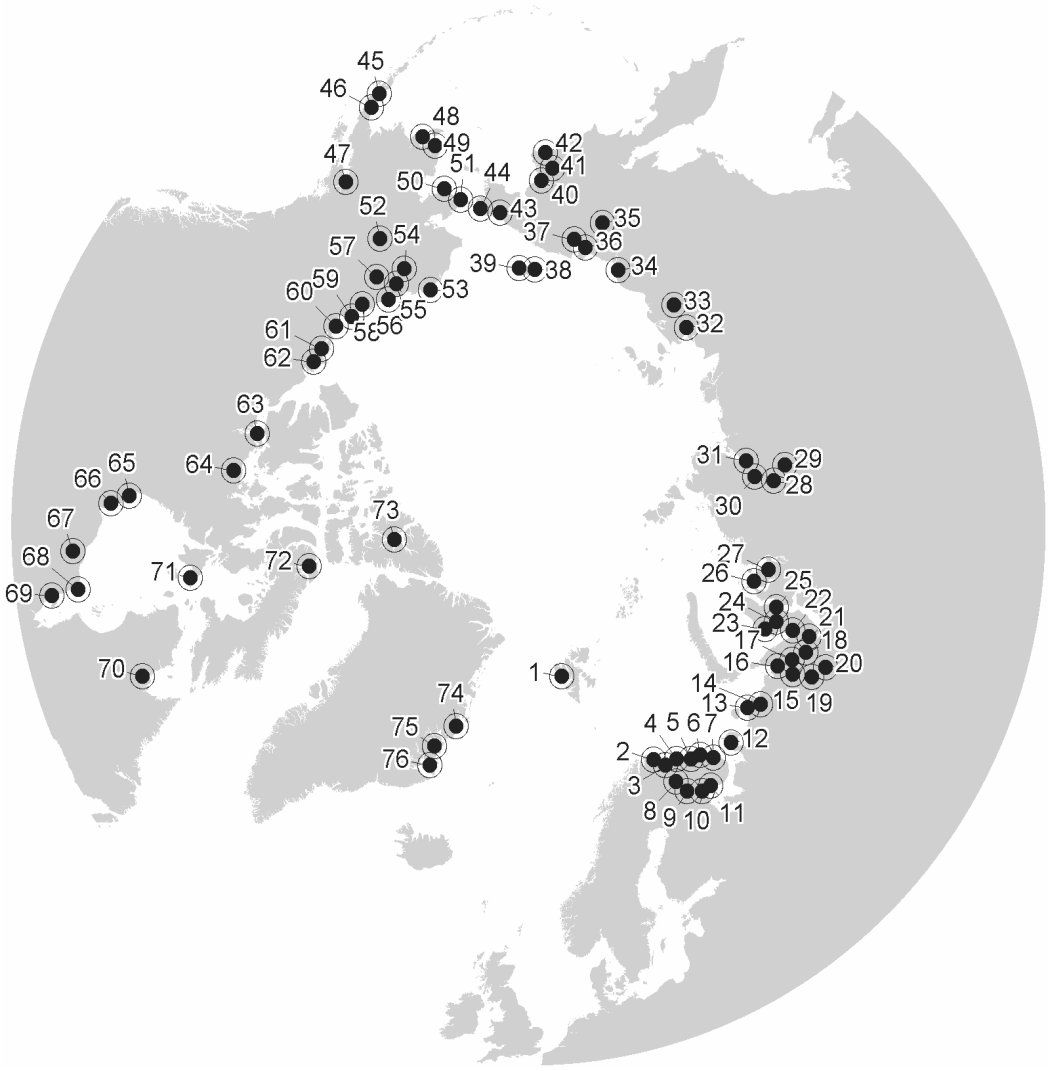

Figure. Arctic localities from which reports about bird breeding conditions in 2009 were provided

LOCALITY REPORTS

1. Western Svalbard Island, Norway (78°50' N, 13°00' E)

Key areas in the north-west of Western Svalbard Island were surveyed on brief excursions in the period from 22 June to 1 July 2009, including 17 areas on a portion of the coast from the Isfjord in the west to the Reinsdurflua Peninsula in the north of the island.

The spring was late, and up to 90% of the island coast was covered with snow at the start of our surveys. Ice was absent in the sea along the western coast, but near the northern coast 50–70% of sea surface was ice covered. Weather conditions were favourable for the reproduction of birds during the period of observations, as air temperatures did not drop below freezing.

Lemmings are absent on Svalbard.

Arctic Foxes were common, and we frequently encountered them and their tracks. Polar Bears were observed twice on small islands near the northern coast, and their tracks were seen regularly. A Polar Bear was once observed in the colony of Common Eiders eating a female eider.

Snowy Owls were not recorded. Arctic Skuas were common and a complete clutch of 2 eggs was found on 27 June. Long-tailed Skuas and Great Skuas were less common than Arctic Skuas.

Bronnich′s Guillemots, Black-legged Kittiwakes, Arctic Terns and Common Eiders nested successfully.

Purple Sandpipers started nesting in late June, and we found an incomplete clutch with 2 eggs on 30 June on the coast of the Isfjord and 2 complete clutches of 4 eggs on 1 July.

Thus, in spite of the late spring conditions were favourable for birds at least in the beginning of the breeding season.

A.E. Volkov

* – scientific names are given in the *Index* on pages 58 – 62

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

Being assessed by extensive trapping-based monitoring, population densities of voles and lemmings were extremely low during the whole season of 2009 as it could be expected based on their normal 5-year population cycle in this region (2007 was the last peak year). There were no records of breeding in the Arctic Fox, Long-tailed Skua, Rough-legged Buzzard and other predators dependent on small rodent.

R.A. Ims

3. Rybachy Peninsula, Murman coast, Kola Peninsula, Russia (69°36′ N, 32°57′ E)

Air temperatures ranged from +1 to +10°C in the period of observations from 26 to 30 May 2009, with northern and northwestern winds of 5 to 20 m/s. Two storms with wind speed of up to 25 m/s were recorded. Light rain occurred from time to time. Weather conditions were typical for the area.

Signs of rodent recent activities were not seen. Mammalian predators were not recorded in the vicinity of a seabird colony, but we found there 3 active nests of Rough-legged Buzzards and observed several non-breeding White-tailed Sea Eagles. Skuas and Raven were common. As previously, Herring Gulls and Great Black-backed Gulls were common breeders. Owls were not recorded.

Common Eiders were common breeders. Grouse were not observed.

The number of active nests of Black-legged Kittiwakes in the colony near Gorodetsky Cape declined by 13.1% compared with 2008, of Great Cormorants by 6.3%, of Guillemots by 1.8% and of Bronnich′s Guillemots increased by 9.5%. Mean clutch size of Black-legged Kittiwakes was 1.3±0.1 eggs. Seabirds apparently suffered from food shortage which was indicated by the decline in numbers of breeding birds and the difficulty to get regurgitated food samples from captured birds. Breeding success of Black-legged Kittiwakes was low.

Human impacts on birds and their habitats were not recorded.

A.V. Ezhov

4. Kildin Island, the Barents Sea, Russia (69°19′ N, 34°19′ E)

The island was visited on 28 June 2009, when we observed a subadult White-billed Diver in a bay. A pair of Red-throated Divers, a pair of Long-tailed Ducks, Tufted Duck and a flock of Black-legged Kittiwakes were recorded on Mogilny Lake. There were numerous Great Cormorants, Common Eiders, Great Black-backed Gulls and Herring Gulls on the rocky coast near Sunduky Cape. Common Eiders had broods of chicks. Gannets and Northern Fulmars were observed in the sea near the island. Alarming of Oystercatchers indicated the presence of chicks. Three pairs of Arctic Skuas and a pair of Bean Geese were recorded in the south-eastern part of the island. An adult and a fledgling Lapland Buntings were observed. We recorded a Rock Ptarmigan, Common Mergansers and a Common Ringed Plover.

Rodents, mammalian predators and birds of prey were not observed.

Human impact on birds of the island is not known.

I.I. Ukolov

5. Teriberka settlement area, Kola Peninsula, Russia (69°09′ N, 35°11′ E)

Small rodents were captured in October 2009 using lines of cylinders and snap-traps in almost all habitats available within the distance of 10 km of the settlement. The abundance of voles and lemmings was very low, and in spite of our special efforts to survey favourable habitats of animals we failed to capture a single rodent. Numerous bodies of animals that had perished during the winter were recorded on excursions.

According to the reports of local people, Norway Lemmings and Grey-sided Voles occurred in the tundra in unusually high numbers in the autumn of the previous year (2008), while lemmings were observed in the settlement in October.

L.G. Emelyanova

6. Krutik Cape, eastern Murman coast, Kola Peninsula, Russia (69°09′ N, 35°57′ E)

Air temperatures ranged from +5 to +15°C in the period of observations from 2 to 9 July 2009, with northern and northwestern winds of 5 to 20 m/s. Light rain occurred from time to time. Weather conditions were typical for the area.

Signs of rodent recent activities were not seen. A Red Fox was recorded in the vicinity of the seabird colony. A Mink with a litter of 3 pups was seen on an island in Dalnezelenetskaya Bay, which was a probable reason for the absence of Common Eiders and Herring Gulls on the island where they usually had bred.

Rough-legged Buzzards and Ravens were common, White-tailed Sea Eagles and Peregrine Falcons were rare in the vicinity of the colony. These species showed no signs of breeding. Long-tailed Skuas were common breeders (chicks and eggs were found). Pomarine Skuas were common non-breeders. Owls were not recorded.

The number of active nests of Black-legged Kittiwakes in the colony on Krutik Cape declined by 20.2% compared with 2008, of Common Guillemots by 7.5% and of Bronnich′s Guillemots by 12.2%.

Mean clutch size of Black-legged Kittiwakes was 1,05±0,1 eggs. Seabirds apparently suffered from food shortage which was indicated by the presence of uncommon food items in food samples and by the decline in numbers of

breeding birds. Breeding success of Black-legged Kittiwakes was low.

Common Eiders were common breeders. Grouse were not observed.

Human impacts on birds and their habitats were not recorded.

A.V. Ezhov

7. Sem′ Ostrovov Archipelago, the Barents Sea, Russia (68°49′ N, 37°20′ E)

Snow completely melted in mid June, soon after our arrival to the study area. Snowfalls were not recorded during the period of observations from 9 June to 6 August 2009, but stormy weather prevailed, with wind speed over 12 m/s on 35 of 58 days. Mean wind speed was 7.3, 7.7 and 6.9 m/s in May, June and July, while maximum values were 31.0, 28.0 and 21.0 m/s respectively. Mean air temperatures were +2.5°C in May (range from –3.2 to +18.2°C), +6.4°C (from +0.8 to +23.2°C) in June, and +7.9°C (from +3.1 to +21.3°C) in August. Generally, the summer season 2009 was late, cold, windy and moderately wet.

Average dates of phenological events in plants were delayed by two weeks compared with the long-term average.

Norway Lemmings were recorded on Kharlov Island and the adjacent mainland in 2009. Observations of these rodents were rare on the island, but their remains were numerous. Signs of activities of Tundra Voles were recorded in several gulfs on the mainland, although visual observations of voles were rare.

Mammalian predators were represented by the American Mink on Kharlov Island. Red Foxes, Wolverines, Mountain Hares and Reindeers were observed on the mainland tundra near the island.

The Peregrine Falcon was the only nesting bird of prey on the archipelago. A nest of this species with a single cold egg was found on one of the islands; this clutch was predated later. Vagrant species included the Golden Eagle and White-tailed Sea Eagle.

Numbers of Great Skuas declined on the archipelago from 18 pairs in 2008 to 15 pairs in 2009, numbers of Arctic Skuas from 135 to 122 pairs. The nest success of Great Skuas was extremely low. The mean size of complete clutches of Arctic Skuas was 1.65±0.05 eggs (*n*=83), and chicks hatched in 40.8% of monitored eggs (*n*=123). Breeding success of Arctic Skuas was not more than 37.4% in 2009. A Long-tailed Skua stayed on Kharlov Island for two days.

Two pairs of Red-throated Divers nested on Yuzhnoe and Severnoe lakes on Kharlov Island. Both nests were destroyed at an early stage of incubation. Black-throated Divers were recorded in the mainland part of the Kandalaksha Nature Reserve. Seven carcasses of Northern Fulmars were found on the littoral coast of islands, while previously we had found 1–3 carcasses annually.

Numbers of Gannets in the colonies increased by 45% and reached 335 pairs. We ringed 281 large chicks in early August, which corresponded to the breeding success of at least 83.9%. The proportion of Atlantic Herring was 90% in the diet of Gannets in 2009.

Numbers of Great Cormorants did not change on the archipelago, 77 pairs compared with 78 pairs in 2008. Four pairs nested on Veshnyak Island (none 2008), 11 pairs on Maly Litsky Island (24 in 2008). Most of Great Cormorants (62 pairs) concentrated in a relatively new colony on Bolshoy Zelenets Island, where 54 pairs had nested in 2008. Nests in colonies on Veshnyak and Maly Litsky islands were destroyed by gulls during incubation. Productivity was on average 0.66 chick per nest in the colony on Bolshoy Zelenets Island. Mean brood size was 2.21±0.16 chicks (*n*=28) in successful nests. Numbers of Shags declined from 300 pairs in 2008 to 250 pairs in 2009 on Veshnyak Island.

Barnacle Geese nested on Maly Zelenets Island (7 pairs) and on Maly Litsky Island (2 pairs). We counted 19 and 8 downy chicks on these two islands in early July. Maly Zelenets Island was inhabited by 29 adult birds at the same time. The total number of breeding Bean Geese on the islands was 90-100 pairs, similar to the previous year value. Total numbers of Common Eiders declined by 27.6% in 2009. Mean clutch size was 3.62±0.10 eggs (*n*=102) in eiders. Nesting attempts by the Northern Pintail and Long-tailed Duck were not recorded. We observed non-breeding Red-breasted Merganser, Common Merganser and Tufted Duck. Remains of a Common Teal were found.

During the recent years helicopters of the Murmansk air company have frequently passed over the Nature Reserve and nearby waters. This had an adverse impact on the breeding success of Common Eiders whose broods mostly concentrated in the gulfs along the mainland. The bays were also used by numerous moulting geese and ducks.

We recorded 5 breeding pairs of Rock Ptarmigans on Kharlov Island (6 pairs in 2008). In total 12 chicks left two nests with the clutches of 8 and 9 eggs; two other pairs had broods of 9 and 12 chicks.

On the islands of the archipelago at least 6 pairs of Ruddy Turnstones bred in 2009 (7 pairs in 2008) and 7 pairs of Oystercatchers (the same in 2008). Broods of Oystercatchers were found also on small islands near the coastline. Breeding success of both species was high. A displaying Common Snipe was observed on Kharlov Island. Territorial pairs of the Eurasian Golden Plover, Common Ringed Plover (a complete clutched examined on 30 June; one-day old chick captured on 8 July), Temminck′s Stint (2 nests with complete clutches found on 8 July) and Wood Sandpiper were recorded on the mainland. Migrating waders were recorded primarily on the mainland and included the Greenshank, Common Redshank, Spotted Redshank, Red-necked Phalarope, Ruff,

Dunlin, Purple Sandpiper and Bar-tailed Godwit. All these species were very rare, with the exception of the Ruff and Dunlin.

The abundance of Herring Gulls and Great Black-backed Gulls declined by approximately 15%. Breeding success was low in the former species and moderate in the latter, mostly due to mortality of chicks. Numbers of Common Gulls declined from 97 pairs in 2008 to 65 pairs in 2009. Mean clutch size was 2.31±0.10 eggs (*n*=51). Chicks hatched in 75% of monitored eggs (*n*=32) on Kharlov Island. Numbers of Black-legged Kittiwakes declined to 15,800 from 17,000 pairs in 2008. Nesting was started by 26.4% of pairs. Breeding success of Black-legged Kittiwakes was close to zero, and a maximum of 15 chicks stayed in nests by early August. Vagrant juvenile Glaucous Gulls appeared in June, and one bird was found dead. Arctic Terns did not nest on large islands in this year, and we found only 3 nests on a small island near the coast.

Numbers of Common Guillemots increased from 4,800 birds in 2008 to 7,600 in 2009 on Kharlov Island. The abundance of Bronnich′s Guillemots (1,055 birds) did not change to any considerable extent compared with the previous year. Common Guillemots again suffered from heavy predation by Ravens, Herring Gulls and Great Black-backed Gulls, and their clutches were completely destroyed in 3 of 5 colonies by mid July. Common Guillemots bred successfully only in areas of the highest density of nests. Counts of other auks were carried out near islands. Numbers of Black Guillemots were close to the value in 2008, while the abundance of Razorbills and Common Puffins decreased. We found remains of an adult Little Auk which had died, probably, during the winter.

Breeding passerines were represented on the islands by the Meadow Pipit, Red-throated Pipit, Water Pipit, Hooded Crow, Raven, White Wagtail, Willow Warbler, Wheatear, Bluethroat, Redwing and Snow Bunting. Numbers of territorial birds decreased notably in the Meadow Pipit, Willow Warbler and Snow Bunting. The abundance of nesting Wheatears increased. Other species did not show notable changes. Passerines, with the exception of the White Wagtail, had relatively high breeding success. We recorded House Martins, Lapland Bunting and Common Redpoll on migration.

Almost all chicks of passerines died during a period of heavy rains with strong wind. However, this had small impact on overall breeding success of most species of passerines which have a prolonged period of reproduction; the White Wagtail which nested *en masse* during this adverse period was an exception. Many chicks of skuas and large gulls (Herring Gulls, in particular), probably died during the adverse weather period. However, we evaluated breeding success of most species of birds as moderate.

M.V. Melnikov, A.V. Osadchiy, P.V. Plotnikov

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

Weather data were obtained from the website http://www.rp5.ru and long-term averages and dates of events were received from the Monchegorsk Weather Station. The maximum air temperatures consistently rose above freezing on 10 April, which indicated the start of phenological spring. In the previous year, 2008, spring started on 14 April, and the long-term average is 10 April. The last air frost was recorded on 21 May. Summer started on 22 June when daily mean air temperatures consistently rose above +10°C, compared with 17 June in 2008 and the long-term average of 14 June. Autumn started on 17 September when daily mean air temperatures consistently dropped below +10°C, compared with 24 August in 2008 and the long-term average of 1 September. The first ground frost occurred on 28 September. Winter started on 24 October when daily mean air temperatures consistently dropped below freezing, compared with 4 November in 2008 and the long-term average of 26 October. Snow blanketed the ground in the forest for the first time on 6 October and was then permanently established.

In 2009 mean monthly air temperatures were 0.3°C below the long-term average in April, 2.1°C above average in May, 0.6°C above average in June, 1.3°C below average in July, 1.1°C above average in August, 2.9°C above average in September, equal to the average in October, 3.1°C above average in November and 1.2°C below average in December. The mean annual air temperature was 0.9°C above the long-term average.

The snow completely melted on the flat open surface in the forest on 27 May (average 30 May) and in the mountain tundra on 18 May (average 1 June). Ice broke on large lakes on 25 May (average date 31 May, *n*=69), and lakes froze in autumn on 8 November (average date 8 November, *n*=72).

Precipitation was 62% of the monthly average in April, 130% in May, 100% in June, 130% in July, 90% in August, 100% in September, 48% in October, 105% in November and 125% in December. The total precipitation was close to the long-term average.

Birds started nesting on the usual dates, but the weather in June and July was unfavourable for breeding, in particular for passerines, waders, terns and Tetraonid birds. Air temperatures were 1.3°C below average during the first 10 days of June and 4°C below average during the first 10 days of July. Precipitation was 220% of the average from 10 to 20 June and also from 20 to 31 July. Water levels were high in rivers and lakes in July. Air temperatures dropped to –4°C on 19 and 20 August in the forested valleys of the Verkhnyaya Chuna and Nyavka rivers.

Food supply for herbivorous birds was determined by the yield of important plants: willow, alder, Bilberry, Clusterberry ranked 5 on a scale of 5; birch, including Dwarf Birch, Alpine Bearberry, Cloudberry, crowberry, Bog Blueberry 4;

pine, Bird Cherry, Common Bearberry, cranberry 3; European Rowan, Red Currant 2; spruce 1.

Autumn counts of small mammals at the field station "Elnyun" (south of Chunatundra area) indicated very low numbers of voles and an increase in the abundance of shrews. We captured a Eurasian Pygmy Shrew, a rare species in the area, in course of these counts. The abundance of Grey-sided Voles decreased to a great extent. In future we expect a continuation in the increase of shrew abundance and slight increase in the abundance of *Clethrionomys* voles.

Numbers of Red Foxes, Ermines and Least Weasels were low during the summer and the winter 2009/2010. Numbers of European Pine Marten remained high. Brown Bears, Wolves, Wolverines, Minks and European Otters were common.

Osprey was the only species among birds of prey with indications of breeding. A pair of Rough-legged Buzzards had attempted to nest in late May, but the nest was deserted later. Owls did not breed.

The density of Tetraonid birds determined during transect counts in August continued to decrease and reached 20 birds/10 km^2, the lowest value recorded for the period 1997-2009. The total linear density of waterfowl (divers, Whooper Swans and ducks) calculated for lake and river shoreline, decreased by 40% compared with 2008.

A.S. Gilyazov, N.V. Zanuzdaeva, G.D. Kataev

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

The winter 2008/2009 started slightly later than usual, and mean air temperatures dropped consistently below freezing on 30 October 2008. The frost was light in November and December, with mean air temperatures ranging from 0°C to –5°C, and minimum temperatures rarely dropping below –10°C. The frost became heavier in January and February, but generally the weather was moderately cold and mean air temperatures dropped below –20°C on 3-4 days each month. Consequently all winter months were warmer than usual. The snow accumulation was high in the forest and its depth reached 80-100 cm and locally 150 cm in February. Mean daily air temperatures consistently rose above freezing on 22 April, close to the usual dates.

May was notably warmer than average, and mean air temperatures were above +5°C on most days from 10 to 20 May. The weather in June was close to average, July was cold and rainy, August was relatively warm. September was also warm, and mean air temperatures were above +10°C during the first 10 days of the month, while maximum temperatures reached +16-20°C. However, from the beginning of October temperatures started to drop below freezing on almost all nights, and mean air temperatures dropped consistently below freezing on 9 October, two weeks earlier than the long-term average. Light frosts alternated with short-term thaws until mid December, and minimum temperatures rarely dropping below –5°C. The weather became colder in the second half of December, when mean air temperatures ranged from –10 to –15°C. Ice formed on wind-protected areas of the bay between islands in mid October, and lakes froze in the end of the month. Many channels between islands froze in mid November, and the whole head of the Kandalaksha Bay froze in early December.

The yield of all berries on the islands of the Northern Archipelago was low in 2009, similarly to 2008, with Cloudberry ranked 1 on a scale of 5, crowberry 2, Clusterberry 2, and Bilberry 2 (data of L.A. Moskvicheva).

The abundance of insectivorous mammals decreased six-fold during the winter 2008/2009 compared with September 2008, and catching with cylinders on Ryashkov Island yielded the following abundance (2008 values are given in brackets for comparison): 2 (0) animals per 10 days in May, 5.0 (1.9) in July, 13.5 (11.5) in August and 2.5 (13.3) in September. The Common Shrew was the only insectivorous species captured on the forested islands of the Northern Archipelago. Similarly to 2008 insectivores were absent on small tree-less islands ('ludas′) in 2009.

Running voles were recorded on some of the forested islands in April and May, but not in late May and early June. Accordingly populations of voles were at a low both on small treeless islands and on forested islands in 2009, with a single exception of Ryashkov Island where Short-tailed Voles were recorded in meadow habitats.

Mammalian predators were represented by Ermines inhabiting 3 of 19 islands (Anisimov, Lodeyny and Ryashkov islands) in 2009. Tracks of Least Weasels were recorded in March and April on Anisimov and Ryashkov islands. Five Red Foxes inhabited five forested islands in summer, and American Minks were observed on three islands. These two species depended to a lesser extent on the abundance of rodents, as these animals were visiting neighbouring islands and destroyed clutches of land-nesting birds there.

Avian rodent-specialists were represented by Eurasian Kestrels which attempted to breed on one of the islands, but then deserted the nest due to the absence of voles. It is interesting that two pairs of Kestrels nested in 2003 and 2006, and one pair in 2002, 2007, 2008 and 2009. Single Rough-legged Buzzards were observed in May near Ryashkov Island and in August near Maly Lomnyshny Island. Remains of Rough-legged Buzzard and Lapland Owl were found in June on Ryashkov Island, and remains of a Eurasian Eagle-Owl on Anisimov Island. As usual 8 pairs of Ravens nested on the islands.

Adult and immature White-tailed Sea Eagles were recorded during the whole summer on the islands, including nesting territories, but their breeding was not confirmed. As before, this predator hunted females of Common Eiders, including incubating birds. White-tailed Sea Eagles were recorded as having taken 217 eider females, of which 37% during incu-

bation, by the time of the counts of seabirds on the islands in late June and early July.

Counts of seabirds were conducted together with V.V. Bianki in late June and early July on 49, mostly treeless islands, ranging in size from 0.1 to 1.3 ha and having the total area of 38,6 ha. We counted 5 nests of Greater Scaups, 1,739 nests of Common Eiders, 2 nests of Velvet Scoters, 14 nests of Red-breasted Mergansers, 36 pairs of Ruddy Turnstones, 148 pairs of Oystercatchers, 297 pairs of Herring Gulls, 32 pairs of Great Black-backed Gulls, 290 pairs of Common Gulls, 83 pairs of Arctic Terns, 91 pairs of Black Guillemots. Numbers of Black Guillemots increased by 16% compared with 2008, while the abundance of Common Eiders and Great Black-backed Gulls had not changed to any great extent since the previous year. Numbers of Oystercatchers, Common Gulls and Herring Gulls decreased by 5-15%, and of Arctic Terns more than halved. The loss of clutches was 35.8% in Common Eiders, which is 1.4 times higher than in 2008. The principal cause of clutch loss was predation of females by White-tailed Sea Eagles.

E.V. Shutova, N.S. Boiko

10. Poriya Inlet, Kandalaksha Bay, the White Sea, Russia (66°45′ N, 33°41′ E)

The sea completely cleared of ice on 16 May 2009, but small patches of snow still remained on islands at this time. The first frost occurred on 18 September, while the first snowfall was recorded on 18 October.

Bird counts were conducted on islands of the Poriya Inlet from 20 June to 2 July by N.G. Panarina and T.S. Vorobyeva, who surveyed 61 island with a total area of 186.7 ha. Complementary observations were made by rangers of the Kandalaksha State Nature Reserve.

We did not capture rodents and did not observe them in the course of the bird counts.

We recorded signs of activity of Brown Bear on five islands, Ermine on two islands and Red Fox on one island.

White-tailed Sea Eagles were the most common birds of prey in the area. Breeding of eagles in 2009 was not confirmed, although two nests of previous years were found on Medvezhy Island. We observed one Osprey, one Northern Harrier and one Merlin.

Common Eiders nested on most of the islands, and we found 308 nests of which 50.3% failed due to predation or desertion. Predation of Sea Eagles on incubating eider females was the principal cause of nest failure; this had not exceeded 10-20% before mid 1980s when Sea Eagles were rare. Red-breasted Mergansers nested in small numbers, and we found seven nests. Velvet Scoters and Common Mergansers were observed in flocks of over 10 birds.

Breeding birds of the islands included Ruddy Turnstones (25 pairs), Oystercatchers (46 pairs), Arctic Terns (the most numerous species with 349 pairs), Herring Gulls (167 pairs), Common Gulls (86 pairs), Great Black-backed Gulls (5 pairs) and Black-headed Gulls (25 pairs in one colony). Four pairs of Arctic Skuas were recorded, and a nest with a clutch of two eggs was found on Stolbovaya-I Island. Passerines were represented on the islands by Meadow Pipits (15 pairs) and White Wagtails (16 pairs).

A.S. Koryakin, E.L. Tolmacheva

11. Luvenga and Umba settlements area, Kola Peninsula, Russia (66°41′ N, 34°21′ E)

Low stage of rodent populations, probably, spread in summer 2009 across both the tundra part (see a report #5 by L.G. Emelyanova from Teriberka settlement area) and taiga part of the Kola Peninsula. Very low abundance of rodents in late July – early August was confirmed by captures with snap-traps in the vicinity of Umba settlement and by captures with snap-traps and cylinders in the vicinity of Luvenga settlement. Only two Common Shrews were captured during the entire period, one animal at each site.

L.G. Emelyanova, A.A. Trubnikov

12. Shoina village, Kanin Peninsula, Russia (67°56′ N, 44°14′ E)

The spring 2009 was characterized by low flood, low temperatures, a high amount of precipitation and strong winds. Snow mostly melted on the tundra by the start of studies on 5 June, and area of a colony of Barnacle Geese was almost completely free of snow with only few snow patches remaining in depressions until mid June. Snow completely melted on flat surfaces on 17 June. Ice-break on rivers occurred from 1 to 5 June. Four snowfalls were recorded in the first half of June and one in the second half of the month. Generally, the season was late, cold and rainy.

Dates of appearance and mass migration of geese was delayed by 7–10 days in 2009. Previously the first migrants appeared in the study area in early May and mass migration finished in mid May. In 2009 peak migration occurred in mid May and finished in early June. The first broods were recorded in Barnacle Geese and King Eiders on 30 June, in Bean Geese on 4 July; the first moulting seaducks were recorded on 27 June, dabbling ducks on 3 July and Bean Geese on 4 July. Other phenological events included the mass appearance of midges on 15 June, the appearance of first imago craneflies on 1 July and the mass appearance of mosquitoes on 10 July.

Lemmings were not observed during the study period from 5 June to 30 July, but Short-tailed Voles were common.

Among mammalian predators Arctic Foxes were rare, and we recorded two single animals and a non-breeding pair within vast study area. One event of mass predation of nests in the colony of Barnacle Geese by an Arctic Fox was observed on 9 June, but generally Arctic Foxes destroyed a small propor-

tion of nests and did not take many eggs. One nest of Bean Geese was destroyed by Arctic Fox. Thus, Arctic Foxes did not have strong impact on breeding populations of geese in 2009. Brown Bears and Wolverines made regular visits to the northern and central parts of the Barnacle Geese colony, where tracks were frequently seen, but not a single nest predation event by these animals was documented.

Non-breeding White-tailed Sea Eagles, Rough-legged Buzzards, Merlins and Hooded Crows occurred in small numbers. Single White-tailed Sea Eagles were observed only near aggregations of brood-raring and moulting geese. Three breeding pairs and one solitary Peregrine Falcon had their hunting territories within the colony of Barnacle Geese. Peregrine Falcons actively hunted downy goslings and even adult Barnacle Geese during hatching. However, larger goose species (mostly Greater White-fronted Geese) on the hilly tundra often nested in the vicinity of Peregrine Falcons′ nests, using their protective umbrella.

The principal predators, exploiting the resources of the Barnacle Geese colony and notably affecting the survival of clutches at the start of incubation and of downy chicks later, included Herring Gulls, Long-tailed Skuas, Arctic Skuas (all common breeders) and numerous Glaucous Gulls. Large Gulls established aggregations of up to several hundred birds during the hatching of geese across the whole colony. In spite of efforts by adult geese to protect their broods gulls successfully captured downy chicks, especially during human disturbance. Common Gulls and Ravens were common breeders. Short-eared Owls were common non-breeders.

Barnacle Geese nested at an average density of 93 nests/km^2 within the colony area of 45.9 km^2. Their mean clutch size was 3.7 eggs (*n*=344), mean brood size 2.7 chicks (*n*=186). In Bean Geese mean clutch size was 3.1 eggs (*n*=12) and brood size 4.0 chicks (*n*=32). In Greater White-fronted Geese mean clutch size was 3.3 eggs (*n*=4).

Willow Grouse nested at a high density of 4 pairs/km^2. Some species of waterfowl and waders were also abundant.

Human impact was not large in this area with low population. However, most inhabitants of the Shoina village are active waterfowl hunters, who have taken during spring and autumn migration approximately 2,000 geese annually. This pressure has had small impact on the state of the Barnacle Goose population, while the impact on populations of the Bean Goose and Greater White-fronted Goose is currently difficult to evaluate. Hunting of moulting geese is no longer practiced, but geese eggs have been collected in high numbers (5,000-10,000), with a common practice of complete removal of first clutches.

S.B. Rosenfeld

13. Kolokolkova Bay coast, Tobseda settl., Arkhangelsk Region, Russia (68°35′ N, 52°20′ E)

The spring was relatively late in 2009. On our arrival on 4 June 80% of the area was covered by snow, and Kolokolkova Bay was completely covered by ice. The snow completely melted on a major part of the area by 13 June, and the bay became free of ice by 20 June. Night frosts were recorded until 15 June. Late June and early July were unusually cold; air temperatures did not rise above +10°C.

As in previous years, there were two peaks of Brent Geese spring migration, on 29–30 May and on 7–9 June. The migration of Greater White-fronted Geese was unusually late which resulted in delayed start of nesting and low numbers of breeding birds (11 nests were found). Barnacle Geese migration peaked on 9 June. Geese migration terminated on 12 June.

Similarly to Greater White-fronted Geese, nesting of Barnacle Geese was delayed. The first nests of Barnacle Geese were found on 5 June, and the peak of nesting occurred on 12 June. The total number of nests in the Kolokolkova Bay area in 2009 was evaluated as 2951, including 1413 nests on the mainland, 1002 nests on islands in the northern part of the bay (796 nests on Chayachi Islands and 206 nests on Radiola Island) and 536 nests on Southern Chayachi Islands in the delta of the Neruta River in the south of the bay. Mean clutch size was 3.99±0.1 SE (*n*=318) in upper part of the marshes in the mainland colony and 3.25±0.1 (*n*=564) on Chayachi Islands. Nest success of Barnacle Geese was relatively high in 2009, with the exception of a colony part in the lower belt of marshes where numbers of breeding birds continued to decline, similarly to Chayachi Islands.

