

ARCTIC BIRDS

Bulletin of the International Breeding Conditions Survey

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compiled by Mikhail Soloviev and Pavel Tomkovich

A WORD FROM THE COMPILERS

The focus of this issue of the bulletin of the Arctic Birds Breeding Conditions Survey (ABBCS) is the reproductive performance of birds in relation to their environment in the Arctic and Subarctic in summer 2008. Arctic terrestrial ecosystems are remarkable for pronounced fluctuations in the abundance and/or productivity at their high trophic levels, in birds and mammals. These unstable systems could have been expected to show quick response to increasing temperatures and precipitation across most of the Arctic during the recent decades. However, so far, the results of observations on the impacts of climate change in terrestrial ecosystems are less alarming compared with the melting of sea-ice and impacts on marine animals (<http://www.arctic.noaa.gov/reportcard>). Apparently, this is partly due to a limited current understanding of the response of Arctic wildlife and ecosystems to both natural and human-induced changes. Several activities implemented in the framework of the International Polar Year 2007–2008 were aimed at filling this gap, for example Arctic Wildlife Observatories Linking Vulnerable EcoSystems (ArcticWOLVES). This project builds a network of circumpolar wildlife observatories in order to assess the current state of Arctic terrestrial food webs over a large geographical range (<http://www.cen.ulaval.ca/arctic-wolves/index.html>). This and similar initiatives made an important contribution to the geographic coverage by ABBCS in 2008, and we anticipate that coordinated monitoring in future will help to obtain a better picture of ecosystem processes developing at a pan-Arctic scale.

Some population parameters of Arctic animals can be currently evaluated only outside of the Arctic. A traditional contribution to the “Arctic Birds” bulletin was made by Australian colleagues, who measured juvenile proportions in wader populations during the non-breed-

ing season with view of making inference about wader breeding success (see the paper by Clive Minton et al. in this issue). This is probably one of the most elaborate examples of such an assessment and has no analogues on other flyways.

Further efforts were made in 2009 to increase the effectiveness of the ABBCS as an information resource. The survey websites (<http://www.arcticbirds.net> and <http://www.arcticbirds.ru/>) were updated with information on distribution, abundance and breeding status of selected Arctic predators and prey species (owls, Arctic Fox, Rough-legged Buzzard, Pomarine Skua and grouse) for the years 1988–2008. All pages are available in both the English and Russian languages. A system allowing on-line access to the database on individual species of birds (available at <http://arctic.ss.msu.ru/birdspec>) was re-designed with view of increasing the functionality of interactive maps. These maps now maintain a selection of sites during zooming and panning; a number of other minor changes was also made. This functionality is pending further improvement, and we would appreciate a feed-back from users on features most urgently required. We would like to use the opportunity to remind that on-line information on individual species of birds is entered exclusively from submitted questionnaires (Part 2), and encourage contributors to fill the latter. It is also advisable to use the current set of survey forms (updated in March 2009) which, in the first place, will make submitting information easier for respondents.

In the meantime the first reports of bird breeding conditions for season 2009 has been published to the ABBCS websites. Many more observation points are needed to discover patterns in bird breeding success and to relate them to observed environmental factors. However, in due time this process of long-term data accumulation should enable us to make legitimate predictions about response of Arctic bird communities to the current global change.

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

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

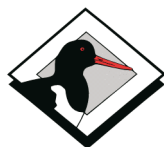
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*J. R. Wilson provided invaluable help by improving the English.
Bird drawing on page 54 by E.A. Koblik.*

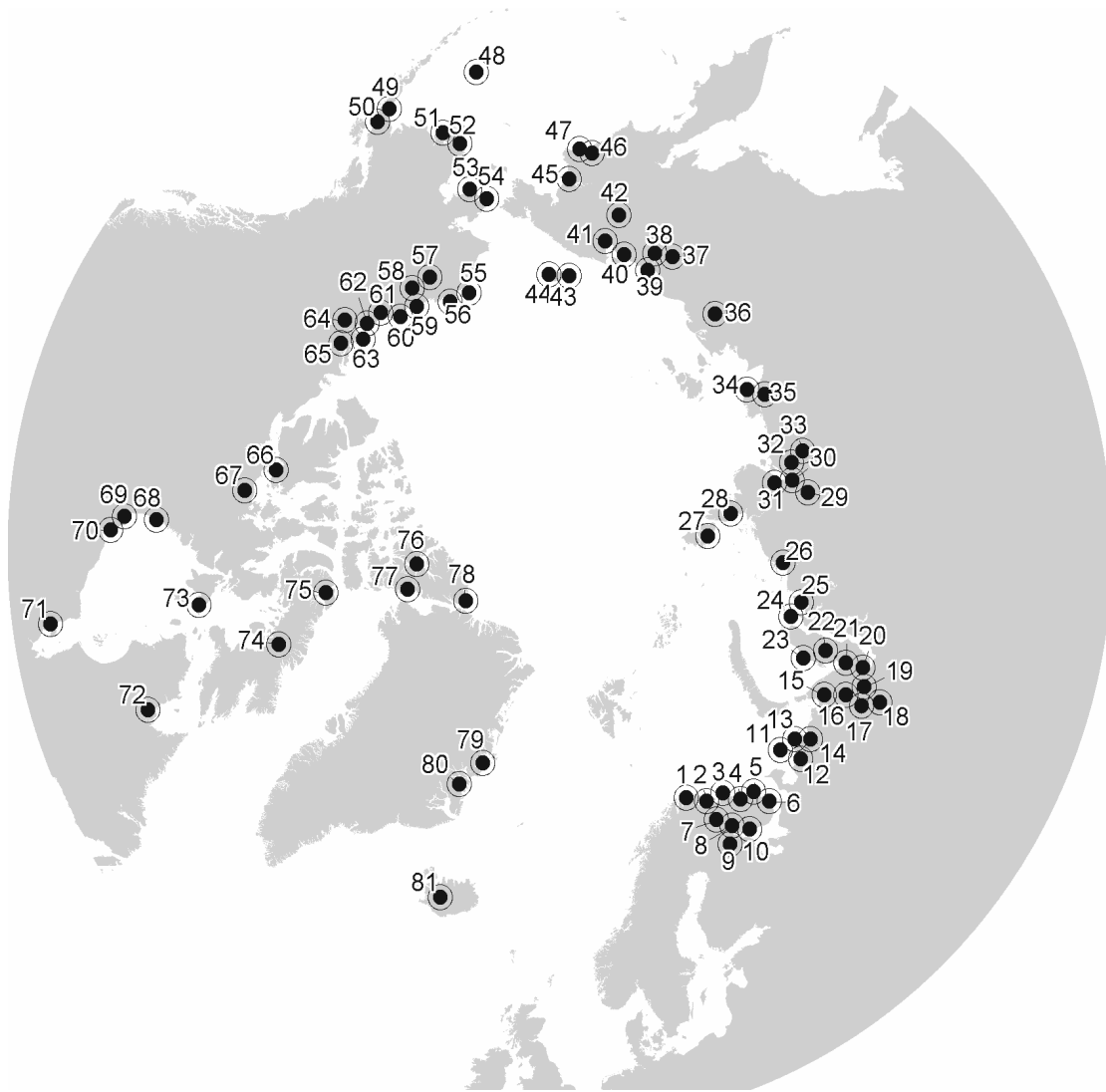


Figure. Arctic localities from which reports about bird breeding conditions in 2008 were provided

LOCALITY REPORTS

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

Populations of the Norway Lemming*, Grey-sided Vole and Tundra Vole that had the distinct peak of a 5-year cycle in 2007 crashed during early spring in 2008. Live lemmings were still seen on the snow surface in April and May, but the populations of both voles and lemmings had reached a bottom level when trapping was conducted at the end of June.

The ecological investigation on Varanger Peninsula is focused on food web dynamics, in particular, on the relationship between small rodent prey and their predators. Snowy Owls were present as late as early April 2008, thereafter they were not seen. However, Snowy Owls were clearly fewer than at the same season in 2007, and they did not form pairs. Surveys for nests of Rough-legged Buzzards and Long-tailed

* – scientific names are given in the *Index* on pages 63-66

Skuas also showed a dramatic drop in numbers of territorial and breeding pairs. Only two nests of Long-tailed Skuas were found (ca. 0.1 pairs/km²) compared to high breeding densities the year before (ca. 1 breeding pair/km²). Only two nests of Rough-legged Buzzards were found compared to 5 nests in 2007. Seven pairs of Arctic Foxes were found to have established on dens in April, but only two of them produced litters. 2008 appeared to be a very poor year for the Willow Grouse as very few appeared to produce clutches.

R.A. Ims

2. Gorodetsky Cape, Rybachy Peninsula, Kola Peninsula, Russia (69°36' N, 32°57' E)

Based on observations on 9–20 June, the season was late and cold. Air temperatures did not exceed +6°C in this period. The weather was dull and windy, with northerly winds reaching 15–20 m/s. There were fogs, frequent drizzling and pelting rains with thunderstorms.

Counts of nesting seabirds were conducted in a colony on the cape. Numbers of all species (Black-legged Kittiwake, Common Guillemots and Bronnich's Guillemots, Great Cormorant) declined slightly compared with 2007. The low breeding success of Black-legged Kittiwakes was clearly due to the lack of food. Hence, weather and feeding conditions were not favourable for the breeding of seabirds.

Lemmings were not recorded. Voles were seen, but we could not judge their abundance. Mammalian predators were not recorded. Rough-legged Buzzards, skuas and Ravens occurred in average numbers and nested. We recorded White-tailed Sea Eagles and Gyrfalcons. Owls were not observed. Willow Grouse were common, but nesting was not confirmed.

Human impacts declined considerably compared with the previous years. Contrary to the previous years poaching fishermen were absent from the area, and there were only small numbers of fishing boats in the nearby sea. Herds of reindeers were recorded in the area less often than earlier.

A.V. Ezhov

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

The season 2008 was apparently late, and during the period of observations from 3 to 20 July cold, with frequent rains and fogs. Mean daily air temperatures ranged from +4–12°C.

Populations of the Norway Lemming and voles peaked. Lemmings were encountered at all times and everywhere, while voles were less abundant.

We recorded Red Foxes in tundra, and observed an American Mink with three cubs. Nesting Rough-legged Buzzards were numerous, and a White-tailed Sea Eagle was recorded. Owls were not seen.

A total count of inhabited nests of Black-legged Kittiwakes indicated a decline in their numbers by 17.5% compared with 2007. Numbers declined by 6.5% in Bronnich's Guillemots and by 23.7% in Common Guillemots compared with 2007.

Skuas bred successfully, and we found 2 nests of Arctic Skuas with 2 chicks each and a nest of Long-tailed Skuas with 2 eggs at an advanced stage of incubation. Of four found nests of Common Ringed Plovers three contained clutches (3, 3, 4 eggs) and one 4 chicks. We regularly observed Whooper Swans in flocks of 2–5 birds and Red-throated Divers (two pairs, including one with a chick) on tundra lakes; Velvet Scoters, Long-tailed Ducks and Barnacle Geese were recorded as well. All chicks hatched successfully in a nest of Velvet Scoters with a clutch of 7 eggs. Other nesting birds included the Snow Bunting (3 chicks in a nest), Shorelark (4 chicks), Redwing (a nest with 5 eggs), Wheatear (2 nests), Temminck's Stint (4 chicks), Meadow Pipit (2 nests with 4 and 5 eggs), Common Gull (4 nests with 2 eggs in each), Arctic Tern (8 nests, all with 2 eggs), White Wagtail

and Rock Ptarmigan. The abundance of Rock Ptarmigans was average.