Mapping of all nests of Glaucous Gulls and Herring Gulls was carried out for the first time in 2009. The number of nests of Glaucous Gulls and Herring Gulls were 317 and 178 on Chayachi Islands, 81 and 23 on Radiola Island, 20 and 22 on Southern Chayachi Islands and 16 and 6 on the mainland. It is possible that the colony of Glaucous Gulls on Chayachi Islands was the largest in Russia. We did not count nests of ducks and waders.

Breeding of Arctic Foxes and avian rodent specialists was not recorded on the tundra adjacent to dunes, apparently due to the low abundance of rodents. Flocks of Pomarine Skuas, apparently suffering from the shortage of food, appeared in the vicinity of Tobseda in late June – early July, which was an unusual event for the area.

Generally, breeding conditions for birds were evaluated as average in 2009.

K.E. Litvin, Y.A. Anisimov, D.S. Dorofeev, O.Y. Anisimova, N.B. Konyukhov

14. Korovinskaya Bay, Malozemelskaya Tundra, Russia (68°16′ N, 53°11′ E)

According to reports from local people a rapid increase of air temperatures occurred in April. Our observations were carried out from 22 June to 18 August 2009. Late June and early July were cold and rainy with very few sunny days, but the rest of July and the first half of August were characterized by average weather conditions. Snowmelt was late and patches of snow remained in some valleys in August. Several short-term snowfalls occurred in late June and early July, but the snow did not blanket the ground. Extreme weather events were not recorded. Mass flowering of the Cloudberry started from 8 July and of Labrador Tea from 12 July. Mosquitoes appeared in mid July and disappeared during the first 10 days of August.

The abundance of microtine rodents dropped to a low value in 2009. Rapid snowmelt in April was followed by frosts which probably killed off the already small populations of rodents. Counts with snap-traps from 30 June to 2 July and from 13 to 15 August (864 trap-nights during each of these periods) resulted in the catching of 3 and 33 rodents, respectively. These results were close to the abundance in 2007 and lower than the abundance in 2008. As before, the Tundra Vole was the most abundant species in captures, and almost all of them were captured in willow stands.

We checked 24 known dens and found 3 new dens of Arctic Foxes in the study area of 100 km^2. The dens were inhabited by 3-4 litters of Arctic Foxes, and one litter of Red Foxes occupied an old den of Arctic Foxes. Litter size ranged from 1 to 5 pups.

One species of Mustelids, the Least Weasel, was discovered by using artificial tunnels, in which animals left ink foot prints on paper. Later a Least Weasel was occasionally captured with a snap-trap. Foot prints of small rodents were constantly recorded in tunnels.

In the study area we found 14 nests of Rough-legged Buzzards, 5 nests of Peregrine Falcons and 2 nests of Long-tailed Skuas. Clutches of buzzards contained 3 eggs, but broods contained 1 or 2 (less often) chicks. The diet of buzzards consisted of Willow Grouse, their chicks and young hares. Owls were not recorded.

Activity of predators was studied using field experiments with hen eggs. Similarly to the previous two years we placed two eggs within each of 36 quadrates of experimental area in the tundra. Eggs disappeared earlier in quadrates of open tundra compared with quadrates with willow stands, and earlier in quadrates with sparse willows compared with quadrates with dense willows.

Two counts of droppings were carried out within quadrates of experimental area. The density of Willow Grouse and Mountain Hares did not changed compared with the previous year, remaining relatively high. Adverse weather conditions did not impact reproductive effort by Willow Grouse, whose numbers were average or above. The first chicks of grouse were found in mid July.

This season was apparently unfavourable for raising chicks by most groups of birds. However, we found considerable number of nests of Red-throated Pipits and other passerines, geese and waders.

Generally, the breeding success of tundra birds can be evaluated as average in 2009. In spite of the low abundance of mictotine rodents the season was favourable for breeding by birds of prey and Arctic Foxes.

Human impact was low in the area, where reindeer husbandry had the largest influence. A herd of 1,500 animals was moving in July and August within the study area, which resulted in the destruction of vegetation and the appearance of numerous patches of bare sand on upper parts of ridges. Apparently reindeers trampled many nests of birds.

I.G. Pokrovsky, O.Y. Kulikova

15. Basin of the upper reaches of the Bolshaya Rogovaya River, Bolshezemelskaya Tundra, Russia (67°22′–67°32′ N, 62°00′–62°15′E)

A usual summer weather established in the period of field studies from 16 to 28 July 2009, with mostly dull, cool and rainy days on 16–23 July and warm or even hot sunny days without precipitation on 24–28 July. Weather anomalies were not recorded. Similar to the Vorkuta vicinity, plant development indicated a delayed start of summer in the area due to cold conditions in the end of June. Deposits and dust on the river banks indicated a relatively high flood, although not as high as in the Vorkuta vicinity.

Unlike areas to the east, damage of shrubs by rodents was not found in the basin of the upper reaches of the Bolshaya Rogovaya River, although moss cover was locally destroyed which implied high undersnow activity of lemmings. During the study period we recorded one Siberian Lemming and occasionally heard calls of Narrow-skulled Voles in shrubs of the river valley. Muskrats were recorded several times. The abundance of lemmings and voles was probably low in the second half of July.

Observations of mammalian predators included fresh tracks of Arctic Foxes on river beaches and an inhabited, albeit without pups, den of Red Fox.

Avian predators were represented by rare and mainly wandering Rough-legged Buzzards. A surveyed area over 200 km^2 was inhabited by 4 nesting pairs with 1 to 4 chicks in a nest. Remains of rodents were not found in the course of the nests′ examination. The youngest chicks died from starvation in two nests during the study period. Neither Northern Harriers, nor Short-eared Owls were observed. Several Long-tailed Skuas, wandering as singles or in pairs, were recorded. A female Snowy Owl appeared in the river valley on 26 July and captured a large chick of the Bean Goose.

Given the low abundance of predators within the surveyed area we evaluated their pressure on clutches and broods of breeding waders as low. This conclusion was confirmed by the high abundance of adult waders of most common species, alarming near broods, including the Common Sandpiper and Terek Sandpiper. Breeding success of most wader species was evaluated as average to high.

V.V. Morozov

16. Padimeyskiye Lakes (Komaty Lake), Bolshezemelskaya Tundra (67°35′ N, 62°09′ E)

The snow probably melted during the first 10 days of June. The season was average in timing and warm. Precipitation occurred rarely during the period of observations from 17 June to 12 July 2009, and included a couple of rains and a thunderstorm with pelting rain and hail on one day in July. These events, probably, had no notable impact on reproduction of birds. Winds were mostly from the northeast.

The abundance of rodents was evaluated as average, as we did not observe signs of lemmings, while Tundra Voles were recorded only in the vicinity of cabins.

Arctic Foxes were rare, and we recorded only 1-2 animals in total.

Owls and Pomarine Skuas were not observed. White-tailed Sea Eagles, Arctic Skuas, Common Gulls, Herring Gulls, Hooded Crows and Ravens were rare and did not breed. Rough-legged Buzzards occurred in small numbers and bred; Long-tailed Skuas were common and bred.

The abundance of Willow Grouse was average and they bred.

Generally, the season was warm and favourable for reproduction by birds.

Y.N. Mineev, O.Y. Mineev

17. Vorkuta City vicinities, Bolshezemelskaya Tundra, Russia (67°25′–67°45′ N, 63°40′–64°20′ E)

According to the reports of local people the winter 2008/2009 was generally moderately cold with low snow accumulation, although in the beginning of the winter air temperatures had dropped to –40-50°C. This resulted in a thick ice on standing waterbodies and influenced spring conditions. Snow depth was average or slightly above that by the end of winter. However, the snow was loose due to few snow-storms.

The spring started on the usual dates, and intensive snowmelt occurred in late May – early June 2009. According to observations from 8 June to 10 August 2009, snow covered less than 30% of surface on northern slopes of hills by 10 June, and had completely melted on other slopes. Streams and small rivers started to run in late May – early June, and ice broke on medium and large rivers on 3-7 June. The flood was very high and prolonged. Water rose to the maximum level on 14-16 June, and floodplain started to dry after 20 June. Floodplain species of waders (the Terek Sandpiper and Temminck′s Stint) could not use their preferred habitats and occurred in very low numbers. Snow completely melted on the tundra by 20 June, although it was still present until early July on steep slopes of river banks and in streams on peat bogs. Ice broke late, after 20 June on karst lakes in bogs and on the tundra, and in the first third of July on large glacial lakes. Generally, the spring was cold and rainy. In spite of the warming in mid July plant and insect phenology was delayed by at least 10 days. Leaves unfolded completely on tundra shrubs only after 3-5 July. Mosquitoes emerged on 7 July, while usually this occurred on 23-25 June. Summer conditions were close to usual, without abnormal heat, cold spells or other extreme events.

Heavy damage of shrub stems, herbs and mosses indicated high abundance of lemmings and voles at the end of winter – beginning of spring. In spring we found everywhere wide areas of completely destroyed moss cover, deposits of "lemming hay" and damaged undersnow stems of willow shrubs. However, rodent numbers dropped dramatically by early June, and Narrow-skulled Voles and Collared Lemmings were not encountered daily on excursions in June and early July. The decline apparently continued through the second half of July and August when we did not see these animals at all.

Mammalian predators were not recorded.

Avian predators nested at a low density. The abundance of Rough-legged Buzzards was low, their clutches contained a maximum of 4 eggs, and usually 2 chicks survived to fledging. Two found nests of Long-tailed Skuas contained clutches of one egg. Northern Harriers were rare breeders. A Short-eared Owl, performing distraction displays near its brood, was seen once. Herring Gulls nested successfully.

Predation pressure on clutches and chicks of waders was low, as we did not record nest failure due to predation in these birds. The abundance of adult waders, alarming near broods, indicated above average to high nest success of all species with the exception of the Terek Sandpiper and Temminck′s Stint.

V.V. Morozov

18. Polar Ural Mts., Russia (67°08′–67°27′ N, 64°25′–65°10′ E)

Mountain areas were surveyed from 11 June to 10 August, with a break for two weeks in the second half of July. Snow covered 80-100% of the area in the mountains by the start of studies. However, rivers and streams already broke, and their banks were covered with blocks of ice. Vast aufeis areas on many rivers indicated a frosty winter with low snow accumulation. Ice-break occurred, probably, on 9–10 June. Intensive snow melt was initiated by notable warming on 14 June. Lakes in the foothills of mountains broke on 20-22 June. Snow cover reduced to less than 50% on 20-22 June on

the slopes adjacent to the plain and in early July in interior regions of the Urals. The spring was evaluated as cold and prolonged due to cold termination of June. Summer weather was typical for the area.

Similarly to plain areas to the west the abundance of lemmings and voles was high in the mountains at the end of winter and early spring. Although the damage to stems and branches of shrubs was recorded in many places its extent was lower than on the plains. Damage to moss cover was high and similar in extent to the damage on the plains. The abundance of the Grey-sided Vole was high in June, as we encountered running animals and recorded their numerous fresh burrows and pathways.

Mammalian predators were not recorded.

Northern Harriers and Rough-legged Buzzards nested at a low and average density, respectively. Clutch size was low in Rough-legged Buzzards, 1–4 eggs, and broods contained 1–3 chicks prior to fledging. Some pairs were failed-breeders. Peregrine Falcons and Merlins nested in the usual numbers for the area. Long-tailed Skuas occupied territories and protected them from predators, but their breeding was not confirmed. Several non-breeding Short-eared Owls were recorded. Common Gulls and Herring Gulls bred successfully.

Pressure of predators on clutches and chicks of waders was low. The abundance of adult waders, alarming near broods, indicated at least average nest success in many common species of the area: Eurasian Golden Plover, Common Ringed Plover, Wood Sandpiper, Ruff, Common Snipe and Pintail Snipe. The abundance of Dotterels, Red-necked Phalaropes, Terek Sandpipers and Temminck′s Stints was apparently lower compared with the previous years. While reasons for the decreased abundance of these species were not known, at least it was not due to predation pressure.

V.V. Morozov

19. Voikar River lower reaches, Lower Ob′ River area, Russia (65°48' N, 63°57' E)

The first notable rise in temperatures in spring occurred during the ice-break on the Ob′ River, on 24-25 May 2009, and was followed by rapid snowmelt. There was no return of really cold weather, but temperatures dropped below freezing at night, and the weather was cool overall. Ice-break on the Voikar River occurred relatively late, on 4 June. Greening of birch occurred on the average date, 14 June, and denoted the start of summer in the area. Most birds had just finished to lay eggs and started incubation at this time. Generally, the spring was later than average in 2009, but the summer was moderately warm and moderately wet.

The abundance of voles was average, based on capture data, with a probable increasing trend. Sometimes voles were recorded visually in the floodplain. However, harriers and skuas were not recorded, while Rough-legged Buzzards and Short-eared Owls were rare non-breeders. White-tailed Sea Eagles and Merlins occurred in average numbers. Ravens were rare.

Red Foxes and Minks were common among mammalian predators.

The abundance of Willow Grouse increased compared with the previous year, 2008, and reached the long-term average. The abundance of most species of ducks decreased, to the highest degree in the Common Teal and to the lowest degree in the Northern Pintail.

Numbers of many wader species decreased including the Greenshank, Terek Sandpiper, Common Snipe, Pintail Snipe and Black-tailed Godwit. The abundance decreased to the least extent in the Wood Sandpiper, and did not change in the Common Sandpiper and Whimbrel and increased in the Little Stint. Breeding gulls occurred in lower numbers, and the number of Arctic Terns were similar to the previous year.

Among common species of passerines, abundance increased in the Yellow Wagtail and Willow Warbler, did not notably change in most other species, and decreased in the Brambling and redpolls.

Human impact was not significant in the area.

Nesting success was evaluated as average in the period of observations from 29 May to 17 June 2009.

M.G. Golovatin

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

The flood was extremely low in 2009, and all high ridges in the floodplain remained dry. Tussocky habitats dried out by the end of June, and the water remained only in large floodplain lakes, mostly in the vicinity to large channels. The weather was slightly cooler than average in the second half of June and moderately wet. Light rains occurred on 4 days. Weak and moderate winds blowing from various directions prevailed. The timing of phenological events was close to average. Weather anomalies were not recorded.

Observations and counts of birds were carried out from 18 to 30 June 2009 on 6 permanent plots in the central part of the Lower Ob floodplain from 65°16′ N, 65°01′ E (Lapytlorpugor plot) to 65°51′ N, 65°30′ E (Verkhny Ryngym plot) and in the course of boat trips between the study plots.

The abundance of *Microtus* and *Clethrionomys* voles was high, and we frequently saw these animals.

Mammalian predators were not recorded. Northern Harriers and Pallid Harriers were regularly observed. Pairs and single hunting Pallid Harriers were constantly seen in the same areas on 4 plots. They apparently nested in the vicinity, but it was not possible to find nests due to extremely difficult terrain with many channels and oxbow lakes. Among several observed non-territorial Short-eared Owls one was alarming, thus probably breeding. We recorded a single Rough-legged

Buzzard and a pair with a nest on a willow. White-tailed Sea Eagles were common and bred. Little Gulls and Black-headed Gull occurred in average numbers, but the proportion of breeding birds was low and their colonies were small. This resulted in a low nesting density of Slavonian Grebes which prefer gull colonies for nesting.

Whooper Swans were common and occurred everywhere. Numbers of other waterfowl were relatively low; in particular, numbers of Tufted Ducks, Common Teals and Northern Pintails declined compared with the previous year. European Wigeons occurred in average numbers and Northern Shovelers were more abundant than usual. Pre-moulting aggregations of ducks were relatively small in size and were recorded mostly in the north of the area on the lake-like shallows adjacent to the largest channels. Clutch size was below average in ducks. Many of duck clutches were destroyed by Hooded Crows, although crow numbers and their nesting density were close to the long-term average. Up to 40 egg-shells were found at feeding sites of crows.

The species composition and abundance of waders were about typical. The Common Snipe was the most numerous species; Terek Sandpipers and Oystercatchers were the second in abundance. Ruffs were recorded only in small flocks of wandering birds. Several flocks of passing Black-tailed Godwits were observed.

Willow Grouse bred in low numbers. Population densities of the most common species of passerines were close to the long-term average. Bramblings were slightly more abundant than usual.

Adverse human impacts on birds were not observed in this season. Nesting success was evaluated as low.

M.G. Golovatin, S.P. Paskhalny

21. Schuchya River, middle reaches, Yamal Peninsula, Russia (66°50′–67°40′ N, 67°29′–69°36′ E)

According to the reports of local people the spring was cold and prolonged in 2009. July was cold and windy compared with the previous years, but storms did not occur. Extreme weather events were not recorded.

According to observations in the period from 29 June to 2 August 2009 the abundance of microtine rodents was higher than in 2008 but still low, and could be ranked 2–2.5 on a scale of 5 (ranked 1 in 2008). Collared Lemmings were recorded twice and Tundra Voles several times. Inhabited colonies of voles were located in river valleys, and a few inhabited colonies of lemmings were found only in deep valleys of streams where deep and crumbly snow apparently had accumulated during the winter. Numbers of Mountain Hares were high, as usual.

Arctic Foxes were not recorded. The proportion of inhabited dens of Red Foxes was average.

Breeding avian rodent-specialists were represented by Rough-legged Buzzards which occurred in average numbers and nested only in river valleys. The abundance of buzzards in forested valleys was higher than in tundra. We found 6 nests per 100 km of the river valley in the forested part of the study area. In tundra Rough-legged Buzzards nested only on rocks where 4 nests were found on a 20 km transect, all near colonies of Collared Lemmings. Rough-legged Buzzards were absent on tundra rivers with steep earth banks. In total 4 nests were found per 80 km of river valleys in the tundra. Clutches contained 3–4 eggs, broods 2–4 chicks, which indicated relatively favourable feeding conditions during the summer, at least in the forest tundra of the area. Rough-legged Buzzards occurred in a similar abundance in 2006, but in that year they had lower breeding success than in 2009, with only 1–2 chicks in a brood. Dates of reproduction were slightly later than usual in the Rough-legged Buzzard and Peregrine Falcon. A few pairs of Long-tailed Skuas, probably, bred, judging by their behaviour.

Short-eared Owls were recorded on two occasions in the forest tundra, and one Northern Harrier was seen.

Merlins, as previously, were numerous breeders, Peregrine Falcons and White-tailed Sea Eagles were common. Golden Eagles were rare, but numbers were slightly higher than in 2008. Similarly to the previous four years Brown Bears destroyed nests of large birds of prey, and we found marks of bear claws on trunks of 40% of trees which had nests. At least one nest of Golden Eagles was destroyed and the two chicks in a nest of White-tailed Sea Eagles were eaten by bears. Breeding Gyrfalcons were almost absent on the standard survey route for the first time in 23 seasons of observations (1976-2008). We found a single inhabited nest on rocks which had 4 fledglings and two territories occupied by Gyrfalcons without nests on a river valley stretch of approximately 450 km. Known nests in trees were not used.

Hooded Crows were abundant breeders, Ravens were common and Magpies relatively common. Numbers of two latter species have been steadily increasing during the last 5 years.

Numbers of Willow Grouse were below average and were lower than in 2008, but still higher than in 2000, the season of very low Grouse abundance.

All those species of divers and Anseriformes which are typical for the area nested in the usual numbers. In particular, Lesser White-fronted Geese and Bean Geese nested in average numbers.

Among waders Terek Sandpipers and Wood Sandpipers were numerous; Eurasian Golden Plovers, Ringed Plovers, Common Sandpipers, Red-necked Phalaropes, Ruffs, Temminck′s Stints, Whimbrels, Bar-tailed Godwits, Common Snipes and Pintail Snipes were common.

Small passerines were numerous as usual, although the abundance of Lapland Buntings has remained low during the last

5 years. Also Great Grey Shrikes were observed less often than in 2008.

Generally, conditions were satisfactory for reproduction by most species of birds in 2009, with the exception of a prolonged spring and cold weather in July. Breeding success of birds is difficult to evaluate as we did not monitor clutch and brood survival, but a relatively low abundance of predators and absence of extreme weather events in July should have favoured successful reproduction. However, windy and cold weather in July could have adversely affected the breeding performance of insectivorous birds. A small increase in the abundance of rodents enabled a relatively successful reproduction of Rough-legged Buzzards.

S.A. Mechnikova, M.S. Romanov

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

According to observations made from 1 March to 1 May 2009 snow accumulation had been average during the winter, and the tops of hills became snow-free by the end of April. Pelting rains lasted for two days during the thaw in mid April, and the subsequent drop of temperature resulted in icing of the tundra, which was then covered again by snow. Spring and summer phenology was average, based on observations during 10 years. Snow melted on 50% of the flat surface on 5-7 June, on 70% on 8 June, and completely disappeared on 15 June. Iceflow along the rivers continued during a week (5-13 June), and occurred 3 days earlier on the Erkatayakha River compared with the Payutayakha River. Relatively cold weather prevailed during this period, with air temperatures not exceeding +10°C during the day time and dropping below freezing at night. Warm and cold days were equally common in mid June and in July. Strong wind occurred occasionally, but the amount of precipitation was small. Generally, weather conditions were favourable for birds until the end of observations on 16 August.

Lemmings were rarely captured with snap-traps in summer, but the proportion of juveniles was high among captured animals. The abundance of voles was average. The thaw in mid April had, probably, affected the results of undersnow reproduction by rodents. Transect counts revealed low density of lemming undersnow nests, although the density was still higher than in 2008. Two large Collared Lemmings, found near a den of Arctic Foxes on 10 June, had placental spots. Most probably, lemmings were unevenly distributed across the area and concentrated in small patches where there were the most favourable conditions.

Mountain Hares occurred in high numbers, which, probably, resulted in a reduced predation pressure on birds. Remains and bodies of juvenile hares were found near dens of Arctic Foxes, and two bodies of hares, about the size of a large cat, were found near a perch of juvenile Peregrine Falcons in mid August. One of the bodies was half-eaten, while another was disembowelled.

According to spring observations using automatic cameras Arctic Foxes were rare and they mostly stayed in the vicinity of the winter road between Obskaya and Bovanenkovo. The Raven, Red Fox and Wolverine were also recorded by the cameras. Arctic Foxes became common in summer and bred. Pups were recorded in 30% of dens (n=12), with up to 4 pups in a brood. Ermines were recorded twice in July. The presence of rodent fur in lemming undersnow nests indicated reproduction of the Ermine and Least Weasel and hence a possible impact of these predators on rodent populations. Nests with fur were particularly abundant along the upper edge of slopes at the border of open tundra and dwarf birch stands.

Five pairs of Rough-legged Buzzards bred in the surveyed area of over 300 km^2, which indicated low density. Clutch size was small in buzzards, up to 3 eggs. One of the buzzard nests was destroyed by an Arctic Skua at a late stage of incubation, and an egg was taken by an Arctic Skua from another nest of buzzards, as recorded by automatic cameras. Chicks hatched in two nests of Rough-legged Buzzards, 8 nests of Peregrine Falcons and also in nests of skuas in the period from 10 to 15 July. This indicated a relatively high nesting synchrony. A male of Snowy Owl was recorded in early June, and, probably, the same male was found dead on 15 June near a nest of Rough-legged Buzzards.

White-tailed Sea Eagles were common, and we recorded adult birds as well as juveniles. One White-tailed Sea Eagle was observed swimming in the river, probably, after the failure of a hunting attempt. A nesting attempt of White-tailed Sea Eagles was indicated by regular observations of adult birds in June and by finding of an uncompleted nest in July on a hill slope to a tundra lake. The nest was made of thick dry branches of shrubs, some of which were over one meter long, and hence could only be made by White-tailed Sea Eagles.

Pomarine Skuas were observed as singles on south-eastward migration in the period from 10 to 15 June (up to 6 birds per day). Long-tailed Skuas and Arctic Skuas occurred in average numbers and nested successfully judging by the results from four monitored nests. A nest of Ravens with four fledglings was found on a railway bridge across the Erkatayakha River on 15 June. Hooded Crows became more common near steep banks of rivers and channels with expansive stands of shrubs up to 2.5 m high. A bird observed on 2 July was undergoing primary moult.

According to reports of local people the abundance of geese in May decreased compared with previous years. Their migration was most intensive in mid May, as usual. Greater White-fronted Geese and Bean Geese were common in summer and bred. Geese broods were observed on rivers after 3 July. Chicks of Bewick′s Swans were recorded on 10-15 July. A single nest of Whooper Swans contained 5 eggs, and a brood of 5 chicks was later recorded in the same area. A single nest of Red-breasted Geese was found, which is a dramatic reduction compared with the previous observations.

Broods of ducks were rare. We found nests of ducks destroyed by Arctic Foxes, and remains of a Long-tailed Duck egg were found near a nest of skuas at the moment of hatching. Food remains of Peregrine Falcons included rare vagrant species: the Garganey, Northern Shoveler, Black-headed Gull and Common Cuckoo.

Density of most bird species was average, according to counts. The density of Willow Grouse was low, similarly to the previous 3 years.

Density of several rare and uncommon species (the Pechora Pipit, Meadow Pipit, Yellow Wagtail) was markedly lower than in former 'late' seasons. However, Siberian Accentors were common on many river bluffs which were covered with dense stands of willow and elder. First eggs in clutches of passerines were found, as usual, after 10 June. Fledglings of pipits and Lapland Buntings appeared in high numbers after 10-15 July. However, a nest of Lapland Buntings with a clutch of 3 eggs was found as late as 15 July.

Generally, pressure of predators on birds was moderate, and flying juveniles were recorded in most species.

During the period of migration the study area was used intensively for hunting, primarily by employees of the railroad 'Obskaya – Bovanenkovo'. Cabins were often transported to the tundra by all-terrain vehicles and hunting regulations were violated due to the virtual absence of control. River bluffs were preferred sites for hunting, where small hides were installed. We found remains of 4 Bewick's Swans (skins and heads) and numerous geese wings in the vicinity of one hide. Another hunting camp was installed for two weeks at a distance of 100 m form a nest of Peregrine Falcons. Local people told us that they had seen a dead bird of prey there.

V.A. Sokolov, A.A. Sokolov, N. Lecomte, D. Ehrich, A. Dixon

23. Sharapov Shar Bay, western Yamal Peninsula, Russia (70°33′ N, 67°18′ E)

The weather was stable and cool, without abundant precipitation, during the period of observations from 28 July to 3 August 2009.

We did not find any signs of rodent presence in the area. Tracks of Arctic Foxes were seen on the sea coast, mostly at river mouths.

One Rough-legged Buzzard was recorded. Hunting and alarming Arctic Skuas were observed in small numbers. A wandering immature White-tailed Sea Eagle was seen. Two nests of Peregrine Falcons on the coastal bluffs contained 2 and 4 chicks.

Several pairs of Bewick's Swans were recorded at river mouths. Numerous Greater White-fronted Geese concentrated primarily on a low tree-less island (laida) at the mouths of the Mordyyakha and Naduiyakha rivers, where their density reached 17.4 pairs/km^2. Mean brood size (3.4±1.5 SD) was close to the average for this part of the Yamal Peninsula. Ducks were relatively rare, and they were mostly represented by small flocks of King Eiders, Long-tailed Ducks and Greater Scaups on the sea near the coast. Broods of ducks were not recorded, but a found nest of King Eider indicated their breeding. A single Steller's Eider was observed in the Mordyyakha River mouth.

Red-throated Divers and Black-throated Divers nested; most of the birds were observed in the Mordyyakha River mouth.

The abundance of waders was low (Little Stints were the most common), but observations of chicks and juveniles indicated their successful breeding. Juveniles of Herring Gulls and Glaucous Gulls were capable to fly well and to feed on their own.

Passerines, including the dominant species, the Lapland Bunting, occurred in small numbers. Fledglings and juveniles were very rare. Snow Buntings were common along the coastal bluffs and had well flying fledglings.

Generally, most species of birds, with the exception of geese and gulls, occurred in low numbers. Breeding success was evaluated as low based on our observations.

Human impacts were small in the area.

M.G. Golovatin, V.A. Sokolov

24. Bovanenkovo settlement, Yamal Peninsula, Russia (70°22′ N, 68°24′ E)

The weather was relatively cold during the period of observations from 25 to 28 July 2009.

The abundance of rodents was low, and we failed to capture a single animal with snap-traps, although one *Microtus* vole was captured by a dog.

Arctic Foxes were rare, but bred. Breeding birds of prey were not recorded, but some wandering Rough-legged Buzzards were observed. Non-breeding Snowy Owls were rare. Arctic Skuas and Herring Gulls were rare breeders.

Geese occurred at an average density for the area, and their broods' size was not small. Long-tailed Ducks were rare. Among ducks only Northern Pintail and Common Teal were seen with broods. Willow Grouse were regularly observed, although their abundance was evaluated as low; grouse broods were smaller than usual.

The abundance of waders was relatively low. Waders of all species bred successfully, in particular, in the vicinity of industrial settlements, where chicks and juveniles were recorded. Passerines, including the most common Lapland Bunting, occurred in small numbers. Alarming birds were not seen often. A Fieldfare was observed on a bluff of the Seyakha River in the vicinity of Bovanenkovo.

Enterprises, constructing facilities of the Bovanenkovo gas-condensate field, and the near-by settlement had no adverse impact on birds. In contrast, broods of Greater White-fronted

Geese, Willow Grouse and ducks, as well as juveniles of the Red-necked Phalarope, Wood Sandpiper, Temminck′s Stint, Little Stint and Yellow-headed Wagtail were recorded within the settlement and in its vicinity.

Overall breeding success by birds was evaluated as average.

M.G. Golovatin, V.A. Sokolov

25. Bovanenkovo, Mordy-Yakha River valley, Yamal Peninsula, Russia (70°19′ N, 68°41′ E)

The spring was, probably, prolonged and cold. Maximum air temperatures did not rise above +10°C during the period of observations from 23 June to 2 July 2009. Willow leaves did not unfold in early July, and a green aspect was not notable in the tundra.

Populations of lemmings were, probably, at a low, and we observed only two animals. However, lemming undersnow tracks and nests were numerous in all favourable habitats.

Arctic Foxes were seen on two occasions. Other mammalian predators were not recorded.

Owls were not observed. Three nests of Rough-legged Buzzards contained clutches of 2, 3 and 3 eggs. Lemmings were not found in pellets and food remains, and buzzards fed primarily on Ruffs which were numerous on slopes near the floodplain. One nest of buzzards was deserted by 30 June, probably, due to the shortage of food. A single territorial female Peregrine Falcon also fed on male Ruffs. Pomarine Skuas were represented by several single birds and non-breeding territorial pairs. Long-tailed Skuas stayed on territories in pairs, but, probably, did not breed.

Among waders Little Stints were the most numerous, and we found 5 nests corresponding to a nesting density of 8 pairs/km^2. Common Ringed Plovers, Pacific Golden Plovers, Dunlins, Temminck′s Stints, Common Snipes and Pintail Snipes were common on watersheds; Ruffs were numerous near the Mordy-Yakha River valley. Displaying Jack Snipe and Wood Sandpipers were observed in bogs of the floodplain where there were shrubs.

During 10 days we found 7 nests of Greater White-fronted Geese which had started nesting in the period from 15 to 22 June. The mean clutch size was 5 eggs. Pairs and families with young of the previous year occurred at an approximate density of 9 per 1 km^2 in the watershed tundra. Flocks of Greater White-fronted Geese were observed flying eastward and north-eastward on 29–30 June. Bean Geese were not recorded, and only one Bewick′s Swan was seen. One non-breeding pair of Red-Breasted Geese stayed within the territory of a solitary female Peregrine Falcon. Pairs of Long-tailed Ducks and Northern Pintails were common on ice-free patches near banks of tundra lakes.

The linear density of Willow Grouse determined by transect counts was 1.7 birds/km; the estimated population density was 9 pairs/km^2, which is the average abundance on Kolguev Island. Four nests of Willow Grouse contained clutches of 3, 5, 5 and 6 eggs.

A.V. Kondratiev

26. Northern coast of the Gydansky Peninsula and islands of the Oleny Strait, Russia (72°22′–72°15′ N, 78°36′–77°49′ E)

At the time of our arrival to the study area on 6 May 2009 snow almost completely blanketed the ground and was absent only on tops of hillocks and on high bluffs of the coast of the Kara Sea, from where it was blown away by the wind. Sunny weather with weak northern or northwestern winds prevailed during the first 10 days of the expedition. Air temperatures dropped to –20°C at night and reached +22°C in the sun during day-time. The sun was seen once in the period from 16 May to 7 June, when weak to moderate winds of western, northwestern and northeastern directions were recorded. There were 5 snowfalls in May, 3 snowfalls in the first half of June and none later, until the end of studies on 1 August.

Intensive snow melt occurred on 28-29 May after prolonged rain, and over half of the flat tundra area became free from snow on 29-30 May. Low islands in the delta of the Mongocheyakha River were completely snow-covered at that time, and became free from snow by 21-23 June, when air temperatures reached +25-31°C in the sun. Ice-break occurred on 1 July on the Mongocheyakha River, and the sea became almost completely free from ice by 9 July.

Lemmings were common and bred by the start of observations. However, rapid snowmelt in late May – early June resulted in the flooding of burrows and most lemmings were captured by predators. Accordingly the abundance of lemmings decreased and we rarely observed either Siberian Lemmings or Collared Lemmings during the summer. A Tundra Shrew was captured by a dog.

Arctic Foxes were often observed on the sea ice early in the season, and up to 2-3 animals were observed at the same time within binoculars field of view. Numbers of Arctic Foxes decreased in the summer, but they were still common. Tracks of wolves were seen several times.

Rough-legged Buzzards were relatively common on the bedrock coast to the east of the Mongocheyakha River delta, but they were very rare in the major part of the study area including lower part of the river delta. Generally, birds of prey and owls occurred in low numbers in 2009, and the Peregrine Falcon was the only breeding species. Long-tailed Skuas were rare, Arctic Skuas were common and bred, and Pomarine Skuas were numerous non-breeders.

Snow Buntings were already present on the tundra in early May. Flocks of Rock Ptarmigans of up to 105 birds stayed constantly on snow-free patches on the high sea coast. The abundance of Rock Ptarmigans was evaluated as average and of Willow Grouse as low. Rock Ptarmigans bred.