A.V. Ezhov

4. Barents Sea coast from the Teriberskaya Bay to Ivanovskaya Bay, Russia (68°14' – 69°10' N, 35°10' – 38°47' E)

The summer 2008 was early but cold on the Murman coast, which probably resulted in a poor yield of berries. Feeding conditions for seabirds were unfavourable in the first half of summer, and the abundance of seabirds, the Black-legged Kittiwake particularly, declined on some parts of the coast.

An unusually high abundance of rodents, the Grey-sided Vole and Norway Lemming was recorded everywhere along the coast during summer and autumn. This resulted in appearance of Short-eared Owls and Hawk Owls on the coast in high numbers. The abundance of breeding Rough-legged Buzzards increased. Two breeding pairs of Great Grey Shrikes, recorded in patches of birch forest in the tundra in the vicinity of the Ivanovskaya Bay, could have been also attracted to the area by abundant rodents. Nesting of the Ring Ouzel was also recorded in the latter habitat.

S.V. Zyryanov, S.A. Egorov, R.N. Klepikovskiy

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

The spring was late and summer cold and rainy, based on observations carried out from 27 May – 14 August 2008. Extreme weather events were not recorded, and the average wind speed for the period of observations was 6.5 m/s (24 m/s maximum).

Norway Lemmings were not recorded on Kharlov Island. Numerous voles were observed at several sites on the mainland; at one site captured animals were juvenile Tundra Voles.

Mammalian predators were represented by the American Mink on Kharlov Island and the Red Fox and Brown Bear on the nearby mainland coast. Other observations of mammals included Mountain Hares and Reindeers.

Two pairs of Red-breasted Divers nested on Kharlov Island. Black-throated Divers were observed only at the mainland part of the Kandanklaksha Nature Reserve. Carcasses of Northern Fulmars were found on the littoral coast of islands more often than usually this year.

The number of Gannets was 229 pairs, which was close to the number in the previous year (232 pairs), and their breeding success was at least 72.0%. The Great Cormorant stopped nesting on Veshnyak Island, but in a new colony on Bolshoy Zelenets Island it increased its abundance from 12 nests in 2007 to 54 nests in 2008. We also found 24 nests of this species on Maly Litsky Island this year, compared with 28 pairs in 2007. Mean brood size was 2.5 chicks per nest on different islands. The colony of Shags on Veshnyak Island increased to

300 pairs from 220–250 pairs in 2007, and 9 nests were found on Maly Litsky Island.

Barnacle Geese nested on Maly Zelenets Island (6 pairs), Maly Litsky Island (1 pair) and Veshnyak Island (1 pair). We counted 22 large chicks on Maly Zelenets Island in early August. The total number of Bean Geese nesting on the islands of the archipelago was 90–100 pairs, and the mean size of complete clutches was 3.6 eggs ($n=33$). The total number of breeding Common Eiders was estimated at 1,045 nests in 2008, and mean clutch size 4.1 eggs ($n=354$).

Nesting by Northern Pintails was not recorded in 2008, and Long-tailed Ducks bred only on the mainland part of the reserve, where broods were observed. A nest of the Red-breasted Merganser was found on Bolshoy Litsky Island. The Common Merganser and Whooper Swan were non-breeders.

Breeding birds of prey were represented on the archipelago only by Peregrine Falcons. Chicks hatched successfully in two nests found on one island, but all chicks died from starvation in a pair specializing on Black-legged Kittiwakes. Three chicks survived for a longer time in a pair specializing on Common Puffins, although we did not control the pair to fledging. Three pairs of the Rough-legged Buzzard were recorded on the mainland part of the reserve. Two nests were found, each with one juvenile. Other birds of prey recorded on islands of the archipelago included the Golden Eagle, White-tailed Sea Eagle, Gyrfalcon and Merlin.

Grouse species on Kharlov Island were represented by 6 pairs of the Rock Ptarmigan, of which 4 pairs produced broods.

Breeding waders on the archipelago included 7 pairs of Ruddy Turnstones (5 pairs in 2007) and 7 pairs of Oystercatchers (the same in 2007). Nests and broods of Oystercatchers were found also on the mainland and small islands. Displaying Common Snipe were observed on Kharlov Island, and later a fledgling was captured on the mainland. Territorial pairs of Temminck's Stints, Eurasian Golden Plovers, Common Ringed Plovers and Wood Sandpipers were recorded on the mainland tundra.

Migrating waders were recorded primarily on the mainland and included the Greenshank, Redshank, Spotted Redshank, Red-necked Phalarope, Ruff, Little Stint, Dunlin, Purple Sandpiper, Red Knot, Whimbrel and Bar-tailed Godwit. Two wader species new for the area were recorded in 2008. A displaying Broad-billed Sandpiper was observed in a pair in mid July, and two single Common Sandpipers were recorded in early August by R.G. Chemyakin.

There were 18 pairs of Great Skuas, the same as in 2007, and at least 50% of them nested successfully. There were 135 pairs of Arctic Skuas in 2008, the highest number for the period of observations on the archipelago (116 pairs in 2006, 95 pairs in 2007). Mean size of complete clutches was 1.8 eggs ($n=103$). Chicks hatched from 75.2% of eggs controlled ($n=153$). Several nests of Arctic Skuas were found on

the mainland. A single vagrant Long-tailed Skua was seen in 2008.

Numbers of Herring Gulls increased considerably in 2008 compared with the previous year, while numbers of Great Black-backed Gulls decreased slightly on the islands. The mean clutch size was 2.2 eggs ($n=51$) and 2.4 eggs respectively, in these two species. The breeding success was relatively high in both species, and the proportion of juveniles was approximately 25% in flocks seen in early August.

The numbers of Common Gulls did not change notably (approximately 100 pairs). The mean clutch size was 2.3 eggs ($n=63$). Chicks hatched in 74% of eggs controlled ($n=54$) on Kharlov Island.

The numbers of Black-legged Kittiwakes increased from 12,800 pairs in 2007 to 17,000 pairs in 2008. Eggs were laid very late and only in one half of all the nests. Breeding success was close to zero for the first time since the start of our observations in 2001. Juvenile birds were not recorded and nesting colonies were abandoned by most birds in early August.

The total number of Arctic Terns in 2008 was 100 pairs in 4 colonies containing 8 to 32 nests on Kharlov Island. All clutches were destroyed by Arctic Skuas in the space of two weeks.

The late nesting by Black-legged Kittiwakes resulted in increased predation pressure of Ravens, Herring Gulls and Great Black-backed Gulls on the clutches of Common Guillemots. Two large colonies of Common Guillemots were completely destroyed, and we failed to find any birds there during our count, timed to be at the start of hatching. Numbers of Common Guillemots decreased also in other colonies, which also had suffered from heavy predation. The overall decrease in numbers of Common Guillemots on Kharlov Island was 26%. No counts were made in the largest colony on Kuvshin Island. Nests of Bronnich's Guillemot were situated at sites less accessible to predators, and their numbers did not change compared with the previous year.

Other species of auks were counted at the same time as other counts on the islands. The total number of Razorbills was 175 pairs, Black Guillemots 400 pairs and Common Puffin approximately 1500 pairs.

One Short-eared Owl was recorded on Kharlov Island in late May.

A Great Spotted Woodpecker was recorded on Kharlov Island in mid August, and remains of another bird were found near a nest of Peregrine Falcons.

Passerines breeding on the archipelago included the Meadow Pipit, Red-throated Pipit, Rock Pipit, Hooded Crow, Raven, White Wagtail, Willow Warbler, Wheatear, Bluethroat, Fieldfare, Redwing, Common Redpoll and Snow Bunting. Numbers of territorial birds decreased in the Red-throated Pipit,

Wheatear and Snow Bunting. Other species showed no notable change.

Migrants on the archipelago included the Magpie, Lapland Bunting, Barn Swallow, Shorelark, Skylark, Twite, Red Crossbill, White-winged Crossbill and Bullfinch.

M.V. Melnikov, A.V. Osadchiy

6. Dvorovaya Bay, Kola Peninsula, Russia (68°26 N', 38°15' E)

The first summer months were cold and rainy with regular fogs. Air temperatures did not exceed +10°C. Predominantly north-north-western winds reached 15-20 m/s.

A total count of inhabited nests in a colony of seabirds was conducted on 27 July. It indicated a decline in numbers of all breeding species (Black-legged Kittiwake, two species of murre, Great Cormorant) compared with the previous count in this area in 2005. Low breeding success of Black-legged Kittiwakes was probably due to poor feeding conditions.

Microtine rodents were not recorded.

Mammalian predators were represented by Red Foxes, and avian predators by two adult White-tailed Sea Eagles and nesting Rough-legged Buzzards. Skuas and owls were not recorded. Rock Ptarmigans occurred in average numbers. Human impacts on birds were not observed in the area.

A.V. Ezhov

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

The maximum air temperatures consistently rose above freezing on 14 April, which indicated the start of phenological spring. In the previous year, 2007, spring started on 10 March, and the long-term average is 10 April. The last air frost was recorded on 5 June, and the last ground frost on 8 June. Summer started on 17 June when daily mean air temperatures consistently rose above +10°C, compared with 27 June in 2007 and the long-term average of 13 June. Autumn started on 24 August when daily mean air temperatures consistently dropped below +10°C, compared with 26 August in 2007 and the long-term average of 31 August. The first ground frost occurred on 2 September and the first air frost on 2 October. Winter started on 4 November when daily mean air temperatures consistently dropped below freezing, compared with 8 November in 2007 and the long-term average of 26 October. Snow blanketed the ground in the forest for the first time on 28 September and was permanently established on 13 November.

In 2008 mean monthly air temperatures were 0.1°C below the long-term average in April, 0.8°C below average in May, 0.3°C above average in June, 0.9°C below average in July, 2.1°C below average in August, 0.5°C below average in September, 2.7°C above average in October, 1.4°C above average in November and 5.5°C above average in December. The

mean annual air temperature was 1.5°C above the long-term average. It is noteworthy that air temperatures were 2°C below average in the period from 1-10 June.

Precipitation was 56% of the monthly average in April, 66% in May, 68% in June, 155% in July, 79% in August, 58% in September, 163% in October, 136% in November and 180% in December. The total precipitation was 109% of the annual average. Rains occurred daily in the period from 10-20 June. The water level in rivers and lakes was high in July and October.

The snow disappeared from 50% of the flat open surface in the forest on 28 May (average 20 May), and completely melted on 6 June (average 30 May). The snow disappeared from 50% of the flat surface in the tundra on 8 June, compared with the average date 2 June. Ice-break occurred on 22 May on the largest rivers (average 15 May). Ice broke on large lakes 7 days later than average, on 7 June, and lakes froze in autumn on 15 November, 7 days earlier than average. Generally the season was late and cold.

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.

Food supply for herbivorous birds was determined by the yield of important plants: willow ranked 5 on a scale of 5; Alpine Bearberry, Cloudberry, Common Bearberry, crowberry, alder 4; Bilberry, Cranberry 3; pine, spruce, and birch 2-3; European Rowan, Bird Cherry, Bog Blueberry, Clusterberry 2.