The first Greater White-fronted Geese were recorded on 25 May and the first Rough-legged Buzzard on 26 May. A southerly wind on the next day, 27 May, resulted in the appearance of a Barn Swallow near the buildings of a deserted settlement Sosnovaya. We also recorded a Black-throated Thrush and a Rook. The second observation of Rough-legged Buzzard was made on 28 May. The first migrating Pomarine Skuas were recorded on 29 May and 16 Shorelarks flew eastward on 30 May. We observed a Hooded Crow, flying northward, and the first Lapland Buntings on 31 May. Flocks of Bramblings were recorded daily from 29 May to 4 June. The first waders, Dunlins and a Curlew Sandpiper, were seen on 31 May, and the first Red Knots and Sanderlings were recorded in the study area on 1 June. King Eiders appeared on 4 June, and Long-tailed Ducks started to arrive from the north from 3 June. Migration of White-billed Divers was observed on 3 and 4 June. A pair of Bewick′s Swans arrived on 4 June, and their mating displays were recorded on 5 June. Brent Geese were observed for the first time on breeding grounds on 7 June, and displaying Common Ringed Plovers were recorded on the same day.

A pair of territorial Greater White-fronted Geese was observed for the first time on 5 June, and a nest with a clutch of 2 eggs was found on 15 June. A nest of Brent Geese with a single egg was found on 13 June. The first nests with eggs of Glaucous Gulls were found on 8 June and of King Eiders on 20 June.

Hatching started in nests of Herring Gulls and Glaucous Gulls before 11 July and mostly terminated by 18-19 July. The first chicks of Brent Geese appeared on 14 July, and mass hatching occurred on 18-19 July in Brent Geese and King Eiders. The first chicks of Greater White-fronted Geese hatched on 19 July.

Breeding success of birds was very low across a major part of the study area due to the low abundance of lemmings and the presence of two settled families of Nenets people. At egging Nenets people leave one egg in most nests of Greater White-fronted Geese, which in one case resulted in the nest desertion by geese. All nests of Brent Geese found on islands of the Mongocheyakha River delta (n=16) were destroyed by Arctic Foxes. Similarly, all nests of Steller′s Eiders and almost all nests of King Eiders were destroyed by Arctic Foxes or gulls.

Birds nested successfully only in dense colonies on islands of the Oleny Strait. We found 445 nests of large gulls, 325 nests of Brent Geese, 90 nests of King Eiders and 1 nest of Steller′s Eiders on 4 surveyed islands of a total area of 0.75 km^2. Chicks hatched successfully in most of these nests.

The eastern part of the surveyed coastline and Oleny Island were inhabited by several settled families of Nenets people, who collected eggs of geese, ducks and gulls, and hunted geese and eiders.

Overall breeding success of birds was evaluated as average.

N.N. Emelchenko, D.S. Nizovtsev

27. Mongocheyakha River middle and lower reaches, Gydan Peninsula, Russia (72°20′ – 71°55′ N, 78°26′ – 79°17′ E)

There were only three days without rain during the period of observations from 1 August to 3 September. Weak southerly winds prevailed. Sunshine was a rare weather event. Maximum daily air temperatures dropped from +10°C in early August to +3°C in early September. Night frosts were recorded from 9 August. Generally, the season was warm but rainy.

The abundance of lemmings was very low.

Arctic Foxes were common, but breeding was not confirmed. Other mammalian predators were not recorded. Rough-legged Buzzards were rare but bred. Non-breeding Snowy Owls occurred in small numbers.

Nesting of Greater White-fronted Geese was successful. Flocks of moulting geese with broods formed aggregations of up to several hundred birds in the lower reaches of the Mongocheyakha River and on floodplain lakes. Aggregations of up to 150 non-breeding moulting Bean Geese were observed on the river and on large floodplain lakes. The first flying moulted Bean Geese were recorded on 12 August.

Two families of reindeer herders moved to the study area after the end of bird nesting season, hence, reindeer husbandry had small impact on birds. Hunting of moulting geese was practised by reindeer herders and by settled Nenets people inhabiting the coast.

Breeding success of birds was evaluated as average in general.

N.N. Emelchenko, D.S. Nizovtsev

28. Maymecha River lower reaches, south-eastern Taimyr, Russia (71°06′ N, 100°07′ E)

A downstream trip along the Maymecha River was conducted from the mouth of the Chopko River to the confluence with the Kheta River in the period from 14 to 28 August 2009.

After leaving the mountains the Maymecha River runs on a low altitude (up to 100 m a.s.l.) undulating plain, composed of sand and sandy loam. The river valley was 3-6 km wide and occupied predominantly by tundra-mire complexes and shrub communities (willows in the floodplain and alder stands on terraces). Boreal type larch forest prevailed on the watersheds, along with frost-mound bogs. Locally the plain ends at the river with erosional bluffs up to 40 m high.

Katyryk settlement is situated at the river mouth, and the lowest 20-30 km of the river stretch have been periodically visited by humans for fishing, hunting, and the collecting of berries and mushrooms.

Day-time air temperatures ranged usually from +12°C to +20°C, but reached a maximum of +26.0°C on 19 August. Night temperatures dropped to +0.1-3°C from 25 August, but still remained above the freezing point. Phenological autumn started later than usual. The second half of August was rainy, with rains and thunderstorms occurring almost daily; pelting rains were recorded on 3 days. A start of the downstream trip coincided with the start of the autumn flood, which has annually happened on the southern tributaries of the Kheta River and has been known as the "black water" among local people. The highest water level on the Maymecha River was recorded on 15 August, when the water rose at least 3 m above the lowest level and almost the whole of the middle floodplain was flooded. Water levels decreased 0.2-0.5 m daily on the following days.

We captured 30 rodents (22 Middendorff's Voles, 4 Wood Lemmings, 3 Northern Red-backed Voles and 1 Tundra Vole) at four sites at a distance of 80, 70, 45 and 18 km from the river mouth. Given that the captures were short-term (less than 24 hours each) and irregular, the result indicated high abundance of rodents. Northern Pikas were abundant.

Arctic Foxes were not recorded. Tracks of Wolves were regularly seen, and tracks of a small Brown Bear were recorded in the Kheta River valley near the Maymecha River mouth. Dogs in groups of up to 10 animals were recorded within 10 km of the Katyryk settlement. Intensive southward migration of reindeers had continued until 17–19 August, while later only flocks of 5-10 animals or solitary Reindeer were observed.

Rough-legged Buzzards were rare. We found one inhabited nest and recorded juvenile birds on several occasions. Several observations of juvenile Merlins were made. White-tailed Sea Eagles were constantly present at 4 sites. Several small colonies of Herring Gulls were found. Pomarine Skua and Long-tailed Skua were seen on the Kheta River near Katyryk. Hooded Crows appeared at a distance of 25 km from the settlement; one Carrion Crow was recorded. Ravens were observed in small flocks everywhere along the route, which was, probably, related to the migration of reindeers.

In total 39 species of birds were recorded along the Maymecha River, of which 18 were confirmed breeders (the list was apparently incomplete due to the late timing of the survey). An aggregation of up to 100 geese, mostly Greater White-fronted Geese but also a small proportion of Bean Geese, was moving along the shallows of the lower Maymecha River. A flock of up to 20 Bewick′s Swans was observed in the same area. Bewick′s Swans were periodically recorded in pairs along the last 50 km of the Maymecha River stream, but their breeding was not confirmed. A flock of 30 Lesser White-fronted Geese was seen on 16 August in the area of Gongdo Lake (50 km from the Maymecha River mouth). The first breeding record of Red-throated Divers was made for the boreal part of this area, although they are known to breed farther south on Putorana Plateau. It is interesting that the Willow Grouse, absent during the summer in the mountain part of the route, was a common breeder on the plain.

Nesting of birds was, probably, mostly successful. Broods with chicks, close to fledging (not less than 4/5 of an adult bird in size), were recorded in most species of waterfowl. The first flying juvenile Herring Gull was seen on 19 August. The first flock of Black-throated Divers was observed on 20 August.

I.N. Pospelov

see also: "Archives of Nature" of the State Nature Reserve "Taimyrsky". Book 25, 2009. In Russian. http://www.taimyrsky.ru/letopis/letopis2010.pdf. Accessed 16 Oct. 2011.

29. Chopko and Maymecha rivers confluence area, Srednesibirskoe Plateau, south-eastern Taimyr, Russia (70°47′ N, 101°04′ E)

An area near the Chopko River mouth at its confluence with the Maymecha River (125 km from the mouth of the latter) at the northern edge of Srednesibirskoe Plateau (junction of Putorana Plateau and Anabar Plateau) was surveyed in the period from 19 June to 13 August 2009 by an expedition of the Nature Reserve "Taimyrsky". Mountains were on average 350–500 m a.s.l. high with deep valleys with steep slopes and high rocky cliffs. The maximum width of the Maymecha River valley was 1.5 km. The valley had isolated patches of floodplain and terrace. The river flow is flood dependent to a large extent. Vertical zonation of vegetation was well developed. Northern taiga vegetation prevailed at low altitudes and was represented by larch forest with the canopy projection of 0.3–0.6, rarely more, and with shrub or dwarf shrub understory. Spruce often occurred with larch on terraces of the Maymecha River. Alpine meadows occupied steep slopes above 350–400 m a.s.l. and alternated with dense alder stands and talus, while mountain plateau were covered by dryad-forb or shrub-dwarf shrub-sedge-moss tundra. Bogs were rare, and they occurred almost exclusively in the Maymecha River valley.

At the start of observations snow was present only in ravines of the valleys, but approximately 15–20% of the surfaces was snow covered above 400 m a.s.l. Ice on the rivers had already disappeared, and water levels were not high. Rapid increase of the water levels, up to 2 m during several hours, occurred on 20–23 June in the Maymecha River. Spring phenology was, probably, close to average. The summer was very hot, with day-time air temperatures often rising above +30°C and the maximum of +39.7°C recorded on 9 July. Mean daily air temperatures rarely dropped below +12°C during the period of observations. Abundant precipitation and thunderstorms occurred on 28 June, 30 June and 13 July, when there were daily precipitation amounts of 11.2, 9.4 and 16.3 mm. Heavy rains in late June were, probably, responsible for the flood on 2 July, when water level increased by 1.5 m during 3 hours, and most shrubs of the middle floodplain were flooded. Small rains, mostly with thunderstorms, were recorded on a maxi-

mum 5 days in July and early August. The lowest water level was recorded on 4 August in the Maymecha River; pelting rains started from 5 August and resulted in the next increase of the water levels exceeding 3 m above the lowest level. Strong persistent winds were not recorded.

The abundance of biting insects was exceptionally high in this season. Horseflies were the most abundant from 7 to 25 July, when their numbers were many-fold higher than previously observed. The abundance of blackflies became quite high as well from 20 June.

Small mammals typical for forest tundra were common. A total effort of 1,147 trap-nights in the valley larch forest and on mires resulted in catching 61 animal, including 28 Northern Red-backed Voles, 26 Middendorff's Voles, 3 Wood Lemmings, 3 Laxmann′s Shrews and 1 Tundra Shrew. Several nests and droppings of Siberian Lemmings and Collared Lemmings were found in mountain tundra, but animals were not seen. Northern Pikas were common on steep rocky slopes.

Arctic Foxes, probably, visit the area only in winter, as we found a carcass of a fox in winter fur at a height of 4 m on a tree in the vicinity of the field camp, but did not see any animals. Wolves were relatively common (two animals and fresh tracks were recorded), as well as Brown Bears (one seen along with several tracks and dug-outs). Two Wolverines were observed, one of which was hunting a hare. One Ermine was recorded.

The abundance of birds of prey was average. We found 6 nests of Rough-legged Buzzards, but we were able to monitor only one of them due to the remoteness and difficult access to the others. This nest failed due to unknown reasons after the hatching of chicks. An empty nest of Gyfalcons with signs of successful reproduction was found, and juvenile birds were observed. Breeding of Merlins was indicated by behaviour of adult birds and observations of juveniles. A nest of Peregrine Falcons, discovered on a vertical cliff, was not possible to examine. Several White-tailed Sea Eagles were observed, and an inhabited nest of this species on the Sabyda River (71°17′ N, 101°31′ E) was seen from a helicopter. Owls were not recorded. Solitary non-breeding Long-tailed Skuas and Pomarine Skuas were recorded in late June. Solitary Herring Gulls were also rare.

Wild Reindeers, probably, mostly moved away from the area before the start of bird nesting, and we recorded only several small groups migrating northward along the helicopter route. A single observation of reindeers was made in the study area in spring. Intensive autumn migration of reindeers to the south has started on 11 August, when chicks of birds, with the exception of birds of prey, had already left their nests.

All species of birds had already started incubation by 20 June, and we could evaluate breeding success mostly by observations of chicks or fledglings. Nest failure was documented for a single nest, of the Rough-legged Buzzards. Chicks of Greater White-fronted Geese were recorded on 5 July, a brood of Baikal Teals with chicks 5-7 days old on 14 July, downy chicks of Rock Ptarmigans 2-3 days old on 15 July, the first flying young of Rock Ptarmigans on 4 August, mass fledging of forest passerines (Willow Warbler, Redpolls, Wagtails) on 10–12 July, flying young of Arctic Terns on 13 August.

In total 56 species of birds were recorded in the study area, including 46 confirmed or possible breeders. Passerines contributed most to the avian diversity. The bird fauna consisted primarily of boreal species, although mountain tundra was inhabited by tundra species (Pacific Golden Plover, Eurasian Golden Plover, Dotterel, Rock Ptarmigan, Shorelark, Snow Bunting and Lapland Bunting). Many species of geese and ducks were common only on the spring migration, while their numbers and numbers of waders were in general low, apparently due to the small area of wetlands. The most abundant species in the forest included the Willow Warbler, Dusky Thrush, Common Redpoll and Siberian Jay. Mountain tundra was dominated by the Eurasian Golden Plover, Rock Ptarmigan and, locally, Ruff. The most common species in the Maymecha River valley included the Black-throated Diver, European Wigeon, Wood Sandpiper, Ruff, Common Snipe, Arctic Tern, Bluethroat and Common Redpoll. The most interesting observations of birds included several records of Lesser White-fronted Geese in pairs on the Maymecha River (probable breeding), one of the southernmost breeding records for the Bar-tailed Godwit, a nest and juvenile Gyrfalcon, common and probably breeding Common Sandpipers. For the first time we recorded nesting of Peregrine Falcons in a montane northern taiga area, while previous records were in tundra only. At the same time, we did not see several species, common in adjacent areas of Anabar Plateau (Grey-tailed Tattler, Pine Grosbeak, Brambling). The situation with Willow Grouse was unusual, as they were seen only in the beginning of the season and, probably, did not breed.

There was no notable disturbance of bird habitat in the area, although intensive geological surveys were conducted for over 50 years in the Soviet time. The area had almost never been used for commercial hunting, fishery or reindeer husbandry.

I.N. Pospelov

see also: "Archives of Nature" of the State Nature Reserve "Taimyrsky". Book 25, 2009. In Russian. http://www.taimyrsky.ru/letopis/letopis2010.pdf. Accessed 16 Oct. 2011.

30. Ary-Mas, Taimyr, Russia (72°29′ N, 101°50′ E)

Above freezing air temperatures were recorded on the first day of observations, 30 May 2009, in the Ary-Mas territory of the Nature Reserve “Taimyrsky”. There were then no snow-free patches in the larch forest, but the snowcover was 25-30% at the flat open surface of the Novaya River floodplain. Water covered ice of the river and appeared near the banks of floodplain lakes. The water level started to increase in the river on 5 June, and the ice broke on the same date.

The water level started to decrease from 14 June, and then the river cleared of ice. Ice-free strips reached 50-70 m wide on the large floodplain lake Ylymnyakh-Buor on 16 June. Light rains occurred daily during the first 10 days of June, and air temperatures ranged from +1.5 to +5.5°C, with the mean daily value of +3.4°C. Mean daily air temperatures in the periods 10-20 June and 20-30 June were +5.4 and +17.9°C, respectively, and mean monthly air temperature in June was +13.3°C. Snowfalls occurred on 12 and 15 June.

Lemmings were not recorded in the period of observations from 30 May to 18 July. Several Mountain Hares were seen in the forest, and groups of 5-6 hares were frequently observed late in the evening on the Novaya River shore. Young hares were not recorded. A single Arctic Fox was seen, but tracks of foxes were seen on river shores several times. Reindeers were recorded twice, 4 males on 22 June and 14 males on 26 June.

Rough-legged Buzzards were very rare; based on transect counts the abundance of buzzards in the forest was 0.07 bird/km^2, and of Merlins 0.03 bird/km^2. Snowy Owls were not recorded.

Skuas and gulls were rare in 2009. Arctic Skuas and Long-tailed Skuas stayed in the valley of the Novaya River and nested, based on their behaviour. A group of 5-7 Pomarine Skuas stayed in the vicinity of the camp on 18 and 19 June.

The first geese appeared on 24 May, and flocks of migrant geese usually were accompanied by 2-3 pairs of Bewick′s Swans. Based on the description by hunter V. Falkov, he observed a Barnacle Goose in the vicinity of the Ary-Mas territory in late May – early June. Generally, until mid summer waders and gulls occurred in lower numbers in most habitats in 2009 compared with 2005.

We did not record predation on bird clutches and chicks, although this could be due to the absence of special observations.

A.A. Gavrilov

see also: "Archives of Nature" of the State Nature Reserve "Taimyrsky". Book 25, 2009. In Russian. http://www.taimyrsky.ru/letopis/letopis2010.pdf. Accessed 16 Oct. 2011.

31. Bludnaya River mouth, Khatanga River lower reaches, Taimyr, Russia (72°51′ N, 106°02′ E)

Observations were carried out from 10 June to 25 July in the area of approximately 65 km^2, where studies had been carried out in the framework of the Wader Monitoring Project in 1994-2003 and in 2008. The field camp was located at a distance of 3 km from the Khatanga River and 7.5 km from the Novorybnoe settlement which is inhabited by the Dolgan people. The study area is situated in the typical tundra subzone, near its southern border with the southern tundra subzone. A majority of quantitative data on fauna, distribution and numbers of birds were collected on 6 study plots with the total area of 269 hectares.

Mean monthly air temperatures in the study area were –3.8°C, +7.8°C and +12.4°C in May, June and July respectively, compared with the long-term average of –4.2°C, +5.7°C and +10.7°C. Thus, May was slightly warmer than average and June and July considerably warmer than average.

The beginning of the study period in June was characterized by cold weather with rains and two snowfalls. Air temperatures increased from 17 June to 25 June, and then dropped to relatively low values several times until the end of the study period on 25 July, but never reached freezing point. The total amount of precipitation in the study area during the period of surveys from 10 June to 25 July was 3.6 mm, which is the lowest value on record; the median was 22.5 mm and range 11.8-30.9 mm for the same period in years 2003-2008 when a quantitative assessment of precipitation was conducted. However, the number of days with precipitation (22) was slightly above average in the study period: the median was 20 days in 1994-2008 (range 8-26 days). Hence, precipitation occurred relatively often during the period of studies, but the amount was very low. Low amount of precipitation in June resulted in the drying out of most habitats on the watershed and river terrace by early July, and they remained dry until the middle of the month. Extreme weather events were not recorded during the study period.

Estimated date of 50% of snow cover on flat surface was 10 June, which was close to the median date for south-eastern Taimyr (12 June). Dates of flowering of early plants and emergence of insects were also slightly earlier than average for the area which was in good agreement with above-average air temperatures in May and June. The flood was very low in 2009 for the second year in a row, and most of the middle floodplain of the Bludnaya River was not covered by water. Water levels were highest on 18 June in the Bludnaya River.

Lemming abundance was low, and only 4 lemmings (two Siberian Lemmings and two Collared Lemmings) were recorded by three observers during the study period. The number of lemming undersnow nests was also low, which indicated that there were no attempts at intensive under snow reproduction.

Similarly to 2008 Arctic Foxes did not breed in the study area, but their abundance was still high, for the second year in a row. Of 30 observations of Arctic Foxes 23 were made in the period from 11 to 30 June, and only 7 from 1 to 25 July. According to the report of Dolgan people a Brown Bear was observed in the study area in spring. A Muskrat was recorded on 9 July swimming in a floodplain lake. This record is probably close to the northern limit of the species distribution.

Numbers of avian predators were very low. Long-tailed Skuas were rare breeders in the area with only 2 nests found, of which both failed. Two pairs of Arctic Skuas occupied their traditional territories in wet sedge bogs. Chicks hatched

in both clutches, consisting of 2 and 1 egg. Pomarine Skuas were common in June on westward migration, which was most intensive on 16 June. A brood of Herring Gulls and a brood of Glaucous Gulls were observed in the vicinity of nests used by these species in previous years. Rough-legged Buzzards were rare non-breeders in the study area. A single Short-eared Owl was seen on 14 June flying to the south-west.

A nest of Peregrine Falcons with 3 eggs was found on 15 July on the bluffs of the Popigay River 70 m to the south-east of where they nested in 2008. One of the eggs was starred which indicated it would hatch soon. Two adult and two juvenile Ravens were observed on 15 July in the vicinity of the nest occupied by Ravens in 2008.

Willow Grouse were rare, and their nesting was not confirmed.

The distribution of breeding dates of waders in 2009 was typical for a season with average timing of snowmelt. Numbers of breeding waders continued to decline in 2009 on the main study plot on the river terrace, and their total density dropped to the lowest value on record for this habitat. The abundance of Lapland Buntings was record high in 2009 in all habitats where this species was the most common passerine.

Nest success of wader species combined was low in 2009, although slightly higher than in typical seasons with heavy egg predation because of a moderate nest success of Grey Phalaropes. Hatching success of passerines was below average. Other than waders, non-passerines hatching success was close to average. A typical prey-switching scenario occurred in 2009 due to the low abundance of lemmings and high abundance of Arctic Foxes. Nest success of Temminck′s Stints and Arctic Redpolls was high on river islands, although the islands were accessible to predators.

Interesting observations of birds included a breeding record of Bewick′s Swans, whose nest with a clutch of 4 eggs was found on 15 June. Later a fifth egg was laid. Chicks hatched successfully on 14-15 July, and the brood moved to a nearby large lake. Previously, swans bred in the study area in 1995. The rarity of swan breeding records in the area is probably due to a high level of disturbance by humans early in the season, when there is a lot of hunting and fishing activities by the Dolgan people.

The close vicinity to the Dolgan settlement results in a heavy hunting pressure on waterbirds in spring. This pressure and associated disturbance is an apparent reason for the absence of breeding geese in the area and for the low number of ducks. In the past the area was visited by reindeer herders in summer, which resulted in heavy trampling of the tundra. However there was only a single such visit in the 12 years of our observation. This occurred in August 1995, when most chicks had hatched. Hence the impact on breeding birds was probably moderate.

M.Y. Soloviev, V.V. Golovnyuk, A.B. Popovkina

see also: "Archives of Nature" of the State Nature Reserve "Taimyrsky". Book 25, 2009. In Russian. http://www.taimyrsky.ru/letopis/letopis2010.pdf. Accessed 16 Oct. 2011.

32. Mainland east of the Yana River delta, Yakutia, Russia (71°14′ N, 140°17′ E)

Observations were carried out from 16 July to 2 August in the sparse larch forest north of Tumat Settlement and mostly on the tundra north to the Sellyaskaya Bay, the Laptev Sea, east to the Soluntakh Lake and southwest to Churpunnya Mountain. The total distance travelled during the survey was 520 km. The vegetation of upland tundra was principally tussocky Hare′s-tail Cottongrass with Dwarf Birch and Dwarf Labrador-tea heath, and *Sphagnum* moss. Willow shrub, up to 1 m high, were most conspicuous along banks of rivers. Wetlands of various types occupy a relatively large portion of the landscape. These are temporal ponds that vary in size and depths (typically ≤15 cm deep) and dominated by sedge *Carex aquatilis*, larger shallow ponds mostly vegetated by Pendant Grass, and large deep open lakes (e.g., Soluntakh Lake). Many of these large wetlands supporting Pendant Grass occurred in close proximity to other wetlands forming wetland complexes. The former two types of wetlands supported most of water birds.

Day-time air temperatures during the survey period were about +5–10°C. Rain occurred on 5 days. Permafrost depth was measured to be 13–38 cm. Loss of river and lake banks due to the melting of the permafrost was a common effect encountered throughout the surveyed area.

Voles were often seen and lemmings were occasionally observed. Interviewed local residents (hunters, trappers, fishermen, reindeer herders) stated that numbers of lemmings remained low but were increasing. We observed one Mountain Hare near Soluntakh Lake.

Mammalian predator populations appeared to be relatively low but probably increasing. Over the 20-day period, we once observed a wolf and once a female Arctic Fox; the latter was at a den with at least 3 half-grown pups. Ermine were present but no live animals were seen. The Wolverine and Brown Bear occur in the area we surveyed according to information of locals. Shed antlers and bones of wild Reindeers but not animals themselves were often seen. Wild Reindeers apparently are sporadic in the area we surveyed. Herders of domestic Reindeers were encountered only in the beginning of the survey.

Rough-legged Buzzards were the most common avian predators and were observed almost daily up to 5 pairs per day. Many buzzards were likely nesting based on their behaviour. We checked one active nest that contained 4 partially feathered young. Peregrine Falcons were seen at 5 locations, mostly on cliffs of rivers and lakes when hill sides had collapsed due to permafrost melt. One Gyrfalcon was observed taking off from a cliff near the Sellyaskaya Bay. One Short-

eared Owl and no Snowy Owls were seen during the survey. The Arctic Skua, Long-tailed Skua, and Pomarine Skua were present and common. At least one species of Skuas was encountered on most days, and often several sightings were made in a single day. Herring Gulls were common. No Ross′s Gulls or Sabine′s Gulls were seen although locals indicated that Ross′s Gulls had been present the previous year. Arctic Terns were observed on one wetland where they were aggressive and thus presumably breeding.

Siberian Cranes were common on wetland complexes along the survey route and a total of 140 individuals were recorded. No young were observed but a majority of the adults were paired; many were seen at too large distances to confirm the presence of young. Sandhill Cranes were uncommon with one pair exhibiting behaviour suggesting presence of young. Swans were often seen but mostly at distances that do not allow identification of species. Both Whooper Swans and Bewick′s Swans were identified on several occasions. The proportion of swan pairs with cygnets was low suggesting poor reproductive success. Bean geese were the most common of geese and their broods were seen on most days with 23 broods being the largest number counted in a single day. Greater White-fronted Geese and Lesser White-fronted Geese (occasionally with broods) were sighted along the survey route but at a much lower frequency than bean geese. Two broods of Greater White-fronted Geese about a week old with 8 goslings were seen on 27 July. According to locals, Brent Geese nested in relatively large numbers and Snow Geese in low numbers on the coast at Sellyaskaya Bay, but none were seen along our survey route. King Eiders were common near the coast and a few broods were seen. We recorded no Steller′s Eiders. However, we were told they occur in the area, but in much reduced numbers from the past except for at the Lyakhovskie Islands where still many occur. We were also informed that Spectacled Eiders occur at low densities with numbers not having changed much over time. We encountered Long-tailed Ducks at four sites including females with broods at two sites. Residents stated that the population of this species has significantly declined in the last decade. A flock of moulting Greater Scaup was seen on the Syuryuktyakh River, but no broods were recorded during the survey. No dabbling duck species was common. The Northern Pintail was the most commonly seen dabbling duck with 4 broods encountered. Northern Pintails and King Eiders led their broods to temporary wetlands where dense sedge stands make observations difficult in July and August. Several flocks of moulting Pintails of 5-20 birds were encountered along the Syuryuktyakh River. Common Teals, but no broods, were observed at several sites. One White-winged Scoter was observed within the sparse larch forest north of Tumat, and one female duck thought to be the Baikal Teal was seen exhibiting brood behaviour.

Willow Grouse were common and most were with broods which almost always were capable of flight for short distances. One grouse brood was observed being attacked by a Herring Gull near the Syalakh River causing a parent to fly up and attack the gull. Only two single Rock Ptarmigans were seen.

Divers were seen on most days with Pacific Divers being most common among identified birds. One pair of White-billed Divers was identified. A Pacific Diver with 2 small chicks was seen on 24 July on a temporary wetland. The preference of wetlands with poor visibility for the observer could be a reason for the fact that few broods of divers were recorded during the survey. Taking of young to temporary wetlands by many species of water birds is partly likely a response to presence of abundant avian predators.

Our survey area appears to be an important breeding ground for arctic waders. Most waders were located in temporary wetlands as were nearly all broods with the very few sightings of adult Grey Plover and Whimbrel being the only exceptions. An adult Spotted Redshank was observed on a *Sphagnum* covered mound surrounded by sedges near Lake Soluntakh. Pectoral Sandpipers, Little Stints, Temminck′s Stints, Common Snipes, and Red-necked Phalaropes were seen at several wetland sites and there were several single records of the Long-billed Dowitcher and Sharp-tailed Sandpiper.

I.P. Bysykatova, G.L. Krapu

33. Dzhukagirskoe Lake, “Kytalyk” Resource Reserve, lower Indigirka River basin, Yakutia, Russia (70°30′ N, 145°30′ E)

The snow accumulation was low during the winter 2008/2009. Weather conditions were normal in the period of observations from 31 May to 29 July, without returns of cold weather and heavy snowfalls. Snow cover reduced to 50% in the tundra on 4-5 June and disappeared completely on 9-10 June. The season was warm and dry.

Lemmings were numerous and they were encountered everywhere. The abundance of voles was low.

Arctic Foxes occurred in high numbers and occupied most of the surveyed dens. A temporary shelter of Arctic Foxes with 15 blind pups was found on 15 June when adult animals were transporting pups to a different place, probably, due to the threat of predation by Wolverine. An Arctic Fox den excavated by a Wolverine was found at a distance of 3 km from the camp.

Rough-legged Buzzards and Peregrine Falcons were common and nested successfully. Long-tailed Skuas, Arctic Skuas, Pomarine Skuas and Glaucous Gulls were common breeders, while Herring Gulls and Ross′s Gulls nested in high numbers. The Short-eared Owl and Raven were represented each by a single non-breeder.

A nest of Siberian Cranes with an incubating bird was found on 31 May during a trip to the study area on snowmobiles. The nesting territory of this pair was completely covered by snow at that time and birds removed the snow from the nest of the previous years to lay eggs. All pairs of Siberian Cranes

were incubating by 2 June. The first Ruffs (2 and 3 birds) appeared on the leks closest to the field station on 3 June. The migration of waders was at the most intensive on 4–5 June. The first nest of Grey Phalaropes, with a clutch of 3 eggs, was found on 15 June. Willow Grouse were common breeders. Sandhill Cranes were observed with chicks on 6 July, and all monitored pairs of Siberian Cranes also had chicks in early July.

Breeding conditions were generally favourable for all species of birds in 2009.

S.M. Sleptsov

34. Chukochy Cape, the Kolyma River lowland, Yakutia, Russia (70°10′ N, 160°00′ E)

Observations were carried out in the period from 1 August to 15 September 2009. According to reports from local people snow completely melted on 10 June and ice-break occurred on 10 June. The summer was cold and rainy which resulted in the absence of berries, a low crop of seeds of graminoids and an early departure of most birds.

Lemmings, voles, Arctic Foxes, Rough-legged Buzzards and gulls were common. The abundance of owls, grouse and skuas was low. Waders, swans and Sandhill Cranes were abundant. Broods of Gyrfalcons (6 in total, each with 3 chicks) were recorded in almost all sites where Gyrfalcons had been observed in previous years. Two flocks of Snow Geese (14 and 35 birds, one third of them juveniles) were recorded on the coast near Chukochy Cape. Snow Geese were not recorded in this area since the early 1990s. Ducks occurred in small numbers and had small broods in the area of Chersky settlement.

S.V. Gubin

35. Anyuy volcano, Southern Anyuy Ridge, Chukotka, Russia (67°10′ N, 165°45′ E)

In the mountains of central Chukotka sunny warm days alternated with rainy days during the first 10 days of August 2009, then clear, sunny and warm (sometimes hot) weather prevailed from 11 to 18 August. On 19–22 August a cyclone established in the area with winds reaching 28 m/s on the coast of the East-Siberian Sea, which resulted in notable increase of the water tables in the Kolyma River lower reaches. Snow blanketed the ground with a layer over 50 cm thick that did not melt at the altitudes over 700 m above sea level. Cool, dull and rainy weather prevailed until 3 September; then temperatures increased on 3–5 September. Local fishermen characterized the summer as cold and wet.

We observed numerous Arctic Ground Squirrels, as well as Northern Pikas. Voles were not recorded, which apparently indicated their low abundance.

Two Brown Bears and one Wolverine were seen. Birds of prey were not seen, and a single observed owl was a Lapland Owl (photographed), which tallied well with the low abundance of rodents. Wild Reindeers were relatively numerous in river valleys in late August.

Rock Ptarmigans with large broods were numerous in the mountain tundra. We recorded Common Snipe, Nutcracker, American Pipit (identified from photographs). Observations on the Maly Anyuy River during the downstream trip from Keperveem to Anyuysk included many large flocks of ducks and geese and a flock of 15 swans flying over the river, and a pair of swans flushed from the river.

F.A. Romanenko

36. Kyttyk Peninsula, north-western Chukotka, Russia (69°25′ – 69°45′ N, 167°08′ – 168°37′ E)

The spring was, probably, early, but cold and prolonged on the Kyttyk Peninsula. Summer weather was generally also cold, rainy and stormy. However, air temperatures did not drop below freezing in August, and snow never blanketed the ground. According to observations during the period from 16 July to 19 August 2009 unfavourable weather conditions at the start of the season adversely affected the breeding success of swans, waders and all species of gulls.

Lemmings were not recorded, and voles were rare.

Neither Arctic Foxes, nor signs of their breeding were recorded. This was unusual, because in the previous seasons, 2002–2008, we observed Arctic Foxes even when microtine rodents were at a low stage of population cycle. A Wolverine was observed once which is a normal rate of occurrence on the peninsula for this rare species. Brown Bears were abundant; we encountered different animals several times, recorded numerous tracks and were told by local people about their successful hunting of these animals.

Rough-legged Buzzards occurred in low numbers. Their nesting attempts failed, and examined nests were unused or emptied. Peregrine Falcons bred at a density slightly above the long-term average, but their breeding success was not determined. One nest of Rough-legged Buzzards and one nest of Peregrine Falcons were destroyed by Brown Bears. Owls were not recorded. Skuas were very rare, and their juveniles were not seen. Small gulls and terns were rare. The proportion of juveniles in large gulls was the lowest on record (<1%) during the period of observations. Breeding success of geese, ducks, cranes and divers was relatively high. Broods were recorded in the Bewick's Swan, Bean Goose, Greater White-fronted Goose, Northern Pintail, Baikal Teal, Greater Scaup, Common Eider, King Eider and Long-tailed Duck.

Bewick's Swans were unusually rare in 2009, and occurred in high numbers only on Mosei Island with approximately 450 moulting swans. The density of swans was 0.98 birds/km^2 on lakes in the valley of the Rakvachan River, and 0.29 birds/km on the channel of the river. The proportion of birds with broods was 6.3% and the proportion of juveniles 4.5% on the Kyttyk Peninsula, where 3 broods, of one chick each, were recorded. These were the lowest demographic parameters re-

corded in the Bewick's Swan since the start of observations in 2002.

In contrast to the Bewick's Swan the proportion of juveniles in the local population of Bean Geese was high, 40% of all recorded birds in early and mid August. The proportion of successfully breeding birds was 42.9% of all recorded adults. The first flying goslings were observed early, on 10 August; over half of breeding adults were capable of flying from this date also. Unlike Bean Geese, Greater White-fronted Geese were very rare in 2009 in counts, probably, because the counts were not conducted in the upper reaches of rivers, where Greater White-fronted Geese were more common. This species was not recorded on lakes, and the density of 1.49 birds/km on the lower Rakvachan River corresponded to the total number of 300 Greater White-fronted Geese on the rivers of the peninsula. The proportion of juveniles was high (58%) in the Greater White-fronted Goose, as was the proportion of adult birds with broods (73.9%), although the latter parameter was based on a small sample of 55 birds.

Moulting female Greater Scaups were distributed on rivers and lakes in small groups. The proportion of females with broods was 2.5% of all counted females (2 of 80; broods contained 5 chicks each) in August 2009. Long-tailed Ducks were common. We observed 34 males, 112 females and 42 chicks in the period from 16 July to 19 August. The proportion of females with broods was 7.1% of the total female number, and the mean brood size was 5.25 chicks. The density of broods of King Eiders was 0.11 per 1 km on the Rakvachan River channel; broods contained 6, 6, 4 and 3 chicks (average 4.75). The proportion of females with broods was 57% in the King Eider, which indicated a relatively high breeding success.

Sandhill Cranes with broods of one chick were common; chicks fledged in mid August. Broods of Willow Grouse occurred in small numbers. Waders, usually common at coastal shallows in August, were recorded there from 14 August.

Generally, breeding success differed between groups of birds in 2009. The absence of predators, especially Arctic Foxes, apparently favoured the breeding success of cranes, geese and ducks, and the early spring enabled early fledging of their chicks. However, Bewick's Swans mostly failed to raise broods, probably, due to cold weather; also the predation by numerous Brown Bears could have been directed on clutches of these large birds which were conspicuous on the tundra. The latter supposition was indirectly confirmed by bear predation of Rough-legged Buzzard and Peregrine Falcon clutches, while a nest of Common Eider, incubating at a distance of several meters from the falcons′ nest, was not destroyed by the bear.

Human impacts on birds were small on the Kyttyk Peninsula. Two families of indigenous people permanently inhabit the peninsula. They did not follow hunting regulations and hunted birds during the whole year, but apparently did not have notable adverse impact on populations of breeding birds. The area is used for reindeer husbandry only in winter.

D.V. Solovieva

37. Ayopechan Island, Chaun-Palyavaam Delta, north-western Chukotka, Russia (68°50′ N, 170°30′ E)

According to observations from 12 June to 15 July 2009 the summer was cold in the common delta of the Chaun, Palyavaam and Puchveem rivers. The spring started early and snowmelt started in early May, when air temperatures rose above freezing. However, later the spring became cold and prolonged. Ice-break occurred early on rivers, and they cleared of ice on 2-3 June when the water levels were low. Snow melted completely on approximately 10 June. Two strong storms were recorded on 17–18 and 25–26 June, when north-western winds brought rain, snow and water run-up from the Chaun Bay. The weather was cold and windy on other days as well. The strong southerly winds typically occurring in other years was recorded only once, on 1–3 July, which resulted in the presence of ice in the Chaun Bay until early July and low air temperatures on Ayopechan Island. However, air temperatures did not drop below freezing and snow did not blanket the ground during the period of surveys.

Rodents were not recorded, including voles in the vicinity of the field station.

Arctic Foxes were rare and did not breed; four observers made in total three records of adult animals and one of tracks. A den of Red Foxes with a single pup was found on a near-by island. We recorded Brown Bear for the first time on Ayopechan Island. Local people had not observed bears there since at least the 1970s. The bear stayed on the island maximum for two days.

Birds of prey were very rare. Rough-legged Buzzards were not recorded. A pair of Peregrine Falcons stayed on a bluff for 2–3 days and then disappeared. We did not observe breeding buzzards and falcons in the study area in 2002–2008, but they were regularly recorded on river banks several kilometres upstream from the mouth, buzzards sometimes in relatively high numbers. Owls were not observed.

A single observation of two Pomarine Skuas was made on 16 June. Arctic Skuas were present throughout the period of studies; breeding pairs were recorded on 4 of 40 1-km^2 plots. Predation pressure by skuas on nests of ducks and divers was similar to the previous years. Long-tailed Skuas had been common breeders in 1970–1980s in the lower reaches of the Chaun River (Krechmar et al. 1991), however, the species distribution and abundance have apparently changed since that time. In 2009 we recorded breeding of Long-tailed Skuas for the first time since the start of our observations, but the nest was destroyed. Flocks of several to 150 wandering Long-tailed Skuas appeared in early July.

As previously, Herring Gulls were the most numerous among gulls. There were four permanent large mixed colonies of Herring Gulls and Glaucous Gulls in the study area. In 2009 the colonies contained at the first survey 45, 32, 24 and 9 nests of two gull species combined, while in 2008 the numbers were 67, 41, 31 and 13 nests. This indicated a consistent decline in the size of colonies. Apart of the main colonies we found on the island 25 nests in small colonies of 2-4 nests or as singles. The total nesting density of large gulls was not less than 3.75 nests/km^2. Large gulls were active predators of bird clutches, including conspecifics, and they also hunted chicks. We recorded large gulls destroying nests of Bewick's Swans, Pacific Divers, ducks and gulls.

Arctic Terns nested as previously in small numbers and we found 9 nests with the clutches of 1-2 eggs. Their first chick was recorded on 29 June. Chicks hatched, probably, in two nests, while other nests were deserted during the storms on 17–18 and 25–26 June. Sabine′s Gulls occurred in small numbers in 2009, and we found five nests after the storms; the first starred egg was recorded on 29 June. Ross′s Gulls were not observed. The absence of protection provided by colonies of small gulls and terns to waterfowl and waders was a possible reason for low breeding success of Long-tailed Ducks, which lost all nests in gull colonies due to predation, and also of waders, although clutches of the latter were not monitored. Some single nests of Glaucous Gulls and Herring Gulls were found destroyed after the storms, but the fate of nests of these species in the colonies was not determined.

Three species of divers nested in the area at a local density of over 2 nests/km^2. We found a nest of White-billed Divers and 16 nests of Pacific Divers and Black-throated Divers combined. The mean clutch size was 1.75 eggs in the nests of the *Gavia arctica* superspecies.

The nesting population of Bewick's Swans is stable in the Chaun-Palyavaam delta. When surveying study plots of the total area of 41 km^2 for nests of Spectacled Eiders we found 55 nests of Bewick's Swans. Some nests of swans could be missed during these surveys and the density of 1.34 nests/km^2 could be an underestimate. The absolute count of swan nests on one plot on 12 June yielded nesting density of 2.67 nests/km^2 (8 nests on 3 km^2). Chicks hatched in 6 of 55 found nests, 10 nests were destroyed, 1 nest deserted and fate of 38 nests was unknown. Nest success was 35.3% for nests with known fate. Mean clutch size was 3.69 eggs (range 1–6 eggs, n=32); mean brood size during two weeks from the start of hatching was 2.76 chicks (n=27).

There was an apparent decline in numbers of geese on Ayopechan Island. Greater White-fronted Geese had bred regularly on the island in 1980s, although the number of migrating birds had decreased by a factor of 30 during 10 years (Krechmar et al. 1991). However since the start of our surveys in 2002 we found a nest Greater White-fronted Geese for the first time in 2009. Broods of Bean Geese were recorded in 1980s (Krechmar et al. 1991), but not in the course of our studies.

The nesting density of Spectacled Eiders in the study area of 41 km^2 was 2.37 nests/km^2 (n=97) (Solovieva, 2009), which was the second highest value after 2007 (2.6 nests/km^2). Nesting success was 27.1%. King Eiders and Great Scaups were rare and we found one nest of the former species and two of the latter; the nest fate was not determined. The abundance of Northern Pintail decreased considerably compared with 2003–2007 according to general impressions. Not a single nest was found in 2009, while previously up to 7 nests of Pintails were found in a year.

In 2009 we found 12 nests of Long-tailed Ducks compared with 4 to 40 nests in the previous years. The first nest of Long-tailed Ducks with a complete clutch of 8 eggs was found unusually early, on 13 June. Complete clutches contained 6 to 8 eggs (mean 7.0 eggs), and 2 of 8 eggs disappeared in one nest. Incomplete clutches found in the second half of June (on 19, 20 and 29) could be replacement ones. The first chicks in a brood of 6 accompanied by two females were recorded on 8 July.

According to general impression, numbers of Sandhill Cranes were similar to the previous years, with local density over 2 nests/km^2. Mean clutch size was 1.82 eggs (n=12). Partial predation of one clutch by gulls was recorded. The first chick was observed on 23 June. Nesting success of cranes was probably high as we found three broods. The abundance of breeding Willow Grouse was low.

The most common waders as usually were the Dunlin (4 nests and 3 broods found) and Red-necked Phalarope (29 nests). The first recently hatched chicks of Dunlins were recorded on 27 June. The first complete fresh clutch of Red-necked Phalaropes was found on 15 June, the first brood on 27 June; mean clutch size was 3.86 in this species. We found 1 or 2 nests of Grey Plovers, Ruddy Turnstones, Grey Phalaropes, Ruff, Temminck′s Stint, Pectoral Sandpiper, Long-billed Dowitcher and Common Snipe. Curlew Sandpipers did not nest, similar to 2008. A pronounced decline in the abundance of Ruffs was recorded. No leks were established in the vicinity of the field station and males were recorded only once. This could be due to adverse weather conditions in spring.

Generally, the season of 2009 was undoubtedly unfavourable, but not catastrophic for birds. Nest success of most species was evaluated as low.

The study area is separated from the Rytkuchi settlement by a broad channel of the Palyavaam River. However, local people made regular visits to the eastern part of Ayopechan Island to hunt swans and cranes and, probably, to collect eggs. The impact of this harvest on local populations of swans and cranes is not known, but divers and ducks were affected to a lesser extent. Disturbance by humans resulted in increased predation pressure on clutches of birds, in particular swans and divers.

D.V. Solovieva

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

The 2009 spring breeding population of Wrangel Island Snow Geese was in the range of 135 000 to 140 000 birds, similar to the previous year′s estimate of 145 000 birds. Breeding conditions in 2009 were more favourable than the year before. The two large colonies were estimated to contain 50,000 to 60,000 nests and the colonies had 80% nest success.

V.V. Baranyuk

Canadian Wildlife Service Waterfowl Committee. 2009. Population Status of Migratory Game Birds in Canada. CWS Migratory Birds Regulatory Report Number 28. http://dsp-psd.pwgsc.gc.ca/collection_2010/ec/CW69-16-28-2009-eng.pdf. Accessed 16 Oct. 2011.

39. Neizvestnaya River upper reaches, Wrangel Island, Russia (71°13′ N, 179°20′ W)

According to observations carried out from 10 June to 22 September 2009 the spring was, probably, early and the summer cold and wet with frequent drops of air temperatures below freezing, winds, rains and snowfalls. Ice-break occurred on 22-25 May on major rivers. The snow completely melted on 12-14 June on plains, but extensive snow banks disappeared only by the end of August in river valleys and remained until fresh snow fell in the autumn in the Central Mountains. However, extreme weather events were not recorded during the period of bird reproduction.

Populations of lemmings reached peak values in 2009.

The abundance of Arctic Foxes was below average in most areas of the island. The density of Arctic Foxes on the study plot in the upper reaches of the Neizvestnaya River was 0.11 pair/km^2, which was below the value in 2008, and all pairs bred. In the mountains many pairs of Arctic Foxes did not use dens for reproduction, probably, trying to avoid predation by Wolves and Wolverines. This made difficult evaluation of animal status and litter size. Signs of visits by Wolves and Wolverines were recorded at 9 of 50 inspected dens. Arctic Foxes bred at 28-30 denning sites. Litters in dens contained 10-14 pups.

Diurnal birds of prey were not recorded. Snowy Owls arrived to the island by the start of reproduction in lower numbers than usual. However, later their abundance was evaluated as average. Distribution of owls across the island was typical, and they occupied at first the best territories in the Northern Mountains and in the valley of the Gusinaya River. Very small numbers of pairs bred on the Northern and Southern plains. The density of owls was 0.44 bird/km^2 on the study plot "Upper Neizvestnaya River", which was 45 km^2. We recorded 107 confirmed cases of owl reproduction in 2009. High abundance of lemmings enabled reproduction of a great majority of the owls on the island, including birds that arrived late. Non-breeders were rare. The first chicks in owl clutches hatched from 13 June to 28 July. The proportion of lemmings in the diet of breeding Snowy Owls was 95%. Other prey included Common Eiders, Pomarine Skuas, Long-tailed Skuas, skua chicks, fledglings of Snow Buntings, and chicks of Grey Plovers, Ruddy Turnstones and Red Knots. There was a high breeding success of Snowy Owls, particularly, among older birds. Clutch size varied from 5 to 12 eggs, and broods of fledged young contained 5-10 chicks (mean 7.44).

A pair of Short-eared Owls successfully bred on the island, and we observed a wandering group of one adult and five juveniles in the upper reaches of the Neizvestnaya River in late August.

Pomarine Skuas were common breeders in all parts of the island. Non-breeding birds were not recorded on the study plot "Upper Neizvestnaya River". Here nest density was 0.7 nest/km^2, and nests occurred at distances of 1.5-2 km. The distribution of Pomarine Skuas was relatively even, with higher density in sedge tussock tundra and lower density in dry areas covered with small stones. Mean clutch size was 1.86 (n=22). Breeding success was high with the mean brood size 1.81 (n=41). The proportion of birds of dark morph was 12.5%. The last observation of Pomarine Skuas was made on 16 September which were still on their breeding territories. Two adult Pomarine Skuas were killed by Snowy Owls and three skua chicks were captured by owls.

Numbers of Long-tailed Skuas were slightly below average, which could be due to occurrence of Pomarine Skuas in high numbers. The density of Long-tailed Skuas on the study plot "Upper Neizvestnaya River" was 0.24 nest/km^2. A flock of several tens of non-breeding Long-tailed Skuas was observed in the valley of the Tundrovaya River in late July, which is typical for seasons with unfavourable breeding conditions. Mean clutch size was 1.82 (n=11), and breeding success was high as most pairs raised both chicks. Adult and juvenile Long-tailed Skuas left breeding territories earlier than usual, on 20-23 August. Solitary adult birds were observed on passage after 23 August. Two Long-tailed Skuas were killed by Snowy Owls, in conflicts initiated by skuas.

The abundance of Snow Geese outside of the main colony was average during the nesting period. Geese and Common Eiders did not form large colonies (>50 nests) near nests of Snowy Owls, while dispersed nesting of geese and eiders was very common.

Most species of birds bred unusually early in 2009. Hatching started on 13 June in Snowy Owls. Snow Geese with chicks started moving to the Northern Plain on 16 June. Fledglings of Snow Buntings and Lapland Buntings were recorded on 28-29 June, fledglings of Ruddy Turnstones from 10 July.

The season 2009 was outstanding on Wrangel Island, as favourable weather conditions early in the breeding season and high abundance of lemmings enabled high reproductive success in all species of tundra birds.

I.E. Menyushina

40. Anadyr, Chukotka, Russia (64°43′ N, 177°44′ E)

According to observations in the period from 18 to 28 May in the vicinity of the Anadyr airport the spring was early in 2009. Snow cover reduced to 10% by 18-19 May on flat elevated patches of the plain but was slightly more extensive on the slopes and especially in valleys of the Zolotoy Ridge. Clear windy weather (up to 30 m/s on 22 May) prevailed from 19 May, but with some fogs. There were no frosts at night after 21 May and the remaining snow melted rapidly. Observations from a helicopter on 20 May showed that the amount of snow was much higher on the plain tundra on the southern coast of Anadyr Liman (10-20% of the area free of snow on different patches). The tundra to the south, at the northern foothills of the Koryak Highlands, was 40-80% free of snow. The Avtotkuul and Nygchekveem rivers were locally blocked by ice, but ice movement had not started. Snow cover ranged from 5% to 20% in the same area on 28 May.

Cottongrass flowers were recorded during the first excursion on 19 May. Active flies and spiders appeared everywhere on 24 May.

Fresh signs of rodent activities were found only on slopes of the Ugolnaya River valley, which indicated low rodent abundance. Arctic Ground Squirrels were also rare. Calls of Northern Pikas were heard and two Mountain Hares were recorded in rocky habitats in gently sloping mountains.

Mammalian predators were not recorded. Avian predators were represented by rare Rough-legged Buzzards, Peregrine Falcons and Short-eared Owls without signs of breeding. Skuas were rare, but Long-tailed Skuas and a pair of Arctic Skuas occupied their territories on 24-25 May. Two pairs of Glaucous Gulls had complete clutches and Herring Gulls finished building nests on 24 May in a small loose colony of these two species in the valley of the lower reaches of the Ugolnaya River.

The first Pacific Golden Plovers, White Wagtails, Red-throated Pipits, Little Buntings and Lapland Buntings were recorded on 19 May, Wood Sandpipers, Common Snipes, Whimbrels, Long-tailed Skuas, Wheatears, Yellow Wagtails on 20 May, Common Ringed Plovers, Red-necked Phalaropes, Ruffs, Pectoral Sandpipers, Arctic Terns and Bluethroats on 24 May, Terek Sandpipers and Long-billed Dowitchers on 27 May. Lesser Sand Plovers, Ruddy Turnstones and Dunlins in migrating flocks and single Red Knots and Red-necked Stints were observed on coastal marshes and mudflats from 23 May. Wood Sandpipers, Long-toed Stints and Common Snipes displayed after 24 May. A complete clutch of Sandhill Cranes and an incomplete clutch (2 eggs) of Arctic Redpolls were found on 25 May. Willow Grouse were common in willow scrubs along streams, and Rock Ptarmigans were numerous, inhabiting plain tussocky tundra as well as their usual mountain habitats.

We found strong evidence of unsuccessful breeding by birds during our second visit to the area on 24-26 July. High water levels in mires and lakes indicated that breeding failure was due to rainy weather. A very few birds were observed alarming near broods in the broad vicinity of the Anadyr airport, including 1 brood of Willow Grouse, 1 brood of Sandhill Cranes, 3-4 broods of Common Ringed Plovers, 3 broods of Wood Sandpipers, 3 broods of Temminck′s Stints, 1 brood of Pacific Golden Plovers, 2 broods of Snow Buntings, 1 brood of Bluethroats, 1 brood of Pechora Pipits, several broods of Red-throated Pipits, White Wagtails and Common Sandpipers. Whimbrels, Great Knots and American Pipits were not recorded. A nest of Common Snipe with a clutch of 3 eggs at an early stage of incubation was unusual for this time of the year. Glaucous Gulls, Herring Gulls and Common Eiders were probably not affected by the adverse weather, as broods of large chicks of these species were observed near the Ugolnaya River mouth, and broods of Herring Gulls also farther upstream.

Flocks of waders, usually observed on mud flats of the lagoon near the Zhilova Koshka Spit, were not recorded there in late July 2009. A single aggregation of 55 adult Common Ringed Plovers and a flock of 10 Dunlins were seen at one site.

P.S. Tomkovich, V.Yu. Arkhipov

41. Anadyr Lowland and the north of Koryak Highlands, Chukotka, Russia (63°30′ N, 176°30′ E)

The timing of spring and early summer was close to average in the Anadyr city area. The snow accumulation was average at the start of spring, and snow melted by the usual dates. A period of adverse weather occurred in late June – early July, when there were strong easterly winds combined with rains. The wind from the sea brought a lot of water into the Anadyr Estuary, which resulted in partial flooding of the Alexandra Spit and high water levels in the Kazachka River. Many nests of birds were, probably, flooded in the river floodplain, and small chicks could hardly survive a period of strong wind with rain lasting over one week. We observed 3 one week old chicks of Herring Gulls, hiding behind an air pit on the roof of a kindergarten after the nest on the roof was destroyed by the wind. The cyclone established over a large area, and we assume that similar conditions should have prevailed on the spits Russkaya Koshka and Zemlya Geka, as well as in the lagoons of the western coast of the Anadyr Bay (for example, the Tymna Lagoon), which are often exposed to storm surge flooding during easterly winds.

Microtine rodents and mammalian predators were not recorded on the Anadyr Lowland between Anadyr Town and the Nygchekveem River on an all-terrain vehicle trip in the period from 5 to 9 July.

Skuas were common. A pair of Greater White-fronted Geese with 4 chicks was observed on a small lake. A flock of 10-15 Pine Grosbeaks was seen on the margin of a Siberian Dwarf Pine thicket to the south of the Nygchekveem River. Willow Grouse with broods of 7-12 chicks were common and locally abundant everywhere on the route along the northern macroslope of the Meinypilgyno Ridge. Rare females and

one pair of Harlequin Ducks were recorded on rivers. Grouse were not recorded on the southern slope of the ridge in the valley of the Kautayam River (also called Kavtae or Kautat River). Flocks of 6-8 Greater White-fronted Geese were flying in different directions over the valley of lower Kakanaut River. Geese flied to the north along the valley on 12 July, including a flock of 16 birds in a typical migration formation. Observations of geese migration in the previous years suggests that a proportion of Greater White-fronted Geese in early July migrated along river valleys from the Meinypilgyno lake-river system to a moulting destination, probably in the Anadyr Lowland.

A.P. Golub, E.V. Golub

42. Meinypilgyno area, Anadyr District, Chukotka, Russia (62°33′ N, 177°05′ E)

According to reports of local people the spring started on the usual dates in the Meinypilgyno Settlement area, although the amount of snow was higher than usual due to heavy snowfalls at the end of winter. A nearshore belt of packed ice formed on the sea in April and broke up on 26 May. At arrival on 28 May 2009 there were snowbanks 2-3 m high between houses in the settlement and extensive snow-covered areas on coastal sandy-gravel ridges, which separated the lakes from the sea. However, snow was melted on 80% of flat surfaces within 1 km to the north of the settlement. Snow was unevenly distributed elsewhere on the coastal plain and we evaluated the coverage as 75–95% there. Snowcover reduced from 40–60% on 28 May to 20–50% on 30 May in moraine hills, 2 km from the sea. Mean daily air temperatures already rose above freezing at this time.

Good weather with weak to moderate winds prevailed in June. 18 days were sunny or with clear periods of over 2 hours, and shorter clear periods occurred on 6 days. Fog occurred on 12 days in the coastal area, mostly before 11 June; rains or drizzle were recorded on 10 days. Extreme weather events were not recorded in June. Minimum air temperatures rose above freezing on 4 June, but later dropped below 0°C on 10 and 12 June. Maximum air temperatures rose above +15°C on 7 days in June, and reached +18.7°C on 22 June. The last snowbanks disappeared in the settlement and in tundra depressions in early July. According to opinion of A.P. Golub, snow accumulation during the winter was the highest during the recent 10 years; snowbanks in ravines, on mountain slopes and in the foothills were still present in September.

The Pervaya Rechka channel running between coastal ridges and connecting Vaamychgyn and Pekulneiskoe lakes broke into the sea on 13-14 June which was early for the rather late season. Water levels on the lakes started to decrease after this event, and low islands and spits emerged from under the water, providing nesting habitats for Herring Gulls, Common Eiders and other waterbirds. Ice was broken by the wind on Pekulneiskoe Lake on 16 June and completely melted on 21 June.

The weather was completely different in July. Rains started on 29 June and continued with different intensity almost daily until our departure on 24 July. Precipitation did not occur on 3 of 24 days of observation in July, a half-day clear spell was recorded on 24 July, and short clear spells were recorded on 6 days. Fog came into the coast from the sea on two days in July. Small bogs, lakes and channels were filled with rain water which levels locally exceeded spring flood level. Rains were associated with cold weather, and air temperatures mostly ranged from +3.5–5°C at nights and +6–8°C in the day. Temperatures only rose above +15°C, on 17, 23 and 24 July. We saw mountains to the south of the study area covered by fresh snow during a clearing in the weather on 7 July.

We recorded flying Bumblebees, flowering dwarf willows, and Cottongrass which was finishing flowering, in late May in the moraine hills. The start of flowering was recorded on 1 June in Alpine Bearberry, *Androsace ochotensis*, Feltleaf Willow, 4 June in sedges *Carex sp*., 5 June in Alpine Azalea and locoweed *Oxytropis sp*., 8 June in driad *Dryas sp*., 10 June in *Diapensia obovata*, 11 June in *Rhododendron aureum* and *Rh. camtschaticum*, 12 June in *Papaver sp*. and *Dicentra peregrina*, 13 June in Labrador Tea, 14 June in *Caltha sibirica*, 15 June in Arctic Raspberry, 17 June in Arctic bell-heather, Bog Blueberry and Golden Root, 19 June in Bog-rosemary and Blue Heath, 21 June in Little Weaselsnout, 22 June in Northern Mountain Cranberry, 26 June in *Astragalus sp*., Woolly Geranium, Round-leaved Wintergreen and Captiate Valerian, 8 July in Dwarf Fireweed, 10 July in Bunchberry. Seed pods of willows opened on 28 June. The first mushrooms (Birch Bolete) were collected on 8 July. The first large imago of midges were recorded on 4 June and they appeared *en masse* on 13 June. The first butterflies were recorded on 8 June and mosquitoes on 16 June; mosquitoes became annoying on some days from 22 June.

Lemmings were not recorded. Findings of undersnow nests and tracks along with rare observations of *Microtus* voles (in total 5 records by two observers, including 3 on the skirts of the settlement) indicated their relative commonness during the winter and a decline by summer. The most common rodent everywhere in dry habitats was the Arctic Ground Squirrel, although their total numbers were not high. Mountain Hares were seen on 3 occasions.

The most common predators in the settlement vicinity were dogs, hunting Arctic Ground Squirrels singly or in groups of 2-3. Red Foxes were not recorded in the area of coastal ridges, but were seen on the shore and on islands of Vaamychgyn Lake where there were considerable extensive expanses of willow shrubs. A Wolverine was seen. Brown Bears were common in valleys of rivers, running into Vaamychgyn Lake, but occasionally were also recorded on the coastal ridges and in the close vicinity of the settlement.

Avian predators were represented by Rough-legged Buzzards, Peregrine Falcons, Gyrfalcons, all recorded several times during the season. One immature Bald Eagle was recorded and Short-eared Owls, were more regularly observed,

but were still rare. None of these birds bred. A nest of a single known breeding pair of Arctic Skuas was destroyed. Numbers of Long-tailed Skuas increased rapidly on the coastal plain in mid June, but then declined at the end of the month. Skuas, probably, fed on Crowberries of the previous year heavy crop. They were moving back and forth on the ground, flying from one site to another and gathering in flocks, sometimes of over 80 birds. Herring Gulls and immature Glaucous Gulls were also feeding in the tundra in a similar manner, but in small numbers. These gulls and skuas apparently found and destroyed clutches of birds. Three pairs of Ravens bred, and a pair nesting in the settlement was seen feeding chicks for the first time on 1 June; 4 chicks left the nest on 28 June.

Some birds nested early in accordance with relatively early snowmelt in some areas of the tundra. A nest of Skylarks with hatching chicks was found on 30 May. The first complete clutches were found on 5 June in Lesser Sand Plover, 12 June in Red-necked Stint; the first egg was laid by Spoon-billed Sandpiper on 8 June. Incubating Herring Gulls were first observed on 18 June and Black-throated Divers on 19 June. A nest of Sandhill Cranes with hatching chicks was found on 22 June. Rock Ptarmigans were not recorded, while Willow Grouse occurred in small numbers in willow stands far from the sea coast.

Rainy weather in July had strong adverse impact on the breeding success of some species of waders and passerines. Cold eggs were recorded several times in monitored nests of Lesser Sand Plovers which probably failed to find enough surface-active insects during bad weather. At least two nests were deserted, and incubation of eggs with dead embryos was continued by a male in another nest. Common Ringed Plovers disappeared from the settlement in July, while the abundance of House Martins, numerous breeders in June, declined dramatically. Common Ringed Plovers were rare outside of the settlement, however, most of their nests did not fail. Chicks hatched in all of 3 known nests of Pacific Golden Plovers. Three of 4 monitored nests of Spoon-billed Sandpipers failed, probably, due to predation. We found eggshells from nests destroyed by predators of Black Scoters, Greater White-fronted Geese, Willow Grouse and Common Eiders. Only two broods were found in July in a local population of 4 pairs of Red Knots. Chicks of waders apparently had increased mortality due to bad weather, as we found only 1-2 grown-up chicks in several broods of Common Ringed Plovers and Spoon-billed Sandpipers.

Spring hunting of geese was regulated only by dates of geese arrival and local movements. In accordance with a common practice local people from the settlement collected eggs of Herring Gulls, Common Eiders and other waterfowl on several islands of large lakes almost daily, with such intensity that birds could not complete their clutches.

We did not record broods of ducks and divers before our departure on 24 July. Several broods of Greater White-fronted Geese contained 1-2 chicks only. Broods of waders were very rare. Wheatears, White Wagtails and Snow Buntings were the most successful breeders, judging by observations of broods and alarming birds. Generally, the season 2009 was extremely unfavourable for tundra birds in the study area, and their breeding success was low. A.P. Golub believed the season to be the worst on record during the recent years.

P.S. Tomkovich, V.Yu. Arkhipov

43. Belyaka Spit, Chukotka, Russia (67°04′ N, 174°37′ W)

The spring was early in 2009. Observations from a helicopter on 27 May showed that coastal tundra in the Vankarem lowland was 90% free of snow and water was running rapidly in all rivers and streams. When we arrived at the Belyaka Spit on 30 May coastal habitats had very little snow. This melted completely by 5 June. June was relatively cold and minimum air temperatures were above freezing on 6 days during the month, 7–9, 11, 13 and 17 June and dropped below –1°C on two days, 25 June (–2.7°C) and 30 June (–3.9°C). Maximum day-time air temperatures rose above +10°C only on days without frost. Minimum temperatures consistently rose above freezing after 1 July.

Southerly winds prevailed before 20 June which combined with the impact of thaw water resulted in a rapid deterioration of the sea ice. Large polynyas appeared in the strait between the Belyaka Spit and Yuzhny Island on 13 June, two weeks earlier than in 2005 and 3 days earlier than in 2002. Ice broke in the strait on 22 June 2009, and the entire visible sea surface became free of ice on 5 July, after another occurrence of southerly wind. July was also cold, and minimum air temperatures were above +5°C only in August. Southerly winds prevailed in July and occasionally were storms.

In June precipitation was represented by mostly light drizzle on 7 days and snow which covered the ground for several hours during the night of 22 June. The first half of July was also very dry and only a single light shower occurred on 7 July. In the second half of July rains occurred almost nonstop from 18 to 21 July. Then light rains were recorded until 10 August, and after that there was no more precipitation to the end of observations on 20 August.

Low June temperatures resulted in slow thaw of the permafrost and a delay in ice melt on lakes until July. The low amount of precipitation and thaw water caused a notable drying out of the tundra by the end of June.

Most species of breeding birds arrived to the Belyaka Spit in late May. In the course of the sledge trip from the Nutepelmen Settlement to the Belyaka Spit on 28 May we observed White-billed Divers, Pacific Divers, Emperor Geese, Common Eiders, Long-tailed Ducks, Sandhill Cranes, Herring Gulls, pairs of Snow Buntings and Lapland Buntings, actively displaying Dunlins and Rock Sandpipers. On the first excursion on the Belyaka Spit on 3 June we also observed alarming pairs of Glaucous Gulls, pairs of Red-necked Phalaropes and Grey Phalaropes, displaying Temminck′s Stints and Long-billed Dowitchers, Common Ringed Plovers, a

Grey Plover, single feeding Pectoral Sandpipers, White Wagtails, pairs of Long-tailed Skuas, one Pomarine Skua, flocks of Brent Geese and overflying pairs of Tundra Swans. Mating started from 6 June in Pacific Divers, White-billed Divers and Common Eiders. The first Western Sandpiper was recorded on 6 June, birds of this species appeared *en masse* on the next day and started to display immediately. Red-necked Stints arrived and started to display on 7 June, but they were much less abundant compared with Western Sandpipers. The first Ruff was recorded on 8 June, and a lek of 4 males and 3 females was observed on 10 June. The first Ruddy Turnstone was recorded unusually late for this species, on 9 June. Mating of Long-tailed Ducks was observed on 9 June, and the first Red-throated Diver appeared on 10 June.

Neither lemmings, nor their undersnow nests were recorded during the period of observations from 30 May to 20 August. This indicated a prolonged population low. Rare Tundra Voles inhabited the vicinity of the camp hut. Similarly to 2005, Arctic Ground Squirrels were relatively numerous in the coastal tundra, where their numbers further increased in the second half of July after the start of the dispersion of juveniles.