Grey-sided Voles were the most numerous among the small rodents, and we captured on average 31.8 animals/100 trap-nights in autumn 2008. This value indicated a decrease in the abundance by a factor of 1.3 compared with 2007. The density of Grey-sided Voles was higher in spruce forest in valleys than in forest on slopes and in the mountain tundra. Males became more abundant than females by autumn, and age structure was the following: over-wintered animals 13.2%, animals of the year ready for reproduction 13.8% and juveniles 73.0%. The latter age category consisted of 3 generations: early summer (36.1%), mid-summer (43.2%) and late summer (20.7%). Among animals of the year ready for reproduction 79.3% of animals were born in the first half of summer, that is slightly higher compared with 2007. In the period from 1-10 September all adult males of Grey-sided Voles were still ready for reproduction, while females had already terminated breeding. Most females of Grey-sided Voles produced 2 broods in summer 2008. Adult animals of the year produced on average 8 young, and overwintered females 9 young.

Numbers of two other species of *Clethrionomys* voles, the Bank Vole and Northern Red-backed Vole declined by a factor of 2.6, and there were very low numbers. Apart from the Grey-sided Vole, *Microtus* voles, the Tundra Vole in particular, occurred in high numbers. Unusually many birch and

willow stems were found with bark rifled by voles during the preceding winter.

Wood Lemmings were recorded in small numbers in catches made with cylinders in the Laplandsky Nature Reserve. We found 3 carcasses of Wood Lemmings along with *Clethrionomys* and *Microtus* voles in 4 of 60 nest-boxes examined in the southern part of the reserve. These bodies of microtine rodents were apparently unused food stores of the Eurasian Pygmy Owl: we have not found such food stores in nest-boxes since 1975. A few records of Norway Lemmings were made in the Nyavka Tundra uplands in July and in the Khibiny Mountains in January and September, in addition to several observations reported from the Tersky Coast of the Kola Peninsula.

Numbers of Red Foxes, Martens, Ermines and Least Weasels were high; other predators (the Brown Bear, Wolf, Wolverine, Mink and European Otter) were common.

Among birds of prey and owls nests or other indications of breeding, were recorded in the Osprey, Rough-legged Buzzard, Northern Goshawk, Gyrfalcon, Lapland Owl, Hawk Owl and Eurasian Pygmy Owl. Remains of Brown Rats (identified by V.N. Kalyakin from the Moscow State University) were found in pellets of chicks of Northern Goshawks and Lapland Owls. This was the first record of rats in the Lapland Nature Reserve. Great Grey Shrikes were observed more often than usual.

The density of Tetraonid birds determined during transect counts in August continued to decrease and reached 26 birds/10 km², the lowest value recorded for the period 1998-2008. The lineal density of waterfowl (divers and ducks) calculated for lake and river shoreline, continued to increase from 2005.

Numbers of all species of waders and the Arctic Tern were low in the mountain tundra and in the forest. The breeding success of small birds was relatively low, probably due to cold rainy weather in June and July and the high abundance of predators.

Breeding conditions were favourable in 2008 for rodent specialists due to the high abundance of their prey. Numbers of mammals remained at a high level during the winter 2007/2008. Mammalian predators, in particular Ermines and Martens, bred successfully, and their numbers increased considerably by autumn 2008. A decrease in the abundance of Mountain Hares was notable compared with the increasing numbers of predators.

A.S. Gilyazov, G.D. Kataev

8. Karelsky Coast, Kandalaksha Bay, the White Sea, Russia (67°00' N, 32°25' E)

The abundance of insectivores decreased dramatically during the under-snow period of 2007/2008. They were absent in catches in spring, which was, probably, among other reasons, due to frequent rains in spring resulting in a high level

of ground waters. The abundance remained low during the whole season. Precipitation occurred on 61.3% of days in May, 56.7% in June, 51.6% in July, 64.5% in August, and 43.3% in September, and 58.1% in October. Not a single animal was captured with snap-traps in the autumn (total effort 400 trap-nights). The abundance of shrews increased from 1.3 animals/10 days in 2007 to 2.2 animals/10 days in 2008 in catches with cylinders. One captured Laxmann's Shrew and 13 Common Shrews represented 68.4% of the total number of captured small mammals Micromammalia. Running shrews were observed in different parts of the count area in August and September.

Voles (*Cricetidea*) over-wintered successfully and were common during the whole year. Three species of voles accounted for 43.3% of the total number of captured animals. Their relative abundance was 0.75 animals/100 snap-traps in autumn.

Catching with cylinders yielded an abundance of 7.5 animals per 10 days in June, 2.0 in July, 0.4 in August and 2.0 in September. The Tundra Vole was the most common species (46.1%), and the Grey-sided Vole was the second in abundance (38.5%). Wood Lemming was not captured in 2008.

Similarly to the previous year the Ermine was the only mammalian predator recorded in September in the area of trapping.

Avian rodent specialists were not observed in 2008, probably, due to the short duration of surveys, which were only five days each month.

N.S. Boiko

9. Kandalaksha District, Murmansk Region, Kandalaksha Bay, the White Sea, Russia (67°10' N, 32°30' E)

An increase in the abundance of insectivores *Insectivora* was recorded in 2008, and they were abundant on both coasts of the Kandalaksha Bay. Residents of coastal settlements often observed running animals. This has not been reported previously. The relative abundance of Common Shrews in the area of Luvenga field station was 9.7 animals/100 snap-traps in August (L.G. Emel'yanova).

Numbers of *Microtus* voles remained high for the third year in a row on both coasts of the Kandalaksha Bay, also in human settlements. The abundance of *Clethrionomys* voles started to increase. Voles of different species, including animals running on snow surface, were frequently recorded in Kandalaksha town from January to November. The local population of Common Voles *Microtus (arvalis) rossiaemeridionalis* was still present in the area of lower Kandalaksha.