Arctic Foxes were observed daily in June on the study plot at the western extremity of the Belyaka Spit with up to two animals at a time. Two males were shot in this area on 2 and 15 July, and Arctic Foxes were recorded only twice after that. However, 4 juveniles were observed in the vicinity of the camp in mid August.

In spite of daily visits of Arctic Foxes to the study plot their predation pressure on breeding birds was not high. Arctic Foxes were definitely responsible for predation of 5 of 35 nests of Western Sandpipers (14.3%) and 3 of 16 nests of Dunlins (18.8%); one more nest of each of these species was presumably destroyed by Arctic Foxes. Predation pressure could have been higher on clutches of waders nesting in drier and more open habitats which were more conspicuous. Most probably Arctic Foxes were the predators which destroyed a nest of Ruddy Turnstones, a nest of Grey Plovers and at least 2 of 4 nests of Common Ringed Plovers. All nests of Common Eiders, found in June, were destroyed, with the exception of nests in the close vicinity to the walls of the camp hut. The amount of predation by Arctic Foxes on eider nests was not clear, because some eider clutches were predated by Herring Gulls (two observations). At least three replacement eider clutches, initiated in July, survived to hatching and this could have been aided by the removal of foxes. All nests of divers on the plot (3 of Pacific Divers and one of White-billed Diver) were successful. Chicks hatched in both found nests of Sandhill Cranes. Predation on Emperor Geese nests by Arctic Foxes was not recorded, and at least one nest of this species survived to hatching.

In summer 2009 Brown Bears regularly visited the Belyaka Spit, searching for corpses of Walruses on the coast and for numerous Ringed Seals on shore fast ice. Fresh tracks of bears were recorded almost daily in June along the sea coast. Eight single bears were observed during the month. Only one of them was seen farther than 200 m from the sea. Observations of bears became rare after the disappearance of the ice, and they were recorded on the plot only twice in July and once in August. Then the bears were digging out Arctic Ground Squirrels from their burrows. The number of bear observations in the western part of the spit increased by a factor of 3-4 in 2009 compared with 2005.

Birds of prey and owls were not recorded during the summer. A nest of Ravens with a clutch of 6 eggs was found on the light-house near the camp hut. The first chick hatched on 6 June. One chick died on the next day, four chicks were thrown off the light-house platform after they had left the nest by a storm wind and died and only one chick fledged.

Two flocks of migrant Pomarine Skuas of 4 and 5 birds and several single birds were recorded from 1 to 10 July. A flock of 5 migrant Arctic Skuas was observed on 15 June. Several single Arctic Skuas made short-term visits to the plot in early July. Flocks of up to 40 wandering Long-tailed Skuas appeared from 3 July and stayed on the spit until the end of the month, sometimes accompanied by 1–2 Arctic Skuas. Skuas did not nest.

According to visual evaluation, numbers of Herring Gulls and Glaucous Gulls did not change in 2009 compared with 2005. On the study plot Herring Gulls nested mostly in a small colony. In July gulls concentrated near corpses of Walruses and Grey Whales which were uncovered as the snow melted. Black-legged Kittiwakes became common after the appearance of polynyas; they captured small fish on the sea near the coast and occasionally visited coastal lakes. Flocks of Black-legged Kittiwakes reached several hundred birds in July. Arctic Terns were observed twice and did not nest. Grouse were not recorded.

Numbers of several breeding bird species changed to a considerable extent compared with the previous years. The most striking was the absence of the Spoon-billed Sandpiper, which was not recorded during the summer in spite of special search efforts. Western Sandpipers occurred in record high numbers. In the highest nesting density there were 19.1 nests/km^2 in an intensive search area of 2.23 km^2 (1.78 km^2 without the largest lakes) where 30 nests and 4 additional broods were found. Local density reached 5 nests/ha. In total we found 35 nests and 6 broods during the summer in the study area and its vicinity, of which 25 nests and 2 broods were within the intensive study area of 2005. Three observers found only 10 nests and broods within the latter area in 2005. According to estimate by P. Tomkovich approximately 30 pairs of Western Sandpipers nested in 2002 in the northern part of the Belyaka Spit in an area of approximately 27 km^2 (of which 2.3 km^2 occupied by lakes).

The nesting density of Red-necked Stints in the intensive study area was at least 2.8 pairs/km^2 (including 4 nests and 1 brood), while a single brood was found there in 2005. The nesting density of Dunlins was a minimum 8.4 nests/km^2 in

the intensive study area (13 nests and 2 broods). This was, probably, an increase compared with 2005. In 2005 5 nests were found by three observers within the intensive study area of that year, while 9 nests were found within the same area in 2009. In 2002 nesting density of Dunlins on the Belyaka Spit was estimated at 1–1.5 pairs/km^2 by P. Tomkovich.

A delay of the permafrost thaw and the late ice melt on lakes, probably, caused the cancellation of breeding by some Red-necked Phalaropes and the delay of nesting until late June by most others. Similarly to the previous years (1986–1988, 2002, 2005), Red-necked Phalaropes were abundant in early June 2009, but later we found only 4 nests (of which 2 were predated) and 5 broods. The nesting density of Grey Phalaropes, probably, also decreased compared with 2005, but quantitative data are not available for comparison. Numbers of Ruddy Turnstones decreased to a considerable extent in 2009 compared with 2005. We found only one nest of Ruddy Turnstones during the whole summer outside of the study plot, and observed another pair for several days, which, probably, did not attempt to nest.

Grey Plovers were rare, as previously. A single found nest was later destroyed, and another pair stayed within a restricted area during the whole of June, probably, after losing its clutch early in the season. Their nesting density on the spit was 0.6–1.1 pairs/km^2, close to the density in 2005. Displays of Pacific Golden Plovers were observed in June in two areas, at one of which a pair stayed during several days.

According to a visual evaluation numbers of Common Ringed Plovers and Temminck′s Stints were not less than in 2005. Four nests of Common Ringed Plovers were found on a 3 km stretch of the coast. At least two of these nests were later destroyed. Nest success of Common Ringed Plovers was evaluated as low, because only a single brood was observed in July. Low nest success was, probably, due to the high activity of Arctic Foxes and Brown Bears in the principal habitat of this species. Only 2 nests of Temminck′s Stints were found on the spit, at a large distance from each other, although one more pair probably nested there.

Rock Sandpipers nested at a density similar to the densities in 2002–2005. We found 2 nests and 2 broods in the area of intensive search, which yielded a minimum density of 2.2 nests/km^2. Another pair was observed in late June performing distraction displays at another locality.

Numbers of Long-billed Dowitchers and Pectoral Sandpipers were comparable to those in 2005. One nest (later destroyed) of Long-billed Dowitchers was found in 2009 on the study plot and one brood outside the plot. Pectoral Sandpipers were rare, their breeding was not confirmed, although displaying males were observed until mid June at two sites within the study plot. One nest of this species was found in 2005. Ruffs were relatively common and nested in 2009. Females with distraction displays were observed on 8 and 10 July. Chicks were not found, although we heard their calls.

Red-throated Divers were notably less abundant compared with 2005. A brood of 2 chicks was recorded in early August. Long-tailed Ducks were relatively numerous, but neither nests, nor broods were found. Northern Pintails were recorded in pairs and there were flocks of males during the whole summer, but breeding was not confirmed.

The absence of snowfalls during spring and summer was favourable for breeding by tundra birds. Nest success of uniparental incubators among small sandpipers could have been adversely influenced by low June temperatures. Thus, only 4 chicks (3 and 1) hatched from 8 eggs in two complete clutches of Temminck′s Stints. Hatching success was 91.1% (n=45 eggs) in 11 monitored clutches of Western Sandpipers, of which one egg did not hatch in 5 clutches. Two of the latter 5 clutches were incubated by a single bird, two clutches by both parents, and the contribution of parents to incubation of one clutch remained unclear. It is noteworthy that chicks hatched from 16 eggs in 4 clutches of Dunlins and 8 eggs in two clutches of Rock Sandpipers. Another brood of the latter species contained four small chicks.

Generally, nest success of birds can be evaluated as high in 2009. This resulted from the absence of extreme weather events and moderately high abundance of Arctic Foxes. In spite of the low abundance of lemmings predation pressure of Arctic Foxes on nesting divers, waders and passerines was not heavy. Juvenile Snow Buntings, Lapland Buntings, Western Sandpipers and Dunlins were numerous in the second half of summer. Common Eiders and Emperor Geese experienced stronger predation pressure by Arctic Foxes, Herring Gulls and Glaucous Gulls, but nesting of these waterfowl was also successful.

Human impacts on breeding birds were small on the Belyaka Spit in 2009. Apart from the author, people were mostly absent there. A short-term visit was made on 26 July by local people from the Neshkan Settlement, while waiting for a storm to pass, and on 14 August by tourists from a cruise ice-breaker.

A.G. Dondua

44. Chegitun River mouth, Chukotka, Russia (66°33′ N, 171°03′ W)

According to our observations in the period from 28 July to 24 August 2009 the weather was typical for the area. Extreme events were not recorded.

Lemmings were not recorded and voles were common according to visual evaluation. Northern Pikas were rare.

Arctic Foxes and Red Foxes were not observed. Brown Bears were common, Wolves and Ermines were rare.

Avian predators were represented by common Rough-legged Buzzards, Herring Gulls and Ravens, numerous Glaucous Gulls and rare Long-tailed Skuas. Owls were not recorded.

Most species of auks, geese, ducks, Sandhill Cranes and passerines were common in the study area, waders were numerous and grouse were not recorded.

Breeding conditions were typical for the region in 2009, and birds, probably, bred successfully. Hunting and egging were not practised in this area.

D.D. Vasyukov

45. Lower Big Sandy River, Alaska, USA (56°13′ N, 160°15′ W)

During the survey on 20-28 May 2009 there seemed to be more than the average amount of stormy/windy weather. The river level seemed low compared to 2007. There was no snow around. Alpine Azalea was beginning to bloom on 20 May 2009. According to general impressions the season was late and cold, but average in humidity.

We used this site as a base for shorebird inventories in 2007. We returned in 2009 specifically to document nesting of Pacific Golden Plovers and to capture, band and test them for Avian Influenza. In 2007, by 29 May we had found 7 nesting pairs. In the same area, in 2009 by 28 May we only had found three nesting pairs, and possibly one pair initiating nesting. We did not record first detection dates of passerines in 2007, so we cannot compare by species.

Small rodents or obvious signs of their activity were not seen. Arctic Ground Squirrels were common.

Red Foxes (common), Brown Bear and North American River Otter (both rare) were the only recorded mammalian predators. We did not record the Rough-legged Buzzard, but found a Long-tailed Skua nest. Past avian inventories had shown this species to be infrequent south and west of Port Heiden. Ptarmigans were frequently seen.

This site serves as an alternate landing strip for a guided hunting and fishing camp located several kilometres upstream. It sees seasonal use by sport hunters and fisherman. In the past, motorized vehicles (involved in oil exploration) made primary road along the south bank of the river. The road is now used by hunters on foot. There is a cabin at the site and some abandoned hunting facilities (old tent, etc). Shell casings are fairly evident.

S.E. Savage

46. Port Heiden, Alaska, USA (56°57′ N, 158°38′ W)

After a 3-day visit in 2004 we returned in 2009 to document nesting of Pacific Golden Plovers and to capture, band and test them for Avian Influenza. In 2004, by 10 June Dr. O.W. Johnson had found 8 nests. In the same area, in 2009 during the period from 28 May to 1 June we had found five nests. Since we visited later than in 2004, it is difficult to say definitively, but my general impression was that 2004 was a warm early year, and 2009 was a cool, late, but average in humidity year which affected nesting timing.

During our stay at the site we did not record microtine rodents, nor mammalian predators. However, Arctic Ground Squirrels were present in small number. Rough-legged Buzzards were not seen, while Skuas were common. Some raptors and owls were occasionally recorded. The population of ptarmigans was low.

This site has been a village since World War II. The original Native American village was slightly south of this modern village. There was an Air Force Base on the site. There was significant disturbance and contamination to the area due to military activities. The Air Force has carried out an environmental remediation program here since 1990 (or earlier). The birds we were studying were nesting in relatively disturbed areas near roads for the most part. Since this is a subsistence community, no doubt, birds are harvested for human consumption. We did not see evidence of that activity during our short visit.

S.E. Savage

47. Susitna Flats, Alaska, USA (61°18′ N, 151°06′ W)

This was my first full breeding season at Susitna Flats and, thus, I do not have a lot to compare it to. However, I have lived near to Susitna Flats for much of my life and can thus make general comparisons. This year there was a normal, if not late spring, with snow cover reduced to 50% on flat areas on 28 April and persisting through until 10 May 2009. However, abruptly on April 27, temperatures warmed considerably (to +15°C) and stayed that way through most of May. This is considerably warmer than the average May temperatures in the area and also meant that there was hardly any precipitation during this period (1 day of rain). June was far more normal, with a number of days of precipitation and temperatures around 16°C. July was again warm and dry, while August returned to more normal conditions. Despite a warm and dry May, there seemed to be no detrimental effects on shorebird productivity. There were no severe weather events during our time on Susitna Flats this year.

Apparent Hudsonian Godwit breeding success rate was 25%, which is higher than we have ever witnessed at Churchill, Manitoba, Canada and higher than success rates reported for other *Limosa* species. However, I do not know how this compares to other years at Susitna Flats. Other shorebird and gull species seemed to have similar success rates this year. Geese and duck rates seemed low, as our few Greater White-fronted Goose nests failed early and we saw no fledglings in the area later on in the summer. Some Northern Pintail nests hatched, but we were not present in the area long enough to ascertain how many fledged young. No Willow Grouse were seen.

One Meadow Vole was seen through the entire summer; no trap data available.

Red Fox, Coyote, and Ravens are the three main predators in the area and are quite common because of the nearby human habitations (gas drilling pads, power plant, small town). Bald Eagles were abundant and one pair bred outside of the study

area 4.95 km^2 in size. Breeding was not confirmed for other diurnal raptors which were seen rarely and mostly on migration (the Osprey and Rough-legged Buzzard) or commonly (the Northern Harrier, Merlin and Peregrine Falcon). Short-eared Owls were common migrants.

That said, only 4 of 28 Hudsonian Godwit nests were depredated prior to hatching, much lower than at Churchill. We were unable to determine what predated the majority of chicks that failed to fledge. In general I evaluate bird breeding success this year as good one.

Disturbance by humans is a daily problem in the area. The area has many, small natural gas wells that are surrounded by gravel pads and connected by gravel roads. These are travelled multiple times daily by heavy trucks and serviced by many employees. That said, disturbance is limited to the pads and roads themselves and to the dust created by the equipment passing by. Few people, if any, venture off of these areas into the main shorebird breeding sites. There is also a small town nearby and many of the residents hunt in the area, but generally only in the fall and winter. Most seemed to recognize the importance of the area for nesting birds and to stay away during the breeding season.

There has been a new coal mine and power plant proposed that would potentially damage some godwit nesting habitat. This, however, is only in the planning phase and is meeting stiff opposition from local residents.

N. Senner

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

May temperatures, snow melt and habitat availability near the study site was only slightly less advanced than normal in 2009. The breakup of ice on the Kuskokwim River at Bethel was three days earlier than average. We were on the study site from 6-16 June, before the hatching of most waterbirds. The only observed hatching was a Glaucous Gull on 15 June. Overall, hatching by waterbirds in 2009 was predicted to be 1-3 days earlier than the long-term average. Waterbird productivity was predicted to be good with low levels of nest predation due to high numbers of microtines. There was abundant evidence of over-winter and spring activity of microtines and numerous individuals were seen. Short-eared Owls were seen daily providing another indication of increased microtine numbers. Microtine populations have responded positively to the lack of large-scale storm surge flooding since 2005.

Although Arctic Fox tracks were seen commonly, predation on eggs and adult waterbirds appeared low in 2009.

Plant phenology was similar or slightly delayed for most species in 2009 compared with 2008 and up to 5-6 day delayed from the long-term average (2003-2009). Flowering dates were: 9 June for *Carex* spp. and Golden Root, 10 June for Arctic Sweet Coltsfoot, and 13 June for Canadian Bunchberry, *Salix* spp., and Cloudberry. Green-up of Common Mare′s Tail (14 June) was 2 days earlier than in 2008 and the first large mosquito emergence in 2009 was 12 June compared to 16 June in 2008. Midge (*Chironomidae*) emergence was one day later in 2009 (11 June) than in 2008.

Grey Phalarope (<5 seen) and Ruddy Turnstones (none seen) continue to be species of concern due to low numbers that are well below historic levels. Uncommon sightings include a single Yellow Warbler (8 June) and a single Double-crested Cormorant (11 June).

C.P. Dau, K. Warren

49. Yukon-Kuskokwim Delta, Alaska, USA (61°15′ N, 165°38′ W)

In 2009, the timing of spring ice breakup and the timing of spring snowmelt on the Yukon-Kuskokwim Delta (YKD) was near average. Fox predation on geese was reduced from the levels of recent years.

Population indices of Cackling Geese in the YKD coastal zone in 2009 decreased about 20% from last year but the number of pairs remained near the record high level of 2008. The median hatch date of Cackling Geese was one day earlier than the long-term average. Nesting surveys conducted during 2009 indicated clutch sizes were slightly below average, and nest success was high. Overall, good production and a fall flight similar to that of last year are expected.

The median hatch of Greater White-fronted Geese was two days later than the long-term average. Yukon Delta nesting surveys conducted during 2009 indicated clutch sizes were near average, and nest success was better than average.

Brant nest densities at five primary colonies on the YKD in 2009 increased from levels in 2008, but remained below the average level since 1992. Clutch sizes were slightly above average, and nest success measured outside the primary colonies was higher than 2008 and above the average level since 1982.

Tundra Swan nesting phenology was about six days later than average, clutch sizes were lower than average, and nest success was slightly lower than in 2008 and the long-term average.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

50. Nome area, Seward Peninsula, Alaska, USA (64°32′ N, 165°25′ W)

From 12-27 June 2009, we studied Pacific Golden Plovers and American Golden Plovers at various sites along the Nome-Teller Road. The region was mostly snow-free when we arrived, and vegetative development, in addition to sub-

stantial numbers of mosquitoes, indicated a relatively early spring. We had variable weather with some days very windy, others foggy, and there were occasional periods of rain. Air temperatures were overall relatively warm, though several days were quite cold.

We located nesting pairs of plovers and captured one member of each pair (15 male Pacific Golden Plovers, 6 male and 2 female American Golden Plovers). Each bird was equipped with a geolocator (MK-14 data logger, British Antarctic Survey) attached to a leg band. We hope to recapture the birds and download the information in the 2010 season. We hope to shed new light on the migratory pathways of each species. A fall sighting in Japan of a nesting Pacific Golden Plover we banded near Nome suggests that not all birds migrate directly between Hawaii and western Alaska, but at least some of them migrate along the Asian coast. For American Golden Plovers, the Seward Peninsula is at the extreme western end of their breeding range and the migratory routes of these birds are uncertain. We found no evidence that the attached data loggers impaired incubation or caused breakage of eggs. Since we left the region before most hatching began, we have no knowledge of overall reproductive success.

As in 2008, there was no indication of lemmings on our study sites. The only rodents observed were Arctic Ground Squirrels.

It appeared that Red Foxes were relatively abundant and several individuals were observed.

The following avian predators were recorded: Rough-legged Buzzard (uncommon, breeding not documented), Short-eared Owl (common), Long-tailed Skua (common breeder), Arctic Skua (uncommon), Pomarine Skua (rare).

Willow Grouse were abundant and bred, while only a few Rock Ptarmigan were present.

O.W. Johnson

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

Our 2009 field season (9-22 June) was more productive than 2008 due to favourable weather. We lost only one nest to Arctic Foxes. This was the first year since our work at this site began in 1988 that we have seen Arctic Fox in our study area. Only one Red Fox was observed in 2009. We, however, had several three-egg Ruddy Turnstone and Grey Plover nests. These may have been second clutches so perhaps predator pressure and harsh weather preceded our arrival.

P. Bruner, A. Bruner, J. Johnson, R.S. Gold

In: Liebezeit, J. (comp.). 2009. Summaries of ongoing or new studies of Alaska shorebirds during 2009. November 2009. No. 8. http://www.fws.gov/shorebirdplan/RegionalShorebird/downloads/AlaskaSummary2009.pdf. Accessed 16 Oct. 2011.

52. Kanuti Lake, Kanuti National Wildlife Refuge, Alaska, USA (66°11′ N, 151°43′ W)

Assessments of timing, air temperatures, and humidity for 2009 season should be noted with caution (they all could be average, but definitely not late), given this observer′s brief history at the study area.

The main study area lies just south of the Kanuti River floodplain. The camp is at the cabin between the Kanuti Lake and Kanuti River. When the river floods in spring, the cabin is essentially on an island. The river flowed over the bank just upriver of cabin by 5 May, and just downriver of the cabin on 3 May. These low spots in the bank probably the best gauges for observing river cresting. The River and Kanuti Lake levels started dropping on 9 May. On 24 May, the river again crested the low spot in bank just upriver of cabin (hot weather and melting snow in the hills caused the second flooding).

The Kanuti Lake was 100% ice-covered upon arrival on 30 April and was 100% ice-free by 19 May. Willow catkins first appeared on 15 May, Wood Frogs were calling from 1 May, paper birch was in leaf on 22 May, the same date as in 2008 and 2009, despite very different spring weather patterns (there was a very late spring in 2008).

2009 was generally dry with warm weather in May and through July. This would seemingly favour most breeding birds, though wetland water levels were quite low as a result of less recharge. I′m not sure if the river flooding twice is remarkable and if so whether ground-nesting birds in the floodplain would have been adversely affected by additional flooding.

Presently we have no way of assessing between-year changes in bird abundance for most species. Abundance of the two focal species, the Whimbrel and Hudsonian Godwit, did not seem remarkably different between 2008 and 2009. In 2008, we had at least 2 pairs of locally nesting Northern Hawk Owls and a pair of Red Foxes that hunted near Kanuti Lake. In 2009, we did not document the owls breeding, nor did we see Red Foxes (though it should be noted that we arrived 18 days later in 2008). This might suggest that there were fewer arvicolines (voles and lemmings) in the area. On the other hand there were more frequent sightings of Northern Harrier and Short-eared Owl. Slavonian Grebes were possibly more numerous and nested more widely in 2008 than 2009.

The only bird targeted for research was the Whimbrel, which we trapped at the nest. 15 received implanted PTTs and leg flags; 6 received leg flags. Nesting success of these birds was excellent – 13 or 14 of 15 nests hatched.

The only possible human disturbance was from us researchers and this was probably minimal, although we did use a helicopter (6 days). We also had some fixed wing aircraft on floats which land at Kanuti Lake cabin but that disturbance was localized and minimal. We observed one spring camp of an Alaska Native family from the nearest commu-

nity (>100 miles). They harvested a few ducks (e.g., plucked Mallard feathers found).

Ch. Harwood

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

In 2009, we conducted the seventh year of a long-term shorebird study at Barrow. The season started a bit earlier than normal but then a snow storm hit at the end of May that delayed things a bit. Snow cover reduced to an estimated 50% on flat areas on 4 June 2009, and it completely disappeared on 10 June 2009. The summer air temperatures and precipitation was quite average throughout the summer, and weather was nicer than the year before during late July and early August. However, it was very windy for good portions of June. Daily meteorological measurements are collected by the U.S. National Weather Service. These are available to other researchers.

Lemming numbers were very low in 2009 – a dramatic change from the very high numbers in 2006 and 2008.

Pomarine Skuas and Snowy Owls did not nest in the Barrow area in 2009. Only one Arctic Skua nest was found.

We located and monitored nests in six 36-ha plots in 2009. All six plots are the same as those sampled in 2005-2008 and were searched with the same intensity as in past years. The breeding density of all shorebird species on our study area was 101.4 nests/km^2 in 2009; this was slightly higher than the long-term average of 90.0 but substantially less than the long-term high of 150.5 nests/km^2. Unlike in 2005-2008, nest predation was quite high despite the presence of a fox removal program.

In 2009, we recorded the highest breeding density ever of American Golden Plover, Dunlin, Red-necked Phalarope, Semipalmated Sandpiper, and Western Sandpiper on our plots during the seven years of this study. The biggest increase was in the Western Sandpiper, whose nest densities reached 5.09 nests/km^2, nearly five times higher than the 7-year running average. The next largest increase was in the American Golden Plover, whose nest density of 11.6 nests/km^2 was nearly twice as high as the next highest year, and three times higher than the 7-year running average. Semipalmated Sandpiper density of 24.5 nests/km^2 was over twice that of the long-term average. The other species increased a lesser amount. Several species had much lower nest densities than historically, including the traditionally abundant Pectoral Sandpiper and Grey Phalarope – two species known for their nomadic tendencies.

A total of 219 nests were located on our plots and another 156 nests were found outside the plot boundaries. This was 20 nests less than the long-term high, which occurred in 2006, but nearly 100 more than the seven-year average. Nests on plots included 15 Pectoral Sandpipers, 42 Grey Phalaropes, 46 Dunlin, 53 Semipalmated Sandpipers, 14 Long-billed Dowitchers, 9 Red-necked Phalaropes, 25 American Golden Plovers, 11 Western Sandpipers, 3 Buff-breasted Sandpipers, and 1 White-rumped Sandpiper. No Baird′s Sandpipers were found on the plots in 2009. The fact that we experimentally removed Dunlin nests during the clutch replacement study and natural predation was quite high probably led to a good level of renesting. This would have artificially inflated the nest densities observed in this study since the same individuals were nesting at least twice.

The first shorebird clutch was initiated on 30 May in 2009 – a full 4 days earlier than the long-term average and 4 days earlier than in any other year of the study. Typical first initiation date is the 3 June but can be as late as the 6 June. Peak initiation date was the 6 June and median initiation date was the 10 June; these dates were about 5 and 4 days earlier, respectively, than the long-term average. Median nest initiation dates for the more abundant species were the 7 June for Dunlin, 9 June for Semipalmated Sandpiper, 11 June for Grey Phalarope, and 18 June for Pectoral Sandpiper. These dates are the earliest or among the earliest dates of nest initiation documented during our 7-year study.

Predators destroyed 68.8% of the known-fate nests in 2009, nearly twice that of the 7-year average of 35.5%, and substantially higher than the 11.7, 8.6, 11.1 and 24.2% observed in 2005-2008, respectively. In fact this level of predation was half-way between the 44.6 and 80% recorded in 2003 and 2004, respectively, when no fox control was in place. Across the more abundant species, hatching success (number hatching at least one young/total number of nests) was highest in Pectoral Sandpipers (38.9%, n = 18), followed by Semipalmated Sandpiper (38.5%, n = 52), Grey Phalarope (32.1%, n = 53), Dunlin (22.5%, n = 138), and Long-billed Dowitcher (17.6%, n = 17). We suspect that the relatively low hatching success in 2009 was due to a number of factors. First, lemmings, which occurred in historically high numbers in 2008, ate the vegetation extensively, making some of our plots look more like a golf course than a normal tundra environment. The lack of vegetation to conceal nests made them more visible to aerial predators (and us). This idea is supported by higher hatching success on plots where vegetation was less denuded. Second, the lack of lemmings in 2009 appeared to dissuade Arctic Fox and the various skua/gull species from establishing den or nest sites. The absence of denning foxes made trapping more difficult as there were no predetermined places to set traps where the hunters knew the fox would return. The lack of territorial foxes also appeared to lead to higher number of transient foxes moving into the area. In the past, foxes could be trapped at historic den sites and once trapped, were not likely to be replaced immediately. Similarly, the absence of nesting (i.e., territorial) gulls or jaegers allowed transient birds to hunt over the plots at will. This was in stark contrast to 2008 when territorial Pomarine Skuas nested on our plots and chased other skuas and gulls for long distances (like a protective umbrella). However, the percentage of successful nests was lower than in other years with fox control (i.e., 2005–2007). This difference is probably due to the high number of avian predators, combined with the lack

of nesting cover resulting from intense grazing by lemmings on our plots.

During 2007–2009, we experimentally removed Dunlin clutches to determine replacement clutch laying rates. Adults were radio-equipped at initial nests, their clutches were removed during early ($\bar{x}$ =5.2 days, *n*=60) and late incubation ($\bar{x}$ =13 days, *n*=29), and individuals were followed to detect replacement nests, assess divorce rate, and examine renest intervals. Eighty-seven percent of the females laid replacement clutches after early removal, while only 43% replaced clutches after late removal. Divorce rate was low (8%), and in all cases, males remained on their original territory while females moved up to >5 km to renest. The average renest interval was six days for both early and late removal treatments. This unexpectedly high rate of clutch replacement suggests a female′s propensity to lay a replacement clutch is not likely constrained by latitudinal factors as expected.

Barrow is a community of over 5,000 people. There is active hunting of wildlife throughout the spring, summer and fall, although most is directed towards larger bird species (not shorebirds), Reindeer, and fishing. There are natural gas wells and pipelines near Barrow too but no active development of this resource. A new landfill opened and became operational in 2008 located about 10 miles from the coast. This landfill is highly regulated with only ash from incinerated garbage being disposed.

R. Lanctot

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

Coastal aerial surveys of near shore waters of the Chukchi and Beaufort seas were conducted from 1-5 July 2009. The Chukchi Sea from Point Hope to Point Barrow was mostly ice free. Shore fast ice was light and deteriorating from Utukok Pass (Kasegaluk Lagoon) north to Point Barrow. Omalik and Kasegaluk lagoons were ice free and Peard Bay had 30% coverage of deteriorating ice with considerable surface melt. From Point Barrow to Cape Simpson, ice was shore fast and Elson Lagoon was 95% ice covered. From Smith Bay to the Colville River, bays were at least 80% covered with deteriorating ice with surface melt with a narrow band of open water along shorelines. Central Beaufort Sea estuaries were mostly ice free with some shore fast ice north of barrier islands. Ice cover was 5-10% in eastern Simpson Lagoon, absent in inner Prudhoe Bay and approximately 5% in Stefansson Sound. Eastern Beaufort Sea estuaries were ice free except for 30% ice cover in Tapkaurak, Oruktalik, Angun, Beaufort lagoons and 50% in Pokok Lagoon. North of central Beaufort Sea barrier islands and along exposed shorelines there was 3 kilometres of ice near Pokok Lagoon and 200 meters from Siku Lagoon to the Canadian border. Snow was absent in onshore habitats throughout the survey area in 2009. Some larger lakes throughout the survey area had remnant ice (Teshekpuk Lake at least 50%) and smaller ponds were ice free.

Beaufort Sea barrier islands did not appear to be accessible to terrestrial predators during the survey. These habitats provide favoured nesting sites for Common Eiders, Glaucous Gulls, Sabine′s Gulls and Arctic Terns. Common Eider numbers were comparable to previous years but the other three species increased dramatically in 2009. Lesser Snow Geese apparently experienced a nesting failure at Howe Island where no birds were seen, but over 400 were observed moulting at nearby Tigvariak Island. Lesser Snow Geese successfully bred near the Utukok River mouth and west of the Colville River suggesting reproductive failures were local. Snowy Owl (*n*=46) numbers were high in 2009 after low population indices in 2007 and 2008, indicating increasing microtine populations.

C.P. Dau, K.S. Bollinger

55. North Slope, Alaska, USA (69°42′ N, 149°54′ W)

Essentially all snow was gone upon our arrival on 30 June. Because it was our first visit to the area, it is hard to say how typical this season was, but other researchers did not mention anything unusual about conditions in 2009. During our time in the area until 7 July, we encountered no extreme weather events. At the coast in Deadhorse, it was often foggy and cool (ca. +5°C), but about 10 km inland, conditions were dry and hot (ca. +20°C); these conditions prevailed at inland sites throughout the duration of our stay. We encountered brief rain storms, but nothing prolonged. From conversations with people more familiar with the region, these weather patterns were typical for the season.

During our one week visit to the region, we flew and drove over large areas searching for breeding Bar-tailed Godwits and Whimbrels, but spent relatively little time actually on the ground. As such, our ability to assess breeding conditions is limited. However, we conducted numerous brief sites visits (<1 hour), and visited one site more extensively (about 3 days on the site). Given these restrictions, we are unable to comment on interannual variability in bird abundance or breeding success. However, at most sites we observed evidence of breeding. We found two Whimbrel nests in the process of hatching on 1 July, captured 4 adult Bar-tailed Godwits from 3 different broods on 4 July, encountered one brood of Stilt Sandpipers and one hatching Bar-tailed Godwit nest on 2 July, encountered one brood of Willow Grouse on 4 July, and noted passerines carrying food for nestlings at many sites (e.g., Yellow Wagtails, Smith′s Longspurs, Bluethroats). We observed groups of non-breeding or failed-breeding Bar-tailed Godwits, so our perception of densities should take into account potential nest loss, but in general all bird species occurred at very low densities.

No small rodents or mammalian predators were recorded. We found an active Gyrfalcon nest on 30 June. Apart from that we occasionally observed other avian predators, the Bald

Eagle, Northern Harrier, Rough-legged Buzzard, Merlin, Peregrine Falcon, Arctic Skua, Long-tailed Skua, Glaucous Gull, Snowy Owl, Short-eared Owl and Raven, of which we had evidence of breeding only for the Long-tailed Skua.

The sites that we visited were not influenced by human activities.

D. Ruthrauff

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

Snow melt occurred as early in 2008 as in 2009 and earlier than in the 5 previous years (2003-2007). Despite the early snow melt, the mean air temperature during the breeding season period (20 May to 30 June) was relatively cool (+2.0°C). In contrast, in 2008 the mean air temperature was +4.9°C. Temperature information is available on-line at www.wunderground.com. This year cloud cover was much more prominent in June and there were more windy days. The first mosquitoes emerged in late June (approximately 28 June). The first bad mosquito day was 1 July. This is a bit later than normal.

During the period of field studies from 3 June – 11 July 2009 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 and monitored 103 nests of 11 species from 3 June to 11 July. Thirty-seven nests successfully hatched/fledged, 48 failed and 18 nests were of unknown or undetermined fate. Nest predation was the most important cause of nest failure (92%). Other sources of nest failure included abandonment, infertile eggs, and an observer accidentally alerting a predator to a nest. Mayfield estimates of nesting success for the three most common species were: 0.396 in Lapland Bunting (*n*=30), 0.459 Semipalmated Sandpiper (*n*=21), and 0.557 in Pectoral Sandpiper (*n*=8).