Microtine rodents were captured by Herring Gulls and Common Gulls in 2008, and in August their remains were found in 7.5 % ($n=67$) and 22.2 % ($n=9$) of pellets of the two gull species, respectively. Pellets were collected on tidal flats in the vicinity of the Luvenga field station by V.V. Korbut.

The autumn was warmer in 2008 than in 2007. Mean monthly air temperatures were $+7.3^{\circ}$ ($+6.1^{\circ}$) in September, $+4.7^{\circ}$ ($+2.9^{\circ}$) in October, -3.9° (-3.3°) in November, and -2.6° (-3.1° in December) (data of "Kandalaksha" weather station obtained from the Internet). Snow cover was established on 2 November 2008 (P.M. Iliyn). We expect an increase in abundance of *Clethrionomys* voles in 2009, and decrease in *Microtus* voles.

High numbers of voles attracted Red Foxes to Kandalaksha, and 1-3 animals were observed in different parts of the town. M.A. Danilov recorded one fox per each railway journey on the trip from Kandalaksha to Chupa in early April.

The Short-eared Owl was recorded in 2008 in the vicinity of Kandalaksha on 28 April and then again at the end of the season, the Lapland Owl on 15 October, Eurasian Pygmy Owl on 16 October and Hawk Owl twice in August and September.

N.S. Boiko, E.V. Shutova

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

The winter 2007/2008 started one week later than usual, and air temperatures dropped consistently below freezing on 3 November 2007. The frost was light until early December, with mean temperatures approximately -5°C , occasionally dropping to -10 - 12°C . However, warm weather occurred on most days in December, when mean daily temperatures rose above freezing. The mean monthly air temperature was higher in December than in November. The largest part of the head of the Kandalaksha Bay remained ice-free until the end of December due to the warm weather and strong winds. There was heavy frost from early January, and the sea froze quickly. However, the winter was generally warmer than usual, with ice remaining thin during the whole winter and polynias appearing regularly near islands. Snow cover was thinner than usual, particularly during the first half of winter, when its depth was 1.5-2 times lower than average. Mean daily air temperatures consistently rose above freezing on 17 April, close to the usual dates. May and the following summer months were cool. Long-lasting rains resulted in the death of chicks in nests of several species of passerines in late June and early July. The autumn was warm and prolonged.

The yield of berries was very low in 2008 on the islands, with Cloudberry ranked 1 on a scale of 5, Crowberry 1, Clusterberry 2, and Bilberry 2 (data of L.A. Moskvicheva).

The abundance of insectivores increased considerably by autumn 2008 compared with 2007, and catching with cylinders on Ryashkov Island yielded the following abundance (2007 values in brackets for comparison): 0 (0) animals per 10 days in May, 1.9 (1.1) in July, 11.5 (2.2) in August and 13.3 (6.0) in September. Common Shrews accounted for 59.1% of the total number of animals captured on the islands of the Northern Archipelago, and Laxmann's Shrews for 2.4%. Insectivores were absent on small tree-less islands ('ludas') in 2008.

Voies (*Cricetidea*) over-wintered successfully, and the relative density of three captured species on the islands of the Northern Archipelago was 3.3 animals/10 days in catches with cylinders, compared with 7.6 animals/10 days in 2007. Voies were less numerous than insectivores, and accounted for 38.6% of all the animals in catches. The most abundant species on the Northern Archipelago was the Short-tailed Vole (53.1% in 2008 and 93.4% in 2007), followed by the Tundra Vole (34.4% in 2008 and 19.7% in 2007) and the Bank Vole (12.5%).

Running voies, predominantly *Microtus* spp., were recorded on 42.1% of forested islands and on 30.4% of ludas of the Northern Archipelago, compared with 42.1% and 18.2%, respectively, in 2007. According to reports of V.V. Korbut and A.S. Koryakin microtine rodents were found in the diet of Herring Gulls on the islands of Luvengsky and Oleny archipelagos.

Mammalian predators were represented by 7 Red Foxes inhabiting 5 islands, and by American Minks on 3 islands. Minks destroyed clutches of land-nesting birds also on nearby islands. Two islands were inhabited by 2 Ermines each, and one by one Ermine. A Least Weasel inhabited one island.

Similarly to 2007, White-tailed Sea Eagles did not breed on the islands in 2008, although adult and immature birds were recorded during the whole summer. The density of nesting Ravens was 8 pairs on 19 forested islands. A pair of Eurasian Kestrels raised 4 young on one island. A Lapland Owl was recorded on Anisimov Island in November.

Our joint counts with V.V. Bianki in late June – early July on 49, mostly tree-less islands, ranging in size from 0.1 to 1.3 ha and having the total area of 43.6 ha, yielded the following results: 1 nest of the Mallard, 1 nest of the Northern Shoveler, 8 nests of Greater Scaups, 1,681 nests of Common Eiders, 4 nests of Velvet Scoters, 16 nests of Red-breasted Mergansers, 36 pairs of Ruddy Turnstones, 173 pairs of Oystercatchers, 351 pairs of Herring Gulls, 34 pairs of Great Black-backed Gulls, 302 pairs of Common Gulls, 186 pairs of Arctic Terns, 75 pairs of Black Guillemots, 29 pairs of White Wagtails, 3 pairs of Hooded Crows and 7 pairs of Wheatears. The abundance of most species of ducks and Charadriiform birds had not changed to any great extent since the previous year. Numbers of Common Gulls and Arctic Terns increased by 40-45%. The loss of clutches was 26.4% in Common Eiders, 1.5 times lower than in 2007. As previously, killing of females, including incubating birds, by White-tailed Sea Eagles was the principal cause of clutch loss. Remains of 131 females taken by White-tailed Sea Eagles were found during the bird counts on the islands.