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 7 lemmings this year during 113.2 hrs of observation time, which is low density. In 2009 lemming abundance was similar to that observed in 2008 (0.039 individuals/30 min. in 2008 cf. 0.031 individuals/30 min. in 2009).

We also conducted point count surveys for potential nest predators on each plot at three different times during the course of the season. A total of eight potential predators were detected (*n*=number of detections): Glaucous Gull (*n*=70), Arctic Skua (*n*=31), Long-tailed Skua (*n*=18), Snowy Owl (n=14), Raven (*n*=10), Arctic Fox (*n*=3), Pomarine Skua (*n*=2), Arctic Ground Squirrel (*n*=1). Pomarine Skuas were occasionally detected at the site but were not seen after mid-June. We found no evidence that they or Snowy Owls nested at this site this year although noticeably more Snowy Owls were detected on timed counts than in previous years. No breeding of raptors was recorded, while Arctic Skuas and Long-tailed Skuas were nesting as well as Arctic Foxes which were common and denning. Red Foxes were also present in the area according to occasional observations.

In 2009, we documented both overall nest density (75.0 nests/km^2) and nest survivorship to be average compared to previous years though noticeably lower than the high nest density/survivorship year of 2006. Nest densities of the most common species were similar to last year although Lapland Bunting densities increased noticeably (15.8 to 23.3 nests/km^2). Both Willow Grouse and Rock Ptarmigan were common breeding birds. This year′s early season (20 May to 30 June) average air temperature was low compared to most other years. Correspondingly, nest initiation dates for 2 of the 3 most common species were later than in 2008 although the overall trend since monitoring began in 2003 is for earlier nest initiation.

J.R. Liebezeit

57. Atigun Gorge, Arctic National Wildlife Refuge, Alaska, USA (69°28′ N, 149°18′ W)

This was our 3rd year at the study site. We were there from 27 May till 8 July 2009. It was not as cool in 2009 as in 2008, but cooler than 2007. 2009 was much wetter and cloudier than the other years at the study site. Snow cover on flat areas was reduced more than to 50% and break up on major rivers had already occurred when we arrived at the study area on 27 May. Snow melted off completely before 10 June. We had several snow storms in late May and early June as well as a very wet June.

The Smith′s Longspurs was the focal species of the study. Birds of this species are patchily distributed and fairly common within the patches. In 2009 our bird surveys resulted in lower density estimates compared to the previous two years. However, we believe this is due to poor weather during the survey period rather than reduced numbers of birds.

In 2009, the majority of the Smith′s Longspur nests found had three and four egg clutches. Apparent nest success was high (76%). The primary reason for failure was predation. There was a family group of adult and juvenile Ravens at the study site (the juveniles fledged prior to our arrival, but remained at the study site during the field season). Other nest predators commonly seen in the study site were the Red Fox and Arctic Ground Squirrels. Non-breeding Rough-legged Buzzards, Northern Harriers, Merlins, Peregrine Falcons, Long-tailed Skuas and Short-eared Owls were also present in small numbers. Breeding of Gyrfalcon, Golden Eagle, Common Gull and Herring Gull was recorded.

We did not capture Microtine rodents. According to general impressions, Northern Red-backed Voles were rare in 2008-2009, and there was no change in their abundance during the summer. We encountered them a couple of times per week.

Two of the unsuccessful nests were abandoned during incubation. Upon inspection, we found each nest had an egg with

a broken and thin egg shells. The patchy nature of the egg thinning suggested inadequate calcium deposition during egg formation. This may be indicative of poor nutrition during this period.

It is worth noting that Willow Grouse were rare, while Rock Ptarmigans were common and bred.

S. Kendall

58. Komakuk Beach, western North Slope, Yukon Territiry, Canada (69°35′ N, 140°11′ W)

Thaw event occurred on 17 January. Temperature profiles indicated substantial early winter snow (at least 30 cm), on a control grid.

Mark-recapture live trapping of small mammals was undertaken on two, 9 ha, grids in late June and late August. Winter nest counts and mapping on both grids in late June revealed low densities, and *Microtus* voles were almost the only small mammal present in summer 2009. Winter nest counts were less compared with previous winter, but the population increased (almost all *Microtus*) during summer. Age distribution and remains in nest indicated over winter breeding in the voles. Over winter crash of *Lemmus* took place on both grids. The small mammal decline over winter was a result of poor winter conditions (thaw-refreeze in January) and substantial ongoing Weasel predation. The summer population increased because of low abundance of predators (no foxes or Rough-legged Buzzards). *Microtus* voles are becoming more dominant in this system since 2006.

No spring fox activity was recorded. There was little evidence of presence of Weasels, and no Weasels were caught. Only vagrant Snowy Owls and Short-eared Owls were seen. After an aerial survey of fox dens on North Slope from Alaska border east to Babbage River ground visits of dens with higher probability of being natal were undertaken. Inspection of 56 den sites revealed one Red Fox reproductive den and two Arctic Fox reproductive dens. The low density of reproductive dens followed generally low small rodent abundance.

Ravens fledged 4 young (26 June). One pair of each the Peregrine Falcon and Arctic Skua was incubating. A nest of Rough-legged Buzzards failed (June 16 – probably depredated).

Ch. Krebs, A. Kenney, L. Hofer et al.

Arctic WOLVES - 2009 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf. Accessed 16 Oct. 2011.

59. Herschel Island, Yukon Territory, Canada (69°34′ N, 139°05′ W)

Studies were carried out from 18 April to 25 August 2009.

Pattern of snow melt in major habitats were recorded on a snow transect of 25 stations, 10 m apart, from 23 May until full melt in wet lowland on 11 June. Snow melt took place significantly later in 2009, especially than 2008, but also than 2007. Slow spring melt and May snow fall resulted in much later emergence of bare ground.

Three traps for arthropods in wet alluvial fan were run from 18 June to 13 July (the period corresponding to the peak biomass in previous 2 years), to see whether late spring in 2009 had any effect. We measured low abundance of arthropods throughout the sampling period with some increase in July. This meant generally lower availability of arthropods than in previous the two years, and the peak may be extended beyond 13 July. Flight periods of butterflies occurred substantially later in 2009, and their abundance was reduced.

Small mammal abundance was surveyed in early June and early August on two upland 9 ha grids, and on one 2 ha alluvial fan grid trapped. Over winter crash of Brown Lemmings (especially on alluvial fan) was revealed, but the population of Greenland Lemmings was stable on the upland. Winter nests abundance in 2008/2009 winter was less than in previous years as found by counts on all grids in June. Small rodents declined on upland grids during summer, but *Microtus* density increased on the alluvial fan. This is explained as asynchronous population patterns of small mammals which is perplexing (see also Komakuk Beach locality report, #58). Perhaps Brown Lemmings had particular difficulty with winter conditions. Summer declines correlated with local Red Fox natal den, and a likely higher predation pressure than in previous years.

VHF radio-telemetry on 30+ adults (mix of lemming species) in June-July, and August was applied to quantify survival, causes of mortality, and home range use. Considerable skua and Red Fox predation was recorded. Many radios were not recovered also suggesting predation. Thus, summer lemming population declines could have resulted from predation.

Ground search for all fox dens, including those recorded in 1984-1990 revealed record use by foxes, whether reproductive or not. However, only one natal Arctic Fox den, and one natal Red Fox den was confirmed. This is the first study conducted where both species are sympatric and successfully reproducing, and which are telemetered. Least Weasels were rare in 2009 being infrequently captured in lemming traps. It seems they have suffered from winter conditions or winter predation. At least one Wolverine occasionally used the island. Two or more Brown Bears were present in 2009. No Polar Bears recorded.

Raptor abundance estimated by point observations (10 min surveys from high point above the camp) on 21 May to 11 June was low, but included nomadic prospecting Short-eared Owls and Snowy Owls. The eastern end of the island (ca. 21 km^2) was well searched for nests of avian predators. Two nests of Rough-legged Buzzards, 3 of Peregrine Falcons, and 3 of Long-tailed Skuas and none of Short-eared Owls or Snowy Owls were found. This reduced nesting of

raptors was a response probably to late snow melt and/or low lemming abundance.

We conducted one full (12 ha) PRISM plot run in the upland dry community and one smaller (6 ha) PRISM plot run on the alluvial fan. Lapland Bunting, Savannah Sparrow, Rock Ptarmigan in upland and Lapland Bunting, Semipalmated Sandpiper, and Least Sandpiper in lowland were breeding with lower densities than in 2008. A sample of 110 nests (passerines, shorebirds, gallinaceous, waterfowl) were tracked from some time in incubation through hatching, and some to fledging. Considerable Red Fox predation was found on alluvial fan and the point. Fairly high nest success was revealed, as in other years. Rock Ptarmigan nest success was higher this year.

Ch. Krebs, A. Kenney, L. Hofer et al.

Arctic WOLVES - 2009 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf. Accessed 16 Oct. 2011.

60. Mackenzie Delta, Canada (69°22′ N, 134°54′ W)

Ice break-up on the rivers (2-4 June 2009) occurred a few days later than in previous years. Snow had thawed away by the time of our arrival to the study area on 4 June. The wetlands were extremely flooded this year in comparison to previous years and waters took longer to recede. According to observations during first half June, this season appeared to be approximately 1 week late, but average in temperature and humidity.

We saw large numbers of flocking birds, probably still on their way to other breeding grounds.

We saw ten or more Greenland Lemmings and Brown Lemmings per day at our camp. Numbers were high probably due to flooding of the wetlands around us.

Our impression was that Arctic Foxes were common, but we do not have information about their breeding status.

Among avian predators the Rough-legged Buzzard, Northern Harrier, Long-tailed Skua, Arctic Skua, Herring Gull, Glaucos Gull, and Raven were common and bred. Short-eared Owls were rare breeders.

The abundance of Willow Grouse was at its average value.

The impact of human activities in the area is minimal to none at present.

J. Rausch, L.Pirie

61. Anderson Delta, Canada (69°39′ N, 129°24′ W)

We did not stay at the Anderson Delta, but we flew the helicopter there several times during the first half of June 2009 to do surveys. There was no snow when we were there and it did not appear that the season was delayed.

Mammalian predators were not seen. Rough-legged Buzzards, Northern Harriers, Long-tailed Skuas, Herring Gulls, Glaucos Gulls, and Ravens were the recorded predators, which all presumably bred. Both the Willow Grouse and Rock Ptarmigans were common.

The impact of human activities in the area is minimal to none at present.

J. Rausch, L. Pirie

62. Anderson River & Kendall Island, Canada (69°46′ N, 128°54′ W)

Snow Goose nesting efforts were below average at Kendall Island, and were extremely poor at Anderson River colonies.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

63. Walker Bay, Kent Peninsula, Northern Territories, Canada (68°21′ N, 108°05′ W)

Temperatures were well below normal while precipitation was above normal during the period of field studies on 7–26 June 2009. We had no ability to record climatic data because the weather station had been destroyed by bears. Snow cover was recorded from 9 June (95%) until 18 June (<1%). Late melt and deep snow delayed some field work.

Live-trap census revealed the lowest densities of lemmings in our six years of data collection at Walker Bay.

The camp has been trashed by Brown Bears and Wolverines since spring 2008. Two Brown Bears entered camp and forced us to post sentries and carry a firearm in the field during our final research collection period.

D. Morris

Arctic WOLVES - 2009 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf. Accessed 16 Oct. 2011.

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

In 2009, May temperatures near the Queen Maud Gulf were 1-3°C colder than average and spring precipitation was below average. Nesting phenology of the Ross′ Goose at the Karrak Lake colony was one week later than average and near the latest on record since 1993. Biologists expect Ross′ Goose production in 2009 to be poor, similar to that of the last two years.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

65. Cape Churchill, Manitoba, Canada (58°30′ N, 93°30′ W)

Activities of two groups were hampered by the extreme levels of snow, lateness of melt and then severe flooding. The most extreme snow and ice conditions encountered in 41 years delayed both biological and research activities. As of 2 June 2009 we encountered 100% snow and ice cover from Churchill east to Cape Churchill and south to the Owl River. From there south to York Factory snow and ice cover was still 75%.

Polar Bears came ashore about 1 week later than usual and were extremely fat. However, they continued foraging on everything available including Beluga Whales, Ringed Seals and Reindeer. We flew our standard Red Fox transects but given results from the previous years and the limited prey abundance (few Snow Geese nested and extreme flooding severely reduced microtine populations) we focused our efforts on determining activity at the dens on our transect. Only 17% were active in contrast to 77% in 2008. No Red Fox cubs were observed.

We estimated between 5 and 10 million geese (Canada Goose, Greater White-fronted Goose, Brent Goose, Lesser Snow Goose and Ross′s Goose) occupied the coast from the Owl River to York Factory. Destructive foraging by these numbers of geese resulted in severe habitat degradation which was assessed later in the season. Flooding following melt delayed Snow Goose nest initiation further to the point that less than 35% of the Cape Churchill Peninsula population nested. Extreme predation by Arctic Foxes, Wolves, Black Bears, Brown Bears and Polar Bears resulted in complete nesting failure of snow geese in the region. Those that did not nest and those that failed performed a moult migration to unknown areas. We marked ~150 nests of Common Eiders to be revisited later and estimated that 95% of them failed.

R.L. Jefferies, K. Edwards, R.F. Rockwell, D. Koons, J. Sperling, D. Hedman

Arctic WOLVES - 2009 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf. Accessed 16 Oct. 2011.

66. La Perouse Bay, Manitoba, Canada (58°00′ N, 93°00′ W)

Biologists at La Perouse Bay, recorded the latest nesting phenology in 41 years in 2009, and reported a near reproductive failure at that small Snow Goose colony.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

67. Hudson Bay Lowlands, Canada (55°00′ N, 87°00′ W)

Spring phenology was very late in 2009 compared to the recent five-year average and was one of the latest of all years surveyed since 1989. There was a larger than average snow pack on the Mississippi Valley Population of the Canada Goose breeding range (northern Ontario, principally in the Hudson Bay lowlands, west of Hudson and James bays) last winter, and spring was characterized by mean daily temperatures at or below freezing through May and the first week of June. Most of the snow fell in the region in late winter (March to May). May was characterized by near-record snow cover, mean daily temperatures more than 3°C below average. There were several snow storms in May and a blizzard on 17 May that contributed to the heavy snow pack on the coast.

These conditions explain the late breeding phenology in Canada Geese.

The estimated 2009 breeding population of 239 631 Canada Geese was down from 305 191 in 2008 and was 35% below the 1989–2008 average. Surveys indicated a total population of 518 200 Canada Geese, a 17% decrease from the 2008 estimate. Some very large flocks of Canada Geese (>5000) were also observed along the coast. It is highly unusual to observe such large flocks in the Mississippi Valley Population breeding range even when moult migrants are present. These may have been mostly failed or non-breeding birds. Nesting studies near Peawanuck, Ontario yielded nest density estimates even lower than last year′s poor nesting effort, and very low nest success. Nesting conditions inland from the coast appeared to be less harsh. Based on the survey results and a nesting study, it appears that gosling production was well below average in 2009.

Canadian Wildlife Service Waterfowl Committee. 2009. Population Status of Migratory Game Birds in Canada. CWS Migratory Birds Regulatory Report Number 28. http://dsp-psd.pwgsc.gc.ca/collection_2010/ec/CW69-16-28-2009-eng.pdf. Accessed 16 Oct. 2011.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

68. Cape Henrietta Maria, Ontario, Canada (55°09′ N, 82°19′ W)

At Cape Henrietta Maria the 2009 spring thaw was extremely late. The Lesser Snow Goose colony was surveyed on 5 June. On that date, 50–70% of the colony′s usual occupied area was still snow-covered, with the majority of the rest of the area under water. Nest numbers were lower than usual. On June 13, 20 nests were visited at an inland site; the mean clutch size was 3.25 and predicted mean hatch date was 29

June – 1 July, later than the long-term average by about two weeks.

Canadian Wildlife Service Waterfowl Committee. 2009. Population Status of Migratory Game Birds in Canada. CWS Migratory Birds Regulatory Report Number 28. http://dsp-psd.pwgsc.gc.ca/collection_2010/ec/CW69-16-28-2009-eng.pdf. Accessed 16 Oct. 2011.

69. Akimiski Island, Nunavut, Canada (53°00′ N, 82°00′ W)

The camp was occupied from 10 May to 15 September. Above-average snow pack and a colder than average May contributed to geese nesting phenology near the long-term average, but much later than the previous five-year average. Once again, polar bear interfered with activities and arthropod studies. We captured 3 Red Foxes for deployment of collars to track home range and interaction with ground nesting birds.

Nesting studies of Canada Geese on Akimiski Island indicated relatively low nest densities, below-average clutch sizes, and poorer nest success compared to recent years. As a result of late spring thaw nest initiation by Lesser Snow Goose on the island occurred about 10 days later than usual. Ground searches on the coastal portion of the colony revealed nest numbers at or slightly above average.

K. Abraham, R. Brook

Arctic WOLVES - 2009 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf. Accessed 16 Oct. 2011.

Canadian Wildlife Service Waterfowl Committee. 2009. Population Status of Migratory Game Birds in Canada. CWS Migratory Birds Regulatory Report Number 28. http://dsp-psd.pwgsc.gc.ca/collection_2010/ec/CW69-16-28-2009-eng.pdf. Accessed 16 Oct. 2011.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

70. Ungava Bay, Quebec, Canada (58°30′ N, 69°30′ W)

Spring temperatures in 2009 were below normal, particularly along the Hudson Bay coast, where snow melt did not occur until early June. In inland areas, ice cover remained on all but small lakes and ponds or those with very shallow water. Large lakes remained frozen along both the Hudson and Ungava Bay coasts.

The mean nest initiation date by Canada Geese at five monitored sites around Ungava Bay was 4 June, which is 12 days later than in 2008 and 7 days later than the long-term average. The total number of nests found and the mean clutch size for the five sites surveyed along Ungava Bay were 62 and 3.6, respectively. Mean clutch size in 2009 was over an egg lower than in 2008 (4.7). Productivity of Atlantic Population Canada Geese on the Ungava Peninsula was poor (below average) in 2009.

Canadian Wildlife Service Waterfowl Committee. 2009. Population Status of Migratory Game Birds in Canada. CWS Migratory Birds Regulatory Report Number 28. http://dsp-psd.pwgsc.gc.ca/collection_2010/ec/CW69-16-28-2009-eng.pdf. Accessed 16 Oct. 2011.

U.S. Fish and Wildlife Service. 2009. Waterfowl population status, 2009. U.S. Department of the Interior, Washington, D.C. USA. http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2009_Final.pdf. Accessed 16 Oct. 2011.

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

The year 2009 was a late year across the entire eastern Arctic. We arrived on 28 May to about 100% snow cover. Shorebirds did not arrive until 7 June. Although being sunny at this time, it was cool and melt progressed slowly/gradually. I estimate the site was close to two weeks late in early June. In mid-June the melt occurred rapidly once it started. Usually this means that the site is covered with water and slush but this didn′t occur. Instead the snow melted to reveal useable nesting habitat and so because of the nature of the melt the site was where it should have been by June 20 or so. Thus, conditions caught up quickly to where they would be expected in a normal year. We received very little rain, had lower wind and generally nicer weather than usual.

Lemmings declined drastically from the previous two years. No lemmings were trapped during observations and snap trapping and very few Greenland Lemmings were seen on the land (no Brown Lemmings seen). Fresh burrows were rare.

Arctic Fox patrols seemed higher and these animals were common. We also had a resident Ermine. Reindeers were abundant.

Of avian predators only few non-breeding Rough-legged Buzzards, Peregrine Falcons, Short-eared Owls and Ravens were seen. Arctic Skuas were common and bred. Only the Herring Gull was abundant breeder among gulls.

Detailed studies of all shorebirds species were made until 26 July. 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.

The late year may have held up coastal birds, whose numbers were low. Upland species were more abundant, or at least our group were able to find more nests than usual. Hatching success was lower than normal for Ruddy Turnstones and White-rumped Sandpipers, and was low for Grey Phalaropes as well.

P. Smith

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

Field work was conducted over a total study area of about 400 km^2 located in the largest glacial valley on Bylot Island. Within this area, we had 2 camps as usual. The Camp-1 (Base-camp), was occupied from 23 May to 21 August) and the Camp-2, 30 km away, was occupied from 26 May to 19 July. Most activities were conducted on foot in two core areas of about 50 km^2 around each camp. Camp-1 is a prime brood-rearing area for Snow Geese whereas Camp-2 is located in the centre of the Snow Goose nesting colony. Fifteen fly camps were also established for 5-10 days at various times throughout the island.

We retrieved weather data from our 3 automated recording stations. Snowmelt was early and the summer was sunny and fairly dry. These exceptional conditions prevailed during most of the summer. Air temperature averaged +1.07°C between 20 May and 20 June (1.13°C above normal), which corresponds to the period of Snow Goose arrival and egg-laying, and +1.67°C (0.32°C above normal) during 1-15 June, the normal pre-laying and laying period. Despite a normal snow pack at the end of winter (snow depth was 26 cm on 1 June), snowmelt was rapid due to the warm conditions and thus snow disappeared early, similar to 2008. From early June to late August, weather was exceptionally good with lots of sunshine and warm temperatures. Except for a few short spells of rain, it was one of the driest summers on record (cumulative rain, June: 12.5 mm, July: 27 mm, August: 25 mm).

We conducted small-mammal live-trapping in two grids (12x12 traps), one in wetland habitat and one in mesic habitat at Camp-1. We trapped lemmings over 3-day periods 3 times in each grid from mid-June to mid-August. We also trapped lemmings using the same timeline in a third grid set up on the snow-fence experimental plot (10x10 traps). We also conducted snap-trapping survey and cumulated 1889 trap-nights at our 2 trapping sites at the Base-camp Valley from 24 to 31 July, and 949 trap-nights at the Camp-2 from 15 to 18 July. We surveyed our three trapping grids and ran a large number of transects for lemming winter nests.

Our different indices of lemming abundance yielded similar results. Live-trapping at Camp-1 indicated a low abundance of lemmings (0.46 lemmings/100 trap-nights excluding recaptures), much lower than in 2008 (6.99 lemmings/100 trap-nights). Brown Lemmings were greatly outnumbered by Greenland Lemmings in live captures. Snap-trapping in July also suggested a low abundance of lemmings at both camps (0.16 and 0.21 lemmings/100 trap-nights) which were lower than in 2008. Only Greenland Lemmings were caught during our snap trapping sessions (at both camps). Winter nest surveys also indicated low lemming abundance: 9 were found along our transects in 2009 compared to 117 in 2008. Ten of 104 collected winter nests showed signs of predation by Ermines while 26 showed signs of reproductive activity by both species.

We inspected all known dens in the study area (n=106, including 3 new ones found in 2009) for signs of use by foxes and presence of reproductive foxes with cubs. Nineteen dens showed signs of activity (fresh digging and/or footprints). Five of them were used for reproduction. We found 4 litters of Arctic Fox (4% of known denning sites) ranging from 1 to 7 cubs, 4 cubs/litter in average, and no litter of Red Fox. This was a dramatic reduction compared to last year (23% of dens used in 2008, a year of high lemming abundance). Three natal dens were located near the goose colony and one was located close to Dufour Point. Sixty percent (9/15) of observed cubs were captured and tagged. A few families used multiple dens to rear their cubs once these were old enough to follow the adults from the natal den to another rearing den. Cubs were noticeably smaller than in the previous years at the same period and few cubs appeared to survive through the summer. Camera monitoring permitted us to complete our visual observations of litter sizes, and showed that litter sizes decreased rapidly from emergence (21-24 June) to the end of July.

We ran several transects to find raptor and seabird nests. No nests of Snowy Owls were found (vs. 20 in 2008). We found 4 Rough-legged Buzzard nests (vs. 9 in 2008) but these were scattered over a very large area and only one of these nests could be monitored. We found 32 Glaucous Gull nests (vs. 30 nests in 2008), 1 Long-tailed Skua nests (vs. 78 in 2008) and 6 Arctic Skua nests (vs. 2 in 2008). Average clutch size was 2.7 eggs for gulls (vs. 2.8 in 2008), and 1.6 eggs for skuas (vs. 1.9 in 2008). Nesting success (proportion of nests successful in fledging at least one young) was low for gulls (26% vs. 57% in 2008) and unknown for skuas and buzzards.

Snow Geese arrived in early June and within a few days started to move to nesting areas. The peak lay date (11 June) was similar to the long-term average (12 June). Median egg-laying date in the colony was 12 June, which is the long-term average egg-laying date on Bylot Island. Nest density in the colony was slightly lower than last year (4.17 nests/ha vs. 4.34 nest/ha in 2008) but still above the long-term average. Only 3 nests were found at the Base-camp Valley (predominantly a brood-rearing area) compared to 23 in 2008. Overall, average clutch size was 3.38 which is lower than the long-term average (3.71 eggs). Peak hatch was on 9 July, which is again the long-term average. Nesting success (proportion of nests hatching at least one egg) was high this year (74%, 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 (1.07:1) was slightly lower than in 2008 but still above the long-term average (1.04:1). In contrast, mean brood size toward the end of brood-rearing (2.35 young) were much lower than in 2008 and below the long-term averages. Overall, these results are indicative of a good production of young on Bylot Island by the end of the summer.

Such breeding output of geese was surprising because lemming abundance was very low. Typically, nest predation rate, especially by foxes, is high in such years but apparently this was not the case in 2009. The last lemming peak was unusual in that it straddled 2 years (2007 and 2008) and was followed

by a very abrupt decline, which was already apparent during the winter 2008-2009, as evidenced by the low number of winter nests found. This rapid decline may have resulted in a reduced winter survival of foxes (especially for juveniles), leading to low fox numbers in 2009, hence a low predation pressure on goose nests. The end result of this was that the proportion of young in our catches at banding was fairly high.

We found 13 nests of American Golden Plovers and 12 of Baird′s Sandpipers, the most abundant nesting species in the Camp-1 area in 2009. We also monitored 2 nests of White-rumped Sandpipers, formerly one of the most abundant nesting species. Median lay dates of American Golden Plovers and Baird′s Sandpipers were similar to that of previous years. However, for White-rumped Sandpipers, the lay date was the latest observed over the last 4 years but this is based only on one nest. Re-sightings of previously banded Baird′s Sandpipers were similar to previous years with two banded birds re-sighted in the study area and one found nesting. No documented cases of nest predation or failure were recorded this year at Camp-1.

Daily incidental observations were recorded from 23 May to 17 July. We also recorded nests of Lapland Buntings, Sandhill Cranes, King Eiders, Long-tailed Ducks, Canada Geese, Red-throated Divers, Pacific Divers, Rock Ptarmigans, Arctic Terns and Peregrine Falcons. We found 127 nests of Lapland Buntings compared to 109 in 2008; their average clutch size was 5.9 eggs (vs. 5.8 in 2008) and nesting success was moderate (43% vs. 29% in 2008).

In addition to the monitoring of natural nests, 40 artificial nests were deployed during both early to mid-incubation and mid- to late-incubation to experimentally assess annual predation pressure. Daily nest survival estimates for artificial nests in 2009 were lower than in 2008 and 2007 but similar to 2006 or 2005.

G. Gauthier, M.-C. Cadieux, J. Lefebvre, J. Bety, D. Berteaux. 2009. Population study of Greater Snow Geese on Bylot and Ellesmere Islands (Nunavut) in 2009: a progress report.
http://www.cen.ulaval.ca/bylot/files/Report_Bylot_2009.pdf
Arctic WOLVES - 2009 Project Field Report. 2009.
http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf.
Accessed 16 Oct. 2011.

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

Field work was conducted on the Fosheim Peninsula on Ellesmere and the east part of Axel Heiberg Island from 30 July to 6 August 2009. An intensive study area, Eastwind Lake on Fosheim Peninsula, was the area where small mammal field work was done, which was 20 km from the camp.

We conducted small mammal snap-trapping in both mesic and wet meadow habitats for population monitoring. Only one Greenland Lemming was captured in mesic habitat with a total of 786 night-traps which gave a combined index of abundance for both habitats of 0.13 lemming/100 trap-nights.

The two known dens of Arctic Foxes showed no signs of activity this year. No new dens were found neither on the Fosheim Peninsula nor Axel Heiberg Island.

Between 31 July and 6 August, a total of only 17 individual broods were observed among 25 groups of geese while out on surveys with an average of 3.82 goslings per brood. This value is lower than the brood size observed during the previous two years on Ellesmere Island (4.3 and 4.4 young/brood in 2008 and 2007, respectively). Family groups were smaller and more scattered than those observed on Bylot Island. At the end of the field season, we had banded a total of 486 Greater Snow Geese, including 96 adult females marked with neck-collars. In addition, we recaptured 86 birds previously banded. Two of them were banded on Bylot Island in previous years (2001 and 1993) as well as 4 adults originally banded in southern Quebec (Cap Tourmente, 1997 and Ole-aux-Oies, 2008 and 2009) and one Lesser Snow Goose banded as a gosling on Baffin Island in 2004. Brood size was lower than the last two years. We do not have detailed observations at this site to explain the low productivity of geese, but we assume that reproduction was bad in this part of the High Arctic because spring migration was delayed by snow storms and a late spring.

J. Lefebvre, Ch. Marcotte, F. St-Pierre

Arctic WOLVES - 2009 Project Field Report. 2009.
http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2009.pdf.
Accessed 16 Oct. 2011.

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

There was hardly any snow fall in winter. As a result snow cover on flat areas was reduced to 50% on 31 May and melted off completely on 4 June (the former date is estimated from notes and photos, not determined by the analytical method usually used at Zackenberg; the data from this method has been delayed due to calibration problems with the cameras). Ice broke up on major rivers on 7 June. In general the season was early, with relatively wet and unstable summer.

Abundance of lemmings was evaluated as low with 49.1 winter nests/km^2 found.

Arctic Foxes were abundant and bred. Fox cubs died off rapidly this season.

The Gyrfalcon that has been seen several times was the only representative of birds of prey. No owls were recorded. The Long-tailed Skua was the only skua species; the birds bred with density of about 1 pairs/km^2. Ravens were common and nested outside of the census area.

Nest sites were available early and insects were abundant early as well. For some species, such as Dunlin, significant areas that have been usually used for breeding were significantly dryer this season. Possibly this was the reason for lower breeding numbers of this species.

Breeding success was very good in Dunlins that did breed, whereas Sanderlings and Ruddy Turnstones in particular, suffered harshly from predation. Predation pressure was very high during early incubation, whereas it dropped somewhat later on. This is likely to be related to the drop in numbers of live Arctic Fox pups.

Some snow storms in the end of July meant that at least some of late nests were abandoned.

Only few Barnacle Geese goslings were seen this season, and hardly any ducklings (of Common Eiders, King Eiders or Long-tailed Ducks).

Rock Ptarmigans were breeding with average density of 0.25 pairs/km^2.

J. Hansen

see also: Jensen, L.M. and Rasch, M. (eds.) 2010. Zackenberg Ecological Research Operations, 15th Annual Report, 2009. National Environmental Research Institute, Aarhus University, Denmark. 134 pp. http://www.zackenberg.dk/fileadmin/Resources/DMU/GEM/Zackenberg/Nye_Zac_files/ZERO_2010_web.pdf. Accessed 16 Oct. 2011.

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

As estimated, less than 5% of the study area was still covered with snow around 25 June 2009 which means that snow melt pattern in this season displayed an average situation observed during the recent decade.

The main figures obtained by trapping and counting of winter nests on transects testify an extremely low population level of the Greenland Lemming. The number of their winter nests found in 2009 (n=24) was not even half of the lowest number ever recorded since the start of monitoring in this area in 1988 and suggested densities of less than 0,1 lemming/ha. Instead of a density increase that could have been expected as a continuation of the slight recovery recorded in 2008, the population crashed from an intermediate level to a very deep low since summer 2008, giving additional support to the idea of fading cycles. The population peaked last time in 1998/1999 when >1000 winter nests were found in the subsequent summer.

This lemming situation was fully confirmed by the response of predators (Arctic Foxes, Ermines, Snowy Owls and Long-tailed Skuas), with complete failure of their reproduction success. Only one Arctic Fox cub was known still alive in early July, but it was not resighted later. Two winter nests of lemmings occupied by stoats is an absolute low figure, while the ratio of 1 occupied nest out of 12 is close to the ratios associated with high winter predation rates.

Two interactive interpretations of this situation can be suggested. First, snow characteristics that negatively impacted the Muskoxen (8 carcasses from winter and total absence of calves in the herds in summer) may have also affected lemmings. These could result from midwinter melt periods known to occur more often in recent years due to climate change. Second, an unusually high predation by Arctic Foxes could have depleted the lemming population in autumn 2008, so far as there was a high number of fox whelps still alive at the end of summer 2008. Their negative effect could have been increased if the establishment of snowpack was delayed, in October, since the under-snow environment in which lemmings built their winter nests is known to provide them with better protection.

The reason why lemming population apparently no longer experiences the typical cyclic pattern as recorded in 1988–1998, with three high peak years, deserves special attention. Our observations suggest a very poor reproductive output of Snowy Owls and Long-tailed Skuas since the last peak in 1998. Their repeated recruitment failures may soon make their populations endangered.

Very few Rock Ptarmigans were observed. At the same time breeding waders were present with usual densities. However, apparently only few chicks fledged.

B. Sittler

76. Ørsted Dal, northern Jameson Land, Greenland, Denmark (71°05′ N, 23°17′ W)

Ørsted Dal is the largest valley in Jameson Land, with its floor and lower slopes 4-7 km wide. Two study areas in the valley were selected from satellite images to represent different patterns of wet and dry tundra, one of 17.0 km^2 in the upper valley and one of 23.0 km^2 in the central part of the valley. The upper area has much wet fen vegetation and a large Primula Pond, with adjacent smaller ponds to the east. The central area has more mesic tundra and dry, almost barren lands. We applied the “rapid assessment” method there during the pre-breeding period for censuses of birds and covered the upper study area during 11-16 June and the central area during 19-25 June.

Snow melts earlier in Ørsted Dal than in adjacent parts of the Jameson Land, and snowmelt was particularly early in 2009. On a satellite image of 3 June the main part of the valley floor appeared largely snow free. The spring melt had apparently taken place already in the second half of May, and upon our arrival in the upper study area on 11 June, we estimated the snow cover of only 1% on the valley floor. Snowmelt in the central area was a little later – probably due to deeper snow, and snow cover was estimated at 5% upon our arrival on 19 June. No ice remained on the ponds except for the large and deep Primula Pond, which on 11 June only had open water along the shores, decreasing to about 70% ice cover when we left on 19 June. The snow cover on the mountain slopes

above the study areas was 10% in the upper valley and 20% in the central valley, but with considerably more snow on some of the north facing mountain slopes on the south side of the valley.

Most of the time it was windy with a strong and persistent easterly valley breeze that sometimes blew dust from the flood plain high into the air. When this cold and humid wind was not blowing from the ice-covered Greenland Sea, a slightly milder, dry wind was blowing from inland. The easterly wind often brought fog and sometimes light precipitation, but this rarely hampered our work. Our arrival with helicopter on 11 June occurred in the midst of a "blizzard", and on 22-23 June it was raining and blowing constantly for 24 hours during which the mountains above ca. 400 m were covered with fresh snow.

The south-western flat part of the upper valley study area had been flooded during the spring melt and held no breeding birds. The same was the case for the easternmost flat part of the central study area. The ecosystem phenology of the valley (plant growth and invertebrate emergence) appeared not to be particularly early, in spite of the early snowmelt. Purple Saxifrage and Snow Whitlow-grass were blooming extensively at our arrival in both areas, but very few other plants were flowering until some days into our stay. The upper valley, which we covered first, also had the earliest phenology – flowering of 11 common plants and emergence of two insects were 1-9 days later than at Zackenberg in the upper valley, and 3-15 days later in the central valley.

We did not see a single Greenland Lemming. Neither did we see any active summer burrows, although there were several holes, particularly in the upper valley. Similarly, the number of winter nests was very limited, and only few were clearly from the previous winter.

Arctic Foxes were commonly seen in Ørsted Dal in 2009, but there was no indication of their breeding. We saw one or a few almost every day and estimated that about four different individuals occurred in each of the two study areas. Two fox dens, each with 12-33 entrances, were found in both of the study areas, but with no sign of occupation.

A single light-phase Arctic Skua was seen in the upper study area on 16 and 17 June, and one in the central valley on 24 June. Long-tailed Skuas were common in both study areas in 2009, but no proof of breeding was obtained. We recorded 18-25 territories in the upper study area and 9-18 in the central study area. One or two Glaucous Gulls were seen almost daily in both study areas; their breeding colonies exist at the mouth of Ørsted Dal. A Gyrfalcon was seen once, on 11 June. A few old pellets from Snowy Owls were found, but no birds were present. Single Ravens were seen almost daily in both study areas.

Arrival and egg-laying in Barnacle Geese and Pink-footed Geese appears to have advanced as compared to previous decades, an advancement interpreted as the result of climate amelioration. A total of 107 nests of Pink-footed Geese were encountered in the two study areas, which is much more than anticipated. This considerable increase has happened in parallel with a tenfold increase in the entire Icelandic-Greenlandic population during the second half of the 20th century (Madsen et al. 1999, Mitchell 2008). Several nests were depredated by foxes during our stay, and we observed both robbing of single eggs and killing of incubating geese (followed by total loss of the clutch) – all unrelated to our presence. We found 14 depredated nests and seven killed adults. Three first pairs with 3, 4 and 4 goslings were encountered on 24 June. This date is among the earliest known in high-arctic Greenland, where hatching around this date has been recorded only once before.

A territorial male Rock Ptarmigan was recorded in the upper study area on 15 June. Otherwise, the remains of a total of eight Rock Ptarmigans were found in the upper study area and seven in the central study area. All of them consisted of winter plumage feathers, and most likely the birds had been depredated by foxes or Gyrfalcons during the previous winter or spring.

Common Ringed Plovers were common in both study areas, with 22-29 territories in the upper area and 27-30 in the central area. Sanderlings were common in both study areas and particularly so in the central area, with 35-40 territories against 14-16 in the upper area. Dunlin was the most numerous wader in both study areas with 88-94 territories in the upper study area and 38-44 in the central area. We recorded 13-15 Ruddy Turnstone territories in the upper study area and 12-13 in the central study area. The population of Ruddy Turnstone may have decreased since 1974. Red Knots were not particularly numerous in the study areas, since we only found six and 5-7 territories in the upper and the central study area, respectively. Totals of 20-29 and 7-9 Snow Bunting territories were recorded in the upper and central study areas, respectively.

With the densities found, it is likely that the total wader populations in Ørsted Dal and adjacent valleys – the area proposed as a new Ramsar site – number between 1,000 and 2,000 pairs. According to the aerial survey performed in July 2008 (Glahder et al. 2010), the proposed Ramsar site in and around Ørsted Dal held ca. 3,000 moulting Pink-footed Geese.

H. Meltofte, L. Dinesen

see also: H. Meltofte & L. Dinesen. 2010. Population densities of birds in Ørsted Dal, NE Greenland, 2009. Dansk Orn. Foren. Tidsskr. 104: 2, 59-72.

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

BIRD BREEDING CONDITIONS IN THE ARCTIC IN 2009

P.S. TOMKOVICH[1] & M.Y. SOLOVIEV[2]

[1] *Zoological Museum, Lomonosov Moscow State Univ., Bol. Nikitskaya St., 6, Moscow, 125009, Russia, e-mail: pst@zmmu.msu.ru*

[2] *Dept. of Vertebrate Zoology, Biological Faculty, Lomonosov Moscow State Univ., Moscow, 119991, Russia, e-mail: mikhail-soloviev@yandex.ru*

A review of conditions in the Arctic in summer 2009 is based on 76 contributions, published in the current issue of the "Arctic Birds" bulletin. This has represented a decline in the number or reports compared with the previous 5 years. A major part of the information came from survey forms filled in by respondents (n=37), although free-form text notes (n=23) and Internet publications (n=16) have still remained an important addition to questionnaires. However, information from the web was generally less consistent in describing breeding conditions for birds compared with other sources. We received 44 reports from Eurasia and 32 from the New World Arctic, including 18 contributions from Europe, 9 from Western Siberia, 4 from Taimyr, 3 from Yakutia, 10 from Chukotka and Wrangel Island, 13 from Alaska, 16 from Canada and 3 from Greenland. Therefore, spatial coverage of the Arctic region was uneven, which resulted in a variable validity of conclusions based on data from different regions.

Weather and other abiotic factors

Temperature is generally recognized as the most important abiotic factor in the Arctic, and impacts of other factors (e.g., precipitation, wind) on wildlife depend strongly on the temperature regime. Mean June air temperatures showed a moderate deviation from the long-term average across the major part of the Arctic in 2009 (Fig. 1 on page 63). June was colder than average in the north of Western Europe and Western Siberia, in the north of Chukotka, across the major part of Alaska and the Canadian Arctic, and in the eastern Greenland. A particularly cold region was located to the west of the Hudson Bay in Canada. June air temperatures were above average in Siberia from the eastern Taimyr to central parts of Yakutia, at the extreme north of the Canadian Arctic archipelago, in the western Greenland, Iceland, and locally in the central part of Arctic Canada.

Disagreement between the assessment of spring phenology by respondents and mean June air temperature anomalies was quite common in 2009. The reports of early spring tallied well with warm June only on Bylot Island in Canada. The evaluation of spring phenology as average was in agreement with close to average June temperatures in the extreme north-east of Europe, south-eastern Taimyr, Yakutia, and southern Chukotka. The reports of late spring were well supported by low June temperatures in the north of the Kola Peninsula, in the south of Alaska, in the north-west of Canada and in areas to the west and south of the Hudson Bay. Several reports of early spring were received from regions with prevailing low June temperatures in 2009. However, it was indicated in the reports from northern Chukotka and Prudhoe Bay region in Alaska that the spring had started there indeed early in May, but was followed then by a cold June. Similarly, the reports of average spring timing from western and central Alaska failed to match low June temperatures, because spring normally starts in May across these areas. According to information from the Zakenberg area in the eastern Greenland low accumulation of snow during the winter enabled early spring phenology in spite of a cold June. In contrast, high amounts of accumulated snow in the south and centre of the Canadian Arctic were responsible for a delayed spring even in areas with locally high June temperatures. This resulted in late spring across the major part of Arctic Canada.

Patterns of spatial distribution of air temperature anomalies changed notably in July compared with June (Fig. 2 on page 63). Conditions became more contrasting between adjacent large regions. High air temperatures prevailed in July across areas in western Siberia, Alaska and eastern Greenland that had been dominated by cold conditions in June. In contrast, areas of above average June temperatures in Yakutia and southern Chukotka in July merged into a single region of very cold conditions. The weather remained cold in July across western Canada from the south of the Hudson Bay to the Mackenzie River Delta, and temperature anomalies became even larger in parts of this vast area. Cold conditions also persisted on the Kola Peninsula. The vast area of warm weather included in July the eastern and northern Canadian Arctic and Greenland.

Information from respondents about summer weather was in better agreement with mean July temperatures compared with the spring assessments. Most of the few discrepancies can be easily explained. Reports of cold conditions on the central Yamal Peninsula resulted from short-term observations, coinciding with an adverse weather period. Information about a cold summer in the north-west of Alaska was more relevant to June than to July. A report of a warm summer in the Indigirka River area in Yakutia is a mystery, as July was apparently much colder than normal across wide area around this data point.

Apart from a late spring which was generally unfavourable for reproduction by birds, several adverse factors were reported. Pelting rains caused death of chicks of passerines on the Sem' Ostrovov archipelago on the Barents Sea near the Kola Peninsula. Rains resulted in various adverse impacts on southern Chukotka, ranging from death of chicks of passerines and waders to the abandonment of clutches by adult waders. High flood on several rivers of north-eastern Europe, in the Mackenzie River Delta and in the south-west of the Hudson Bay delayed the nesting of birds in floodplain habitats. Summer floods on rivers in the south of the Taimyr region and in central Alaska, probably, resulted in the loss of

bird clutches in floodplains, as did wind driven water run-up in the lower reaches of the Anadyr River. Snowfalls were reported in June in the north of Europe and on the Brooks Range in Alaska, and in the end of July in the eastern Greenland, although it is not likely that these events had notable impact on reproduction by birds.

Rodent abundance

A relation of nest success of tundra birds to abundance of rodents as an alternative prey for Arctic predators has been broadly recognized for decades, therefore we consider rodent abundance as one of the most important ecological factors when reviewing breeding conditions for birds.

Lemmings, the most typical Arctic rodents, occurred in low numbers almost everywhere in 2009 (Fig. 3 on page 64). Lemming numbers were reported high in three sites of the circumpolar region, the Indigirka River area in Yakutia, Wrangel Island and the Mackenzie River Delta in Canada. It is possible that in the case of the Mackenzie area the high frequency of lemming observations was a short-term result of spring thaw and habitat flooding. Lemmings were common at another site in the north of Yakutia. Thus their high abundance in the Indigirka area was probably not an occasional and local out-break. Lemmings were common in spring at one site in the north of western Siberia, but their numbers declined in the course of the season there.

Voles were common or numerous at several sites in the Subarctic, including northeastern Europe, western Siberia, the mountains of the southern Taimyr, at one site in the north of Yakutia, at one site in Chukotka, in the Yukon-Kuskokwim Delta and in central Alaska. However, the abundance of voles was declining in the central Alaska, at most sites in northeastern Europe, as well as in the White Sea region, where numbers were low already by the start of spring.

According to the available data, areas of low rodent abundance prevailed in 2009 across the Canadian Arctic to the east of the Mackenzie River, in the eastern Greenland, northeastern Fennoscandia and a major part of Chukotka.

Predators

Among all predators, mammalian and avian, the Arctic Fox apparently has the strongest influence on nest success of tundra birds. The abundance and breeding status of Arctic Foxes in the circumpolar region in 2009 was in general agreement with prevailing low rodent abundance (Fig. 1 on page 48). Breeding of Arctic Foxes was recorded at 42% of all sites where these animals were observed (14 of 33). Foxes occupied most dens and bred actively at an area of high lemming numbers in the Indigirka River area. The abundance of Arctic Foxes was below average in another lemming peak area, on Wrangel Island, but all pairs bred. Arctic Foxes were abundant and bred at Zakenberg in Greenland, where rodent

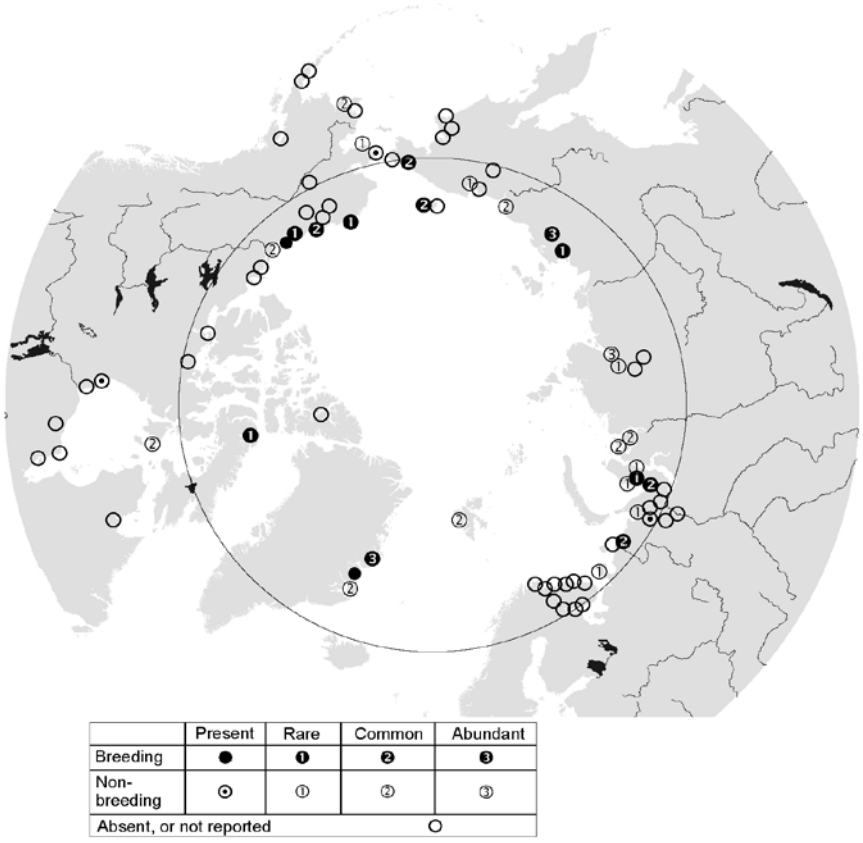

Figure 1. Abundance of Arctic Foxes in the Arctic in 2009

populations were at a low. Breeding of Arctic Foxes was not recorded in 2009 in Fennoscandia.

The Red Fox has more southerly distribution compared with the Arctic Fox. Similar to the previous year observations of Red Foxes were not made in Greenland, Yakutia and Taimyr among large Arctic regions. Information about Red Foxes appeared in 18 contributions in 2009, compared with 24 in 2008 and 13 in 2007.

Ermines were observed at 8 sites scattered across all Arctic regions with the exception of Alaska and Greenland; there was some indirect evidence of Ermine presence in Greenland at a very low density. We received 6 reports of observations of Least Weasels, equally distributed between Europe and Canada, and 4 reports of Minks (3 in Europe and 1 in West Siberia). It is interesting that minks were not reported in the Yukon-Kuskokwim River delta for the third year in a row, although they were numerous there in some of the previous years. Among large mammalian predators Brown Bears were the most frequently reported (*n*=13), followed by Wolverines (*n*=10) and Wolves (*n*=5, all in Siberia). Observations of Polar Bears, Otters and Martens were scarce. Dogs were predators at two sites in Siberia, where they wandered widely unattended around settlements. Polar Bear was reported catching eiders in a nesting colony on Svalbard, while Brown Bears were reported destroying nests of eagles on the Yamal Peninsula and a nest of Rough-legged Buzzards in the north-west of Chukotka.

Avian rodent-specialists are represented first and foremost by owls, which are dependent to the greatest extent on the abundance of rodents. Breeding of Snowy Owls was reported in 2009 on Wrangel Island, while non-breeders were observed at 13 sites (compared with 18 sites in 2008, including 6 sites with proved breeding). Non-breeding Snowy Owls occurred in small numbers at most sites, although they were found in high numbers during aerial surveys at one site in northern Alaska and reported common at another site of the same region (Fig. 2 on page 49). Short-eared Owls were reported from 24 sites (compared with 21 in 2008), of which they bred at 4 sites, including Wrangel Island. Distribution of observations of Short-eared Owls was relatively uniform, with somewhat increased frequency of records in Alaska and the absence of observations in Greenland and on the Kola Peninsula. Boreal species of owls were recorded at 4 southern sites.

Pomarine Skua is another avian predator, heavily dependent on rodents during reproduction. Breeding of Pomarine Skuas, in average numbers, was reported in 2009 from two sites in the Arctic with high abundance of lemmings, lower Indigirka River in Yakutia and Wrangel Island. Non-breeding Pomarine Skuas occurred in total at 10 sites in Siberia and 3 sites in Alaska, and they were common or numerous at a

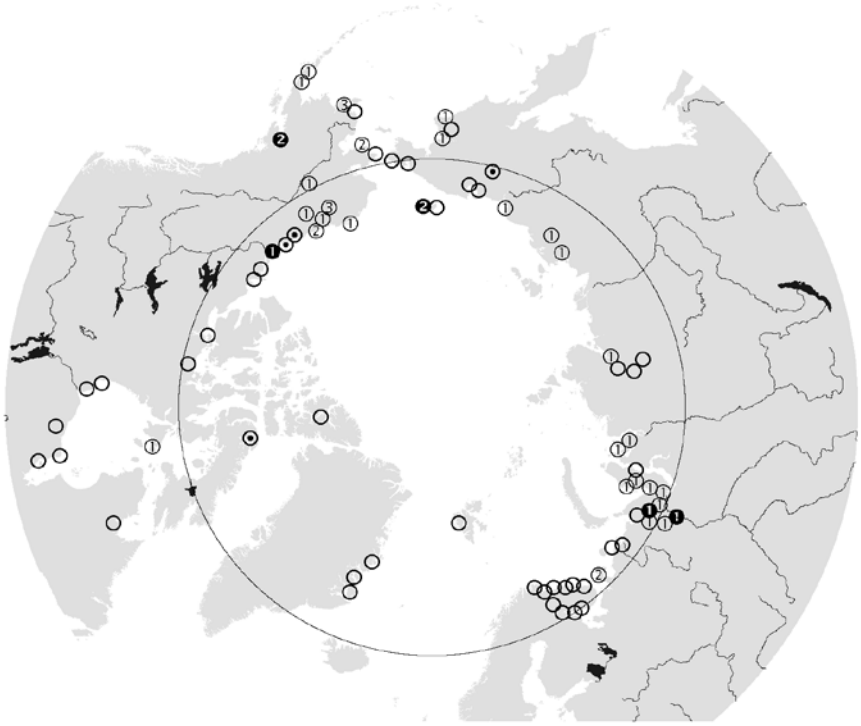

Figure 2. Abundance of owls in the Arctic in 2009

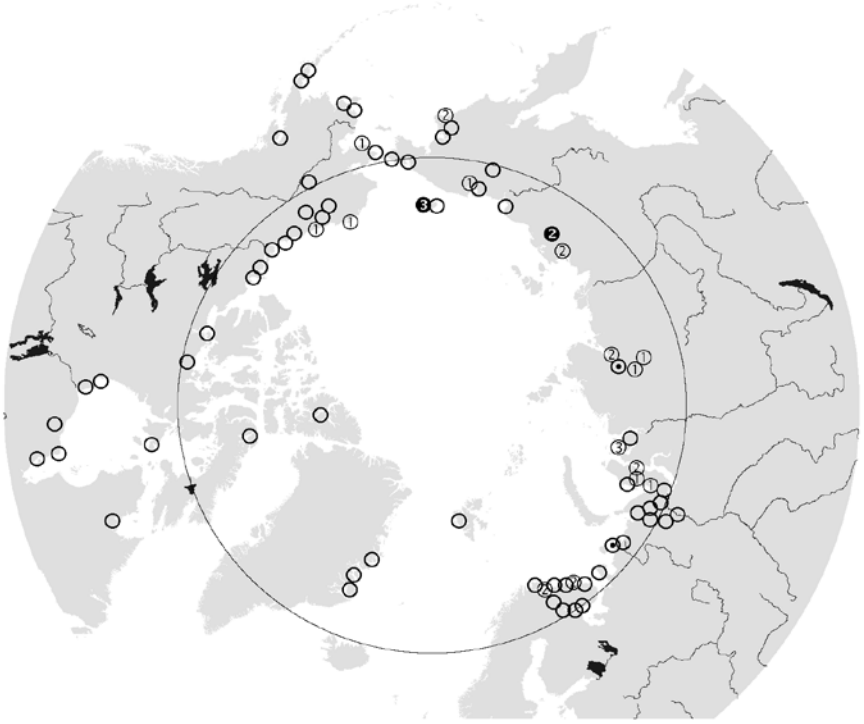

Figure 3. Abundance of Pomarine Skuas in the Arctic in 2009

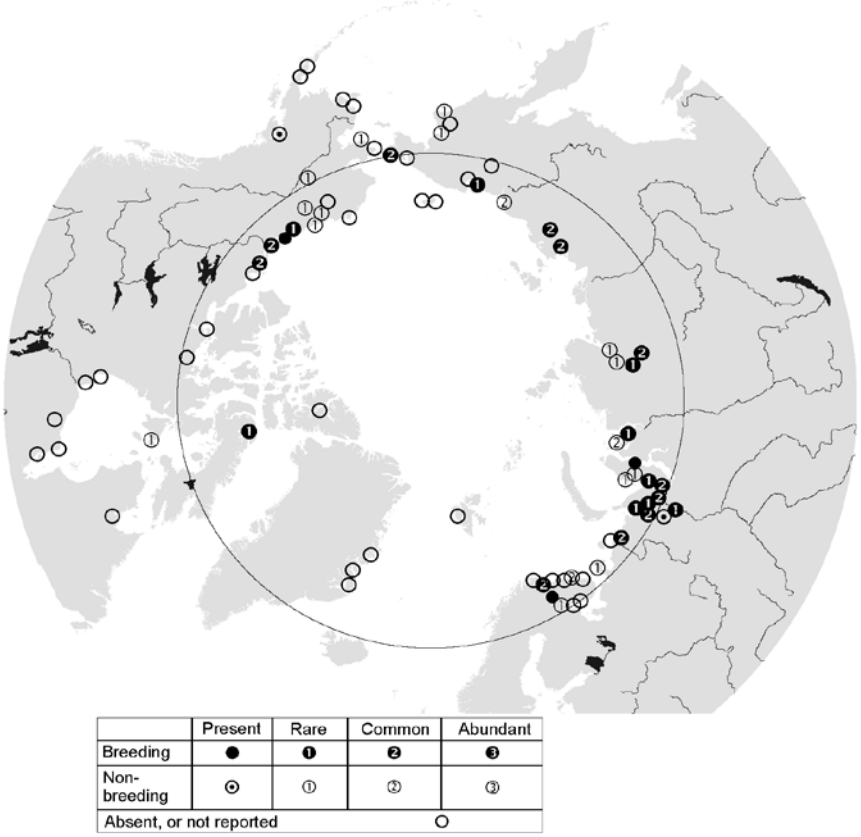

Figure 4. Abundance of Rough-legged Buzzards in the Arctic in 2009

half of Siberian sites (Fig. 3 on page 50), mostly on spring migration.

Distribution and numbers of breeding Rough-legged Buzzards were also determined to a great extent by the abundance of microtine rodents. Rough-legged Buzzards were recorded at 42 sites in 2009, including 11 sites in the European portion of the Arctic (bred at 7 sites), 19 sites in the Asian portion (bred at 10 sites) and 12 in the American portion (bred at 5 sites). Given an apparent absence in vast areas of a high abundance of rodents in 2009, the absence of observations of Rough-legged Buzzards as abundant breeders is not surprising. Observations of breeding buzzards were more common in the area near the border of Europe and Asia, (Fig. 4 on page 50), where several sites of average and high abundance of rodents concentrated. Rough-legged Buzzards were reported as common from three sites in another area of increased abundance of rodents, in Yakutia, and they, probably, bred everywhere there (observations at one of these sites were made too late in the season to confirm breeding).

Other species of avian predators (birds of prey, skuas and large gulls) can have adverse impact on breeding success of tundra birds. However, observations of particularly strong pressure by these birds were not made in 2009. A single notable exception was the specialization of White-tailed Sea Eagles on catching incubating Common Eiders in colonies on the White Sea.

Distribution and numbers of tundra birds

In several cases contributors to the survey provided interesting information about changes in distribution and dynamics in numbers of tundra birds. Most of the reported population changes were, probably, local or short-term, and it is not possible to make conclusions about trends without special studies or an in-depth analysis. Still, information on certain species has attracted attention, because it apparently indicated their declining status. Thus, numbers of breeding White-fronted Geese and Bean Geese have reduced dramatically since the 1980s in the common delta of the Chaun-Palyavaam rivers in the west of Chukotka. Another notable example was information about Arctic Terns. Breeding population of this species declined two-fold during one year on islands of the White Sea. Arctic Terns did not nest in 2009 farther north, on large islands of the Sem' Ostrovov archipelago in the Barents Sea. Arctic Terns had been common breeders in the 1970s-1980s on the Belyaka Spit in the north of the Chukotsky Peninsula, while a single nesting pair was found in the area in 2002, and breeding birds were not recorded there in 2009. Altogether, this data can indicate an unfavourable status of certain populations of Arctic Terns.

Using questionnaires is a convenient method of collecting information about grouse, because these birds are easily recorded even by non-ornithologists. As usual, Rock Ptarmigans were reported from fewer sites (15) than Willow

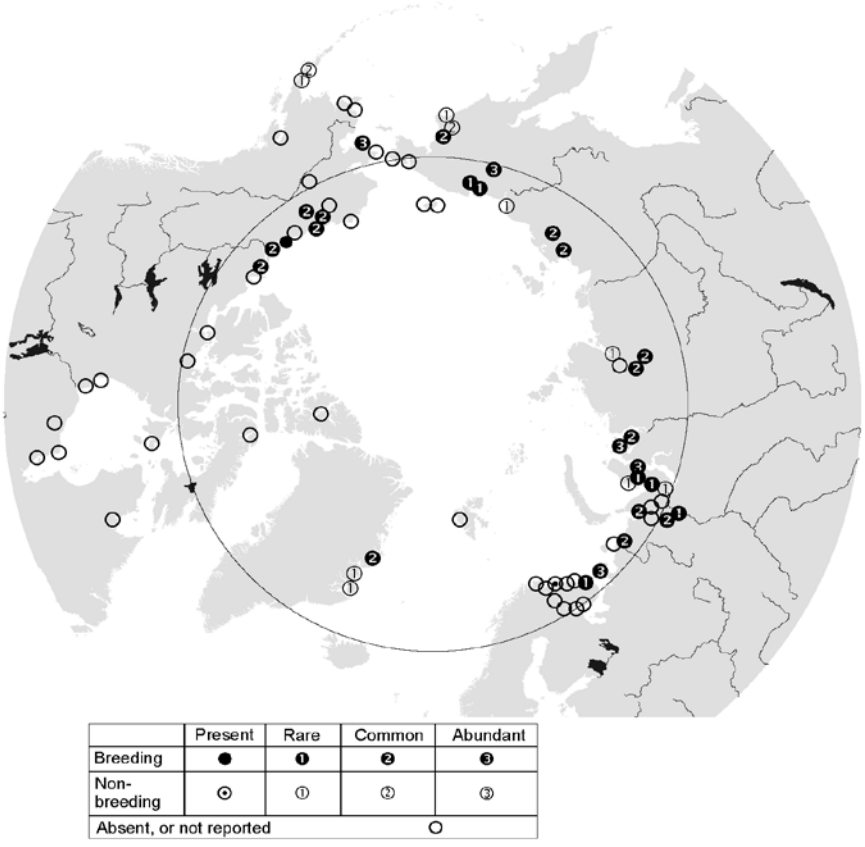

Figure 5. Abundance of grouse in the Arctic in 2009

Grouse (27); in 2008 respective figures were 17 and 33. Generally, patterns of grouse distribution changed little in 2009 (Fig. 5 on page 51) compared with 2008. The abundance of Rock Ptarmigans, probably, declined on the Kola Peninsula, because they were not reported as common from any sites there. Willow Grouse remained common to abundant to the east of the White Sea within Europe. Grouse were reported as abundant from two sites in the extreme north of Western Siberia, which indicated their population increase. The abundance of grouse, probably, declined in the eastern Taimyr, and did not change to any great extent in the north of Yakutia and Chukotka. However, the abundance of both Willow Grouse and Rock Ptarmigans apparently increased in the inner parts of Chukotka, and these birds became numerous at some sites. The abundance of grouse, probably, did not change to any great extent in Alaska, while information from the Hudson Bay area was not available in 2009. Rock Ptarmigans remained rare in the eastern Greenland, although their numbers increased in the Zakenberg area.

Breeding success

Circumpolar pattern of the breeding success of tundra birds in 2009 is shown on Figure 4 on page 64. Point values were assigned based on explicit evaluation by respondents or on clear evidence present in the submitted contributions. Patterns of breeding success were fairly uniform across several large regions of the Arctic. Reports of average breeding success were the most common in northeastern Europe and the north of Western Siberia. Reliable evaluations of breeding success were not available from the area of increased rodent abundance in Yakutia, although favourable breeding conditions were mentioned in one of three reports from there. High proportions of juveniles recorded on non-breeding grounds in Australia during northern winter 2009/2010 in all populations of waders breeding in Yakutia (see Minton *et al*. in the current issue) indicated high breeding success of birds in this Arctic region.

On Chukotka breeding by birds was generally unsuccessful due to extremely poor weather in July, with an exception of one site in the north-east where the success was high. High nest success of Snow Geese and other birds on Wrangel Island indicated favourable breeding conditions there.

Reports of high breeding success prevailed in Alaska, with an exception of the Barrow area, where efforts to control Arctic Fox population, undertaken during several years, eventually led to increased predation pressure on waders. Breeding success was low across a major part of the Canadian Arctic due to late spring phenology and heavy predation. The latter factor contributed to poor breeding success of birds in eastern Greenland.

Thus, reproductive success by birds was generally high in Alaska, Wrangel Island and Yakutia, moderate on the tundra of Europe and Western Siberia and low in the Canadian Arctic, Greenland and major part of Chukotka.

Comparison with predictions for 2009

Predictions of bird breeding performance in several Arctic regions for 2009 were made in the "Arctic Birds" bulletin No. 11 (pages 53-54) 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 successful reproduction of tundra birds in 2009 in northeastern Europe, Western Siberia, Yakutia, Chukotka, Wrangel Island and western Alaska. In contrast, low breeding success was expected on the Kola Peninsula in Europe, on Baffin Island in Canada and in northeastern Greenland. An ambiguous situation in 2008 in the north of Central Siberia, northern Alaska and a major part of the Canadian Arctic did not allow us to make predictions for these regions. Now we can check how the real situation in the Arctic matched these predictions.

A scenario of a decline in the abundance of microtine rodents after three-year period of their high numbers on the Kola Peninsula was fully confirmed. This should have caused increased pressure of abundant predators on breeding birds, but available data unfortunately were not sufficient to make any conclusions about bird breeding success in this region.

As predicted, the abundance of predators did not reach high values in north-eastern Europe and Western Siberia, while the rodent abundance increased at many sites in this region. Accordingly, breeding conditions were favourable in 2009 and resulted in generally moderate breeding success of ground-nesting birds.

Variable patterns of rodent and predator abundance across the Taimyr Peninsula in 2008 did not allow us to predict with confidence development of these parameters and bird breeding success in 2009. According to the scarce available data, Arctic Foxes over-wintered successfully in the east of the region, and had strong adverse impact on the reproduction by birds. In the mountains to the south of Taimyr the breeding success of birds was higher, as the abundance of voles was high there, while Arctic Foxes do not inhabit this area in summer.

From the low reproductive effort by Arctic Foxes across the major part of northern Yakutia in 2008 we expected their low abundance and a low pressure on tundra birds in 2009, which could also have been particularly aided by possible start of recovery of lemming populations. Indeed, lemming abundance increased, but the abundance of Arctic Foxes was still high at some sites. However, a sufficient abundance of rodents, probably, attenuated the pressure of predators on clutches and chicks of tundra birds and enabled their successful reproduction. Eventually, an expected successful breeding of birds in Yakutia occurred, although to a larger extent because of increased rodent abundance, rather than low numbers of Arctic Foxes.

We expected successful reproduction by birds on Chukotka in 2009 due to low abundance of Arctic Foxes and the possible start of growth of lemming populations. However,

the abundance of rodents remained low in the region, while predators were fairly common locally. Moreover, weather conditions were extremely unfavourable in mid summer, and this unpredictable situation had the most adverse impact on reproductive results of birds. The abundance of Arctic Foxes on Wrangel Island in 2009 was below average, as predicted, which combined with high lemming numbers resulted in high breeding success by birds.

From observed trends in the dynamics of microtine rodents and principal predators in the north of Alaska we expected in 2009 successful reproduction of birds in the west of the peninsula and a decline of breeding success in the Barrow area in the north, and this scenario was actually realized. Information from other areas in the north of Alaska was not sufficient to make any predictions. Birds bred successfully there in spite of the maintained low abundance of rodents and not quite favourable weather conditions in spring.

We expected crash of lemming populations in the extreme northwest of Canada and on Baffin and Bylot islands, followed by increased predation pressure on bird nests. Indeed, rodent abundance declined at all sites across the country, from which information became available, with an exception of the Mackenzie River Delta area where lemmings were abundant at least during short early spring period. As to the breeding success by birds it was low almost everywhere, in particular in the Hudson Bay area where adverse weather conditions made a strong contribution to breeding failure by birds. Low abundance and predation pressure of Arctic Foxes on bird nests on Bylot Island were, probably, due to a reduced winter survival of foxes (especially of juveniles).