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

Observations were carried out from 29 May to 10 September in the Peschanka River upper reaches. May and June were colder than in 2006, and even colder than in 2007. The weather in July and August was similar to 2007. Snow covered 80-90% of the tundra surface in early June, and melted to 50% by the middle of the month. Mean daily air temperatures were above freezing after 11 June. Ice-break occurred on 14 June in the upper reaches of the Peschanka River. Snowbanks remained until 10 July in hilly terrain. Sunny days were common in July and early August. As in the previous years storms with winds over 15 m/s were recorded in all months.

Rodents were absent on the island.

Arctic Foxes were common and bred successfully. Four new inhabited dens were found, although several known dens were not used. Red Foxes were recorded several times during the season, but known dens were not inhabited, and new dens were not found.

The numbers of breeding Rough-legged Buzzards and Peregrine Falcons decreased. We found only 3 nests of buzzards, with clutches of 2, 2 and 3 eggs. Nesting of one of these pairs was unsuccessful. Several pairs of Peregrine Falcons did not breed, and nesting of two pairs was unsuccessful. Several breeding pairs had small clutches of 1-2 eggs, smaller than in 2006-2007. Mean clutch size was 3.1 eggs, and hatching occurred from 5-15 July. Peregrine Falcons were observed several times hunting flightless goose chicks. This behaviour was not recorded in 2006-2007. One Snowy Owl was seen on 22 July.

Arctic Skuas were common and nested successfully. A pair of Great Skuas nested, as in 2006. Herring Gulls and Glaucous Gulls were common, and we found several new colonies.

The arrival of geese was late and prolonged in 2008. The earliest pairs arrived in May and started nesting by 12 June, when the arrival peaked. Nesting peaked on 14 June, which was 4 days later than in 2007 and 10 days later than in 2006. Mean clutch size was 3.3 eggs in Greater White-fronted Geese, 3.1 eggs in Bean Geese and 3.4 eggs in Barnacle Geese, which was slightly lower than in 2007. Greater White-fronted Geese nested at a density ranging from 7-82 nests/km², and had a nest success of 85%. Bean Geese nested at a density reaching 15 nests/km², and had a nest success of 83%. Nest success of Barnacle Geese reached 95% in colonies near nests of Peregrine Falcons.

The first moulting and flightless Barnacle Geese, Greater White-fronted Geese and Bean Geese were recorded on 4 July. Intensive north-eastern migration of Greater White-fronted Geese to moulting grounds was observed on 26 June and 6-10 July. The first geese on the wing after the moult, were recorded on 4 July, and the first flying juveniles of Greater White-fronted Geese on 22 August. Many non-breeders and approximately 60% of family parties departed from

the island on 30-31 August. Almost all late broods of geese departed from the island from 7-10 September. The first flying juvenile Brent Geese were recorded on the south-eastern coast of the island on 7 September.

We found 2 nests and observed 8 broods of Tundra Swans. The mean brood size was 2.5 chicks, which was lower than in 2007. Breeding ducks included the King Eider, Velvet Scoter, Long-tailed Duck, Greater Scaup, Northern Pintail and Common Teal, but none of these species was abundant.

Waders were less numerous compared to 2007. Ruddy Turnstones and Little Stints were very rare. Dunlins and Ruffs were rare, and displayed rarely during the cold period before 12 June. Numbers of Temminck's Stints, Common Ringed Plovers, Eurasian Golden Plovers and Grey Plovers were similar to 2006-2007. Two pairs of Dotterels were seen in June, and a nest of this species was found, with a clutch which had been initiated on approximately 6 June.

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12. Velt River basin, Malozemelskaya Tundra, Russia
(67°54' N, 50°56' E)

According to the reports of Naryan-Mar town residents the spring was cold and late in 2008, and ice-break occurred on the night of 3-4 June on the Pechora River near the city. The height and duration of the flood were close to average. Local people did not mention extreme weather events and characterized June as cool.

Our studies were carried out from 16-31 July in the upper and middle reaches of the Velt River. The weather was warm and mostly sunny during this period, with occasional thunderstorms. Air temperatures were +15-17°C, with showers and fog.

Rodent numbers were very low in the second half of summer, and neither lemmings, nor voles were recorded.

Brown Bears were common among mammalian predators, and they were recorded in the river floodplain along with their numerous tracks. Other mammalian predators (Arctic Fox, Red Fox, Ermine, Least Weasel) were not observed, although tracks of Red Foxes were recorded on the sandy beaches of the river and its tributaries. Many dens of Red Foxes were found, but all of them were uninhabited.

Rough-legged Buzzards bred, but mostly unsuccessfully. One and two chicks were still present in the nests of two pairs by 1 August, while chicks in nests of another 3 pairs disappeared, having, probably, died from starvation. At least 5 more pairs held territories in the study area and gave alarm calls on the approach of observers, but their nests were either not found, or were empty, and we considered these birds failed-breeders. One wandering Hen Harrier was recorded. White-tailed Sea Eagles were fairly common as wandering non-breeders.

Most Long-tailed Skuas and Arctic Skuas did not breed, and were observed as wandering single birds or in small flocks. One pair of Long-tailed Skuas and one pair of Arctic Skuas were alarming, apparently near chicks, but the chicks did not fledge, and the adult birds left their territories. Herring Gulls and Common Gulls nested successfully, as we recorded broods of chicks, including well feathered chicks.

All species of waders, typical for watersheds and mires of lake depressions, occurred at a low density in the study area. Waders of river valleys were common (Common Ringed Plover, Terek Sandpiper, Common Sandpiper, and Temminck's Stint). They bred successfully, as we found many broods with chicks of various ages, and flying juveniles. However, breeding was prolonged in these species, probably, due to the cold spring and prolonged flood. Data on breeding success of other wader species in the study area were not obtained.