The abundance of Arctic Foxes had increased by 2008 in eastern Greenland and we expected strong adverse impact of foxes on bird productivity in 2009. This was what actually happened.

Generally, the predictions for bird breeding success in summer 2009 were confirmed in most areas. Available information from several regions (Kola Peninsula, Taimyr, Wrangel Island, parts of the Canadian Arctic) was insufficient to make any conclusions, while an actual scenario on Chukotka was opposite to the expected. It is fair to say that in several cases expectations were confirmed due to impacts of unpredictable weather factors, rather than inferred regularities in predator-prey interactions.

Predictions for summer 2010

As previously, we tried to employ relationships between population dynamics of rodents, their predators and tundra birds, observed in some regions, for predicting the state of "prey-predator" systems in summer 2010 and evaluating the anticipated impact of the predators on bird breeding success.

Low stage of rodent populations will most probably continue on the Kola Peninsula and the White Sea area. Accordingly, the abundance of predators dependent on rodents should decline and predation pressure on land-nesting birds should become weaker. The situation was ambiguous regarding rodent abundance in north-eastern Europe. Certain increase in their numbers during winter 2008/2009 could be a low level population peak, in which case the abundance should drop to a low value in 2010 and predators will switch to clutches of tundra birds as a principal prey. However, the increase could have preceded a real peak in rodent abundance, in which case a reduced pressure of predators will allow birds to breed successfully.

The abundance of rodents increased in 2009 in the north of Western Siberia, but did not reach peak value anywhere. It is reasonable to assume further increase in rodent numbers and successful reproduction by birds. Information available from zonal tundra on Taimyr is scarce. However, an increase in lemming numbers should eventually occur after two seasons of generally low abundance. This scenario should result in high breeding success of birds in the region.

It is likely that peak values in the abundance of lemmings did not spread across the whole north of Yakutia in 2009, and an increase in rodent numbers can be still expected in some parts of this region. However, rodent-specialists bred successfully in summer 2009, which should lead to increased pressure of predators on bird nests and at best average breeding performance of the latter, even if rodent abundance will be locally high.

An increase in rodent populations can be expected on Chukotka in 2010 along with general improvement in bird breeding performance. However, the patterns of rodent and predator abundance will be variable across this mountainous region, and overall bird breeding success can be expected moderate.

High abundance of voles in 2009 should result in active breeding by predators in the Yukon-Kuskokwim Delta in Alaska. Accordingly, breeding success of birds should be average at best in 2010. An increase in the abundance of microtine rodents can be expected farther north, on the Seward Peninsula and in northern Alaska, which will, probably, enable successful reproduction by land-nesting birds.

The abundance of microtine rodents will, probably, drop to a low value in the west of the Canadian Arctic, while the pressure of predators on bird clutches will increase and result in low breeding success. Rodents were rare already in 2009 across the rest of the north of Canada and eastern Greenland, hence, the abundance of predators is not expected to be high and at least moderate breeding success of birds can be anticipated in 2010.

In summary, low breeding success by birds is expected in summer 2010 in western Canadian Arctic and, probably, in northeastern Europe. Relatively favourable conditions should prevail across the rest of the Arctic, where mostly moderate breeding success can be expected. A scenario of high breeding success is possible for Taimyr, a major part of the Canadian Arctic and eastern Greenland. As usual, adverse weather conditions can reduce the results of reproduction.

RECORD WADER BREEDING SUCCESS IN THE 2009 ARCTIC SUMMER

CLIVE MINTON[1], ROSALIND JESSOP[2], CHRIS HASSELL[3]

[1] *165 Dalgetty Road, Beaumaris, Victoria 3193, Australia, e-mail: mintons@ozemail.com.au*

[2] *Phillip Island Nature Park, PO Box 97, Cowes, Victoria, 3922, Australia, e-mail: rjessop@penguins.org.au*

[3] *PO Box 3089, Broome, Western Australia, 6735, Australia, e-mail: turnstone@wn.com.au*

Introduction

For many years the breeding success of waders from the Northern Hemisphere which spend the non-breeding season in Australia has been estimated from the percentage of juveniles in cannon-net catches. Since 2000 the results have been published each year in Arctic Birds (Minton et al. 2000, Minton et al. 2009).

Data is collected in two regions of Australia 3,000 km apart – north-west Australia (Broome and 80 Mile Beach) and south-east Australia (Victoria, the south-east of South Australia, and King Island, Tasmania). This paper covers information gathered during the 2009/2010 non-breeding season and relates to breeding success in the 2009 Northern Hemisphere summer.

Methods

Fieldwork operations were similar in 2009/2010 to those of previous years. Only cannon-net catches are included in the tabulated data because mist-net catches tend to show a different, higher, percentage of juveniles. In north-west Australia (NWA) the main sampling period – usually in the second half of November – was a little earlier than usual (1–20 November). This is not considered to be likely to affect the results as most juveniles have reached that region by the end of October. In south-east Australia (SEA) the usual range of sites was sampled, at similar dates to previous years.

Previous papers have detailed potential limitations of this method of measuring breeding success (Minton et al. 2005). However, in the absence of other proven techniques and established monitoring programs, it is the only comprehensive quantitative breeding success information available on arctic and Northern Hemisphere waders in the East Asian–Australasian Flyway at the present time. Given the comparability of sampling techniques used each year the data is considered to, at least, provide a good index of annual variations in breeding success.

* – scientific names are given in tables and in the *Index* on pages 58-62

Based on percentages of juveniles and deviation of this parameter from the species-specific long-term average we use a 6-grade scale (excellent, very good, good, average, poor, very poor) to evaluate breeding success in 2009. When the figure is close to average but not on it and not different enough to be called good or poor then we indicate which side of average it was (e.g., below average). Obviously where we put the assessments in brackets this is because either this year's sample is too small to be confident or because there isn't a previous history of data to compare with.

Results

Catch and percentage juvenile data collected in SEA and NWA in 2009/2010 are given in Tables 1 and 2. The results for this most recent year have also been added to the long term datasets from these two regions given in Tables 3 and 4.

Sampling in SEA was again satisfactory for six of the seven main study species. However, for the third successive year, sampling was inadequate on Red Knot*. No Red Knot at all were caught. This is mainly as a result of the large decrease in Red Knot population which has taken place over many years, with numbers now reduced to a level which makes them difficult to catch at all.

Good samples were obtained in NWA for all of the usual species except Little Curlew and Ruddy Turnstone. The latter is present only in relatively low numbers at Broome, and only in scattered birds in the parts of 80 Mile Beach which we visit, and therefore obtaining an adequate sample is difficult in most years. Little Curlew are also ephemeral in their numbers and location and in some years no suitable catching opportunity is available. As an offset, reasonable samples were obtained of four species which are not normally caught in sufficient numbers (Sharp-tailed Sandpiper, Broad-billed Sandpiper, Oriental Plover and Eastern Curlew).

It should be noted that the median (Table 1) and average (Tables 3 and 4) percentage juvenile data is calculated on a different basis to that used in previous years. The figures do not include the current year's data. This change has been made to facilitate a better comparison between the new results and those collected in earlier years.

Discussion

In Australian terms this was the "year we had to have"! It was a record good year for breeding success for most of the wader populations which spend the non-breeding season in NWA and a good/very good year for all but one of the species regularly monitored in SEA. This welcome turn-round from the disastrous breeding success experienced by most of these species in 2008 is especially welcome. Presumably it resulted from most of the factors affecting breeding success being favourable in 2009. There must have been a propitious combination of an early snowmelt, above average June/July temperatures, absence of late snowfalls and low predation levels.

South-east Australia (SEA)

In recent years Curlew Sandpiper seem to have fluctuated between particularly good and particularly bad breeding success. The 2009/2010 percentage of juveniles (27%) was the second highest in the last 12 years. Their current population is still well below previous levels and a more sustained period of good breeding success is required. In contrast Sharp-tailed Sandpiper returned to a high level of breeding success (32% juveniles), continuing a long series of eight good years which was only interrupted by the poor performance of 2008 (3.6%). Bar-tailed Godwit (31%) also continued their recent run of six consecutive above-average breeding years. Ruddy Turnstone and Sanderling (both 19%) showed a welcome return to good breeding success after a disastrous performance in 2008.

It is a pity that no data could be collected on Red Knot. However there was a marked increase in the population counted in the main Victorian habitat (Corner Inlet) and it is probable that 2009 was a good breeding season for this species.

Red-necked Stint again had a breeding outcome slightly below the long-term average. It is now seven years since Red-necked Stint had an above average breeding performance.

North-west Australia (NWA)

It was a wonderful experience to be catching juvenile birds in such large numbers during our main sampling period in NWA in the 2009/2010 season. Almost all species which are regularly sampled had a good/very good/excellent breeding outcome in 2009. For Curlew Sandpiper (35%), Great Knot (41%), Bar-tailed Godwit (28%) and Greater Sand Plover (35%) breeding success was the highest recorded in 12 years of monitoring in NWA. In Red Knot (52%) it was the second highest figure ever. Of the main study species only Red-necked Stint (17%) had an outcome below (only slightly) the long-term average.

The high productivity of Great Knot and Bar-tailed Godwit is particularly welcome given the huge losses of feeding habitat these species have experienced in their main migratory stopover regions of the Yellow Sea. One might speculate whether the high breeding success is an indication of density dependent factors coming into play. However this seems unlikely on the arctic breeding grounds. Considering the high breeding success values for other species in 2009 it seems more likely an effect of favourable climatic and predation conditions in their breeding areas.

It is interesting that Broad-billed Sandpiper (11%) and Sanderling (10%), the two species most similar in size to Red-necked Stint, also appear to have had relatively poor breeding outcomes in 2009. In contrast Eastern Curlew, which are rarely sampled, had 15% juveniles – unexpectedly high for a large species and well above the occasional data collected on this species in previous years.

Sharp-tailed Sandpiper do not normally occur in sufficient numbers on the shores in NWA for their breeding success to be monitored annually. However unusually large numbers were present on the shores in November 2009 and these proved to be mostly adults. Only 5.7% were juveniles which compares with a much higher figure (32%) for Sharp-tailed Sandpipers sampled in SEA. It is also interesting to compare the 5.7% figure from cannon-netted birds in NWA with the figure for 72 Sharp-tailed Sandpipers mist-netted (58%) at the inland freshwater site of Lake Eda, near Broome.

Conclusion

There is no doubt that the 2009 breeding season was a very good one – in several cases a record one – for most of the wader populations which spend the non-breeding season in SEA and NWA. Quite why Red-necked Stint seem to have had a below average outcome in so many recent years, in both regions, is not apparent. Breeding success in 2009 appears to have been especially good for most species nesting in the high arctic but still also generally good for many of those nesting in the lower latitudes.

Percentage juvenile monitoring in SEA and NWA will continue in the 2010/2011 season. However the main monitoring period in NWA will move from November to the late February/early March period (for non-wader reasons). This is still within the specified 1 November to mid-March sampling period, when adult and juvenile populations are considered stable. The ongoing monitoring of breeding productivity is fundamental to understanding reasons for population changes recorded in the long-term wader count programs.

Acknowledgements

Enormous thanks are due to those in the Victorian Wader Study Group, and those who have taken part in north-west Australia wader expeditions and other catching activities there, for all their hard work which enabled good samples of the main wader species to be caught in the 2009/2010 season. Their preparedness to go into the field regularly, often at some inconvenience and under difficult climatic conditions, is fundamental to our achieving the required minimum samples of key monitoring species each year.

References

Minton, C., Jessop, R. & Hassell, C. 2000. 1999 Arctic breeding success from Australian perspective. – Arctic Birds 2: 19-20.

Minton, C., Jessop, R., Collins, P. & Gosbell, K. 2005. Monitoring wader breeding productivity by the proportion of first year birds in wader populations in S. E. Australian non-breeding areas. – Status and Conservation of Shorebirds in East Asian-Australasian Flyway. Proceedings of the Australian Shorebirds Conference, Canberra, Dec. 2003. IWSG Special Publication 17 and Wetlands International Global Series 18. Pp. 73-85.

Minton, C., Jessop, R. & Hassell, C. 2009. Wader breeding success in the 2008 Arctic summer, based on juvenile ratios of birds which spend the non-breeding season in Australia. – Arctic Birds 11: 58-62.

Table 1. Percentage of juvenile/first year waders in cannon-net catches in south-east Australia in 2009/2010

Species	No. of catches		Total caught	Juv./1st year		Long term median* % juvenile (years)	Assessment of 2009 breeding success
	Large (>50)	Small (<50)		n	%		
Red-necked Stint *Calidris ruficollis*	7	4	1856	227	**12.2**	13.8 (31)	Average
Curlew Sandpiper *C. ferruginea*	2	4	302	82	**27.2**	10.0 (30)	Very good
Bar-tailed Godwit *Limosa lapponica*	1	1	184	57	**31.0**	18.6 (20)	Very good
Red Knot *C. canutus*	0	0	0	0	(-)	52.1 (17)	?
Ruddy Turnstone *Arenaria interpres*	0	15	336	62	**18.5**	9.3 (19)	Good
Sanderling *C. alba*	1	2	366	71	**19.4**	12.4 (18)	Good
Sharp-tailed Sandpiper *C. acuminata*	2	3	374	120	**32.1**	11.1 (28)	Very 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 22 March are included.

* Does **not** include the 2009/2010 figures

Table 2. Percentage of juvenile/first year waders in cannon-net catches in north-west Australia in 2009/2010

Species	No. of catches		Total caught	Juv./1st year		Assessment of 2009 breeding success
	Large (>50)	Small (<50)		n	(%)	
Great Knot *Calidris tenuirostris*	4	8	927	381	**41.1**	Excellent
Bar-tailed Godwit *Limosa lapponica*	2	9	232	65	**28.0**	Very good
Red-necked Stint *C. ruficollis*	2	8	1183	198	**16.7**	Average
Red Knot *C. canutus*	2	9	296	153	**51.7**	Excellent
Curlew Sandpiper *C. ferruginea*	2	11	293	102	**34.8**	Very good
Ruddy Turnstone *Arenaria interpres*	0	3	9	5	**(55.5)**	(? Excellent)
Sanderling *C. alba*	1	3	156	16	**10.3**	Below average
Broadbilled Sandpiper *Limicola falcinellus*	1	2	53	8	**10.9**	(? Below average)
Sharp-tailed Sandpiper *C. acuminata*	1	7	263	15	**5.7**	Poor
Non-Arctic northern migrants						
Greater Sand Plover *Charadrius leschenaultii*	4	8	489	170	**34.8**	Very good
Terek Sandpiper *Xenus cinereus*	0	4	122	23	**18.8**	Good
Grey-tailed Tattler *Heteroscelus brevipes*	0	9	99	24	**24.2**	Good
Common Greenshank *Tringa nebularia*	0	1	21	1	**(4.8)**	(? Poor)
Whimbrel *Numenius phaeopus*	0	1	25	1	**(4.0)**	(? Poor)
Oriental Plover *Charadrius veredus*	0	4	26	4	**7.5**	(? Poor)
Eastern Curlew *Numerius madagascarensis*	0	2	26	4	**15.4**	(? 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 2009/2010

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/2010	*Average (11 yrs)*
Ruddy Turnstone *Arenaria interpres*	6.2	29	10	9.3	17	6.7	12	28	1.3	19	0.7	19	*12.7*
Red-necked Stint *Calidris ruficollis*	32	23	13	35	13	23	10	7.4	14	10	15	12	*17.5*
Curlew Sandpiper *C. ferruginea*	4.1	20	6.8	27	15	15	22	27	4.9	33	10	27	*16.8*
Sharp-tailed Sandpiper *C. acuminata*	11	10	16	7.9	20	39	42	27	12	20	3.6	32	*18.9*
Sanderling *C. alba*	10	13	2.9	10	43	2.7	16	62	0.5	14	2.9	19	*16.1*
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	29	31	*24.6*

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 11 years) exclude figures in brackets (small samples) and **exclude** 2009/2010 figures

Table 4. Percentage of first year birds in wader catches in north-west Australia 1998/1999 to 2009/2010

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/2010	*Average (11 yrs)*
Red-necked Stint *Calidris ruficollis*	26	46	15	17	41	10	13	20	21	20	10	17	*21.7*
Curlew Sandpiper *C. ferruginea*	9.3	22	11	19	15	7.4	21	37	11	29	10	35	*17.5*
Great Knot *C. tenuirostris*	2.4	4.8	18	5.2	17	16	3.2	12	9.2	12	6	41	*9.6*
Red Knot *C. canutus*	3.3	14	9.6	5.4	32	3.2	(12)	57	11	23	12	52	*17.0*
Bar-tailed Godwit *Limosa lapponica*	2.0	10	4.8	15	13	9.0	6.7	11	8.5	8	4	28	*8.4*
Non-Arctic northern migrants													
Greater Sand Plover *Charadrius leschenaultii*	25	33	22	13	32	24	21	9.5	21	27	27	35	*23.2*
Terek Sandpiper *Xenus cinereus*	12	(0)	8.5	12	11	19	14	13	11	13	15	19	*12.9*
Grey-tailed Tattler *Heteroscelus brevipes*	26	(44)	17	17	9.0	14	11	15	28	25	38	24	*20.0*

All birds cannon-netted in the period 1 November to mid-March. Averages (for last 11 years) exclude figures in brackets (small samples) and **exclude** 2009/2010 figures

ARCTIC SHOREBIRD DEMOGRAPHICS NETWORK: OVERVIEW

Project Goals:

Recent shorebird trend analyses indicate that many North American shorebird species are declining, but we do not know why. The overall goal of the Arctic Shorebird Demographics Network is to conduct demographic analyses for several target species that will help determine factors limiting population size. The Network will measure demographic rates such as adult and juvenile survival, productivity, and other demographic parameters at various life history stages. In addition, the power of the Network will substantially increase our ability to address a wide variety of other science and conservation goals that can only be studied at a regional or global level, such as migratory connectivity studies that require work across the entire range of a species.

A Demographic Approach

The existing large scale monitoring efforts developed under the Program for Regional and International Shorebird Monitoring (PRISM) are aimed at providing population size and trend estimates, along with accompanying environmental data to interpret the estimates. However, the current PRISM program cannot provide information on the mechanisms behind declines, and when shorebird population sizes are likely to be limited (e.g., breeding, migration, non-breeding). Poor reproductive success or low juvenile or adult survival may be limiting populations, but population trends alone are not sufficient to determine which is most important to address to support population growth. Determining when shorebird populations are limited will have significant impacts on future conservation actions to address population declines.

Network Participants

The network is open to participation by any collaborators who are actively conducting arctic shorebird research and can include implementation of the protocols designed by the group at their study sites. In addition, the Network will rely on partners across the range of the target species for resighting efforts of banded birds. Breeding season study sites span the entire Alaskan and Canadian arctic (Figure), and include study sites at Nome, Cape Krusenstern, Barrow, the Ikpikpuk River, the Colville River, Prudhoe Bay, and the Canning River, in Alaska; as well as at the Mackenzie River Delta, East Bay, Bylot Island, and Churchill in Canada.

Pilot Year Completed

The group developed detailed field protocols to investigate demographic parameters as well as environmental variables at all of the study sites and implemented them in 2010. A second version of the field protocols is nearing completion and will be finalized in May 2011. A pilot study year was completed in 2010, including intensive banding efforts for our target species, Semipalmated Sandpiper and Dunlin at most sites, and Western Sandpiper, Pectoral Sandpiper, Whimbrel, and Semipalmated Plover at several sites. In addition, as part of the Arctic Landscape Conservation Cooperative, we collected weather data, invertebrate abundance samples, and other environmental data to help determine causes of variations in nesting success over time.

Funding for site support has been accomplished for the 2011 field season but continued funding will be critical to successfully implement the project over the next three years. Multiple study years are needed to accurately measure survivorship of banded individuals, and also because significant year to year variation occurs in the demographic rates of shorebirds. We anticipate that the network will provide data critical to conservation planning for shorebirds through it's planned completion in four years.

Lead Organizational Roles:

Stephen Brown at Manomet Center for Conservation Sciences is the overall coordinator for the project, and supports group planning, communication, group funding efforts. Rick Lanctot of USFWS is the Science Coordinator, and leads the design and development of field protocols and data analysis. Brett Sandercock of Kansas State University leads the group on study design issues and will lead the demographic analyses. River Gates works for both Manomet and USFWS on protocol development and Network coordination. Joe Liebezeit of the Wildlife Conservation Society, Paul Smith of Environment Canada, and Brooke Hill of the U.S. Fish and Wildlife Service serve on the protocol development committee.

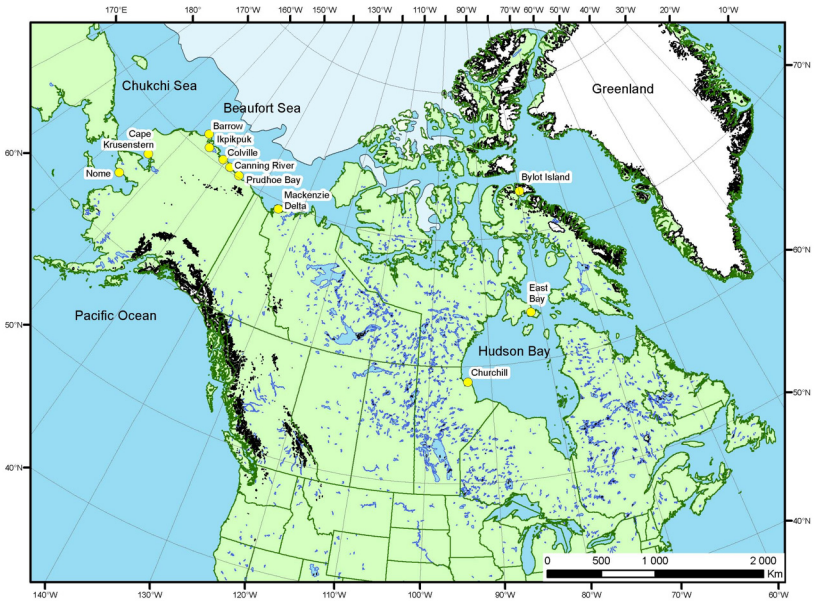

Figure. Study sites in the Arctic Shorebird Demographics Network during the 2010 and/or 2011 field season.

INDEX OF SCIENTIFIC NAMES

MAP COLLECTION

Four maps below (pages 63–64) are provided to illustrate various aspects of bird breeding conditions in the Arctic in 2009.

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 2009 from the mean June/July air temperature averaged for the period 1994-2003. This deviation indicates whether the respective month in 2009 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, although 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.

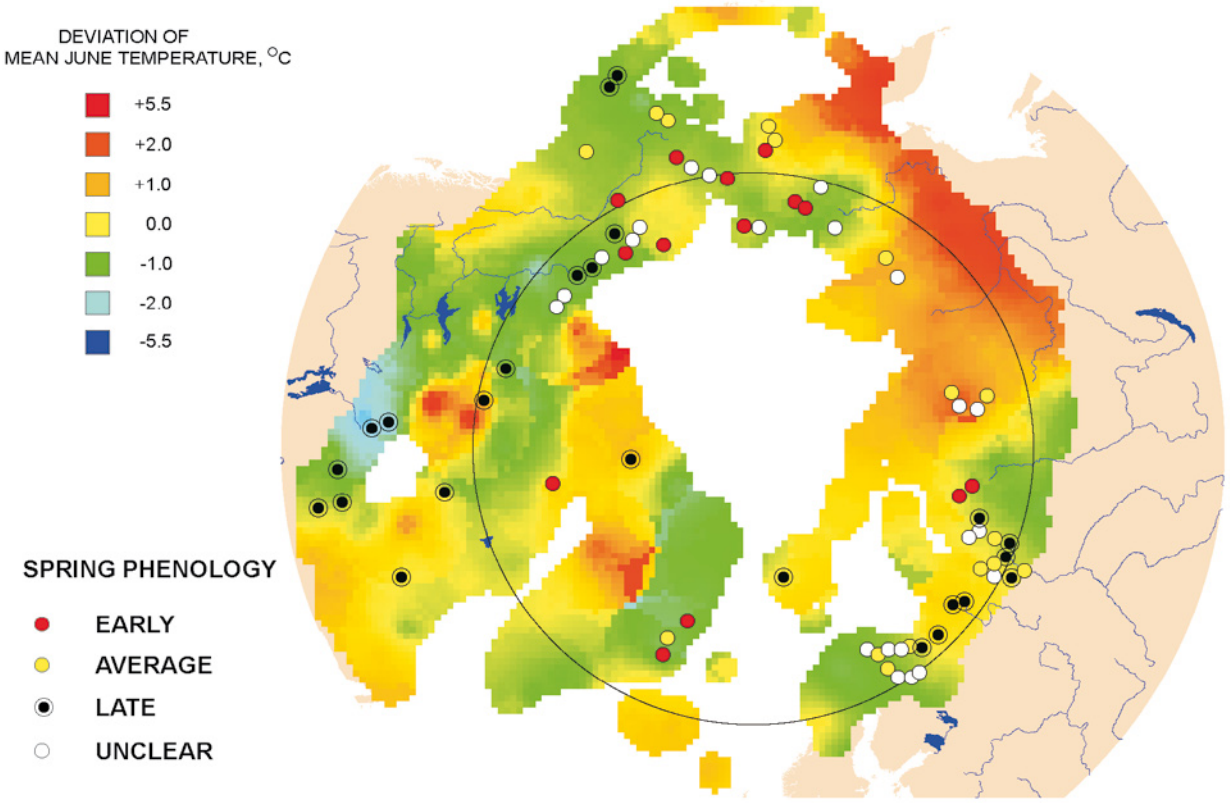

Figure 1. June air temperature and phenological characteristics of spring in the Arctic in 2009. See text above for legend

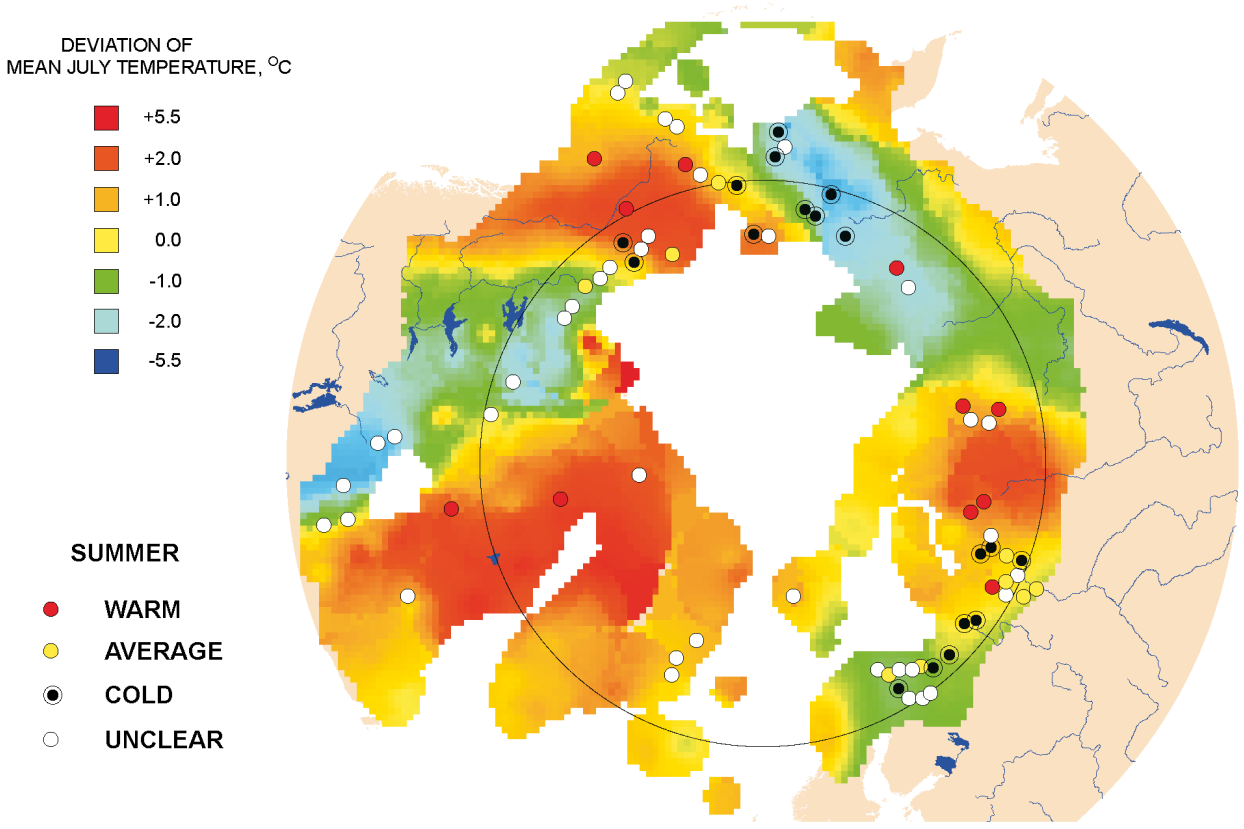

Figure 2. July air temperature and phenological characteristics of summer in the Arctic in 2009

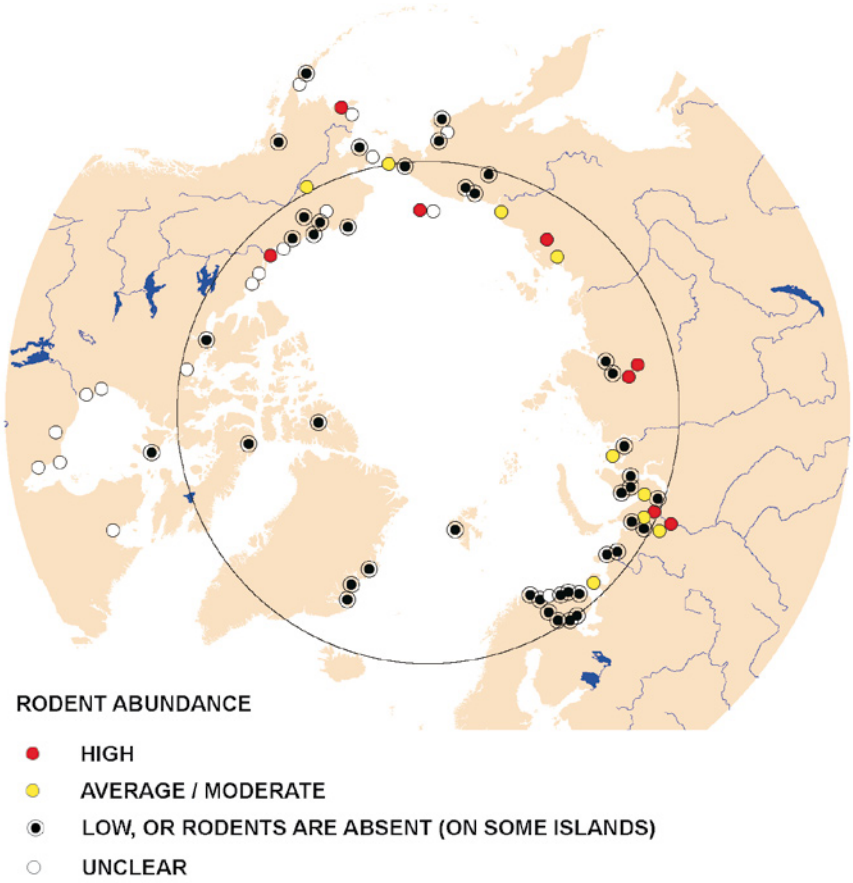

Figure 3. Rodent abundance in the Arctic in 2009

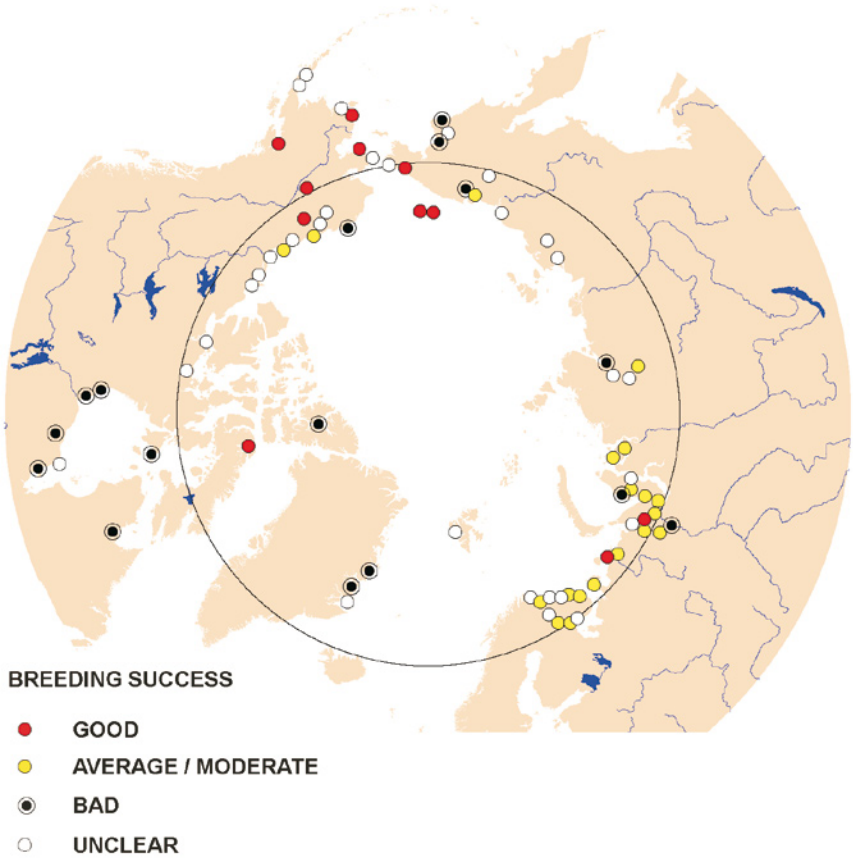

Figure 4. Bird breeding success in the Arctic in 2009