V.V. Morozov

13. Tobseda settlement, Malozemelskaya Tundra, Russia (68°35' N, 52°20' E)

The breeding ecology of the Barnacle Goose and Greater White-fronted Goose was studied from 28 May to 18 August 2008 in the vicinity of Tobseda settlement at the Barents Sea coast near the Kolokolkova Bay.

The spring was one of the latest for the period of studies in the area. Ice-break on the Pechora River had not started by the time we left the Naryan-Mar town on 28 May, and snow cover was continuous almost everywhere in the town vicinity. Snowfalls, snowstorms and night frosts with air temperatures dropping to -3.9°C were observed in the study area until 14 June. 90% of the tundra surface was snow-covered in early June, and the Kolokolkova Bay, was almost completely ice-covered, except for its northernmost part adjacent to the ice-free Pomorsky Channel. Snow melted in the major part of the area by 20 June, although snow patches were locally present until the end of the month. June was relatively cold with the mean monthly air temperature $+5.5^{\circ}\text{C}$, but July was the warmest on record for recent years with the mean monthly air temperature $+13.6^{\circ}\text{C}$. August was cold with the mean monthly air temperature $+9.5^{\circ}\text{C}$. Similarly to the previous year the summer of 2008 was foggy, windy and rainy, with precipitation recorded on 31 of 81 days.

The migration of geese started on 1 June and continued until 11 June. The peak of migration of the Brant Goose occurred on 4 June, when 22,000 birds were counted. The migration of the Barnacle Goose was prolonged and also peaked on 4 June.

Barnacle Geese nested unusually late compared with the previous years. The first nests appeared only on 7 June, and nest initiation peaked on 14 June, one week later than in 2007. The total number of nests of Barnacle Geese was 2676 in 2008 in the Kolokolkova Bay area, including 1338 nests on the mainland, 1064 nests on islands in the northern part of

the bay (792 on Chayach'i Islands and 272 on Radiola Island), and 274 on Yuznye Chayach'i Islands in the Neruta River delta in the south of the bay. The mean clutch size was 3.78 ± 0.04 (SE, $n=1026$) eggs on the mainland and 3.25 ± 0.05 ($n=564$) eggs on Chayach'i Islands. Nesting success of Barnacle Geese was relatively high, 75.5% on average, in 2008. The highest number of nests was depredated at the eastern periphery of the colony on the saltmarsh adjacent to the tundra, where a new shallow den had been dug by Arctic Foxes amidst the geese nests.

Nesting density of Greater White-fronted Geese was low compared with the previous years, and we found only 18 nests in the Tobseda area. The start of their incubation peaked on 13–15 June. The mean clutch size was 4.18 ± 0.5 ($n=17$) eggs; one clutch contained 10 eggs. Nesting success was relatively high, and chicks hatched in 14 of 18 nests. Predation by Arctic Foxes and Arctic Skuas was the principal cause of nest failure.

Nests of ducks and waders were not searched for purposefully. Breeding of Arctic Foxes and avian rodent specialists was not recorded in the tundra adjacent to the dunes, which was due to low rodent abundance. Owls were not recorded. Willow Grouse bred successfully in small numbers. Generally, breeding conditions for birds were moderately favourable in 2008.

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O.Y. Anisimova

14. Nenetsky Nature Reserve, the Pechora River delta area, Russia (68°20' N, 53°20' E)

The field season in the Nenetsky Reserve lasted from 18 June until 18 August. The main effort was at the Korovinskaya Bay, on the 36 grids from last year and the area around these, which was searched for fox dens and raptor nests. Two trips were made to Lovetsky Island, one in mid July and one in August. Due to late snowmelt the work on the grids had to wait until the end of June, so the mustelid tunnel- and artificial egg experiments could go on for about six weeks.

Lemming winter nest counts showed low lemming abundance during the winter, although we recorded many winter rodent tracks on our willow grids. Mountain Hares and Willow Grouse were abundant, and both seemed to succeed in reproduction this year. Reindeer were observed regularly in our core area, but the large herds only migrated through the area a few times in August.

There were several Arctic Fox dens with recent signs of activity in the Korovinskaya Bay area, but only one den with documented reproduction. At this den, five cubs were observed. No signs of Red Foxes were registered.

Ten nests of the Rough-legged Buzzard were found and visited regularly. On four of these, we placed cameras. Three nests failed or were abandoned during the season, and chick number varied between one and four. We observed the Per-

egrine Falcon sporadically, and two nests with chicks were found. During the first weeks of the summer, we observed several Arctic Skuas and Long-tailed Skuas every day, but by the end of the summer only a few breeding pairs remained. Two nest of Long-tailed Skuas were found, one of which succeeded. Also two nests, both successful, of Arctic Skuas were documented in the core area. In August, a Snowy Owl was observed near the camp site three times.

The relatively low breeding intensity in predators this year reflected the low number of lemmings. The predation pressure on grouse seemed to be high, as we regularly observed predated adult birds or eggs, and the eggs from artificial nests on the open tundra disappeared almost immediately. The prey remains from buzzard nests were dominated by Tundra Voles, young Mountain Hares and grouse, but occasionally we found Collared Lemmings and other birds of prey.

A. Kosorukova, G. Skogstad, A. Gatilov, R. Ims, E. Fuglei
Arctic Predators IPY Project. 2008. News.
<http://www.arctic-predators.uit.no/News.html>

15. Syadeiyu-Korotai Kha River basin, Bolshezemelskaya Tundra, Russia (68°41' – 68°49' N, 61°24' – 63°10' E)

According to observations from 17 June to 18 July 2008 the season was warm with rare rains. Two snowfalls were recorded in the second half of June.

Tundra Voles were rare and lemmings were not recorded.

Arctic Foxes were rare, and their breeding was not confirmed. Rough-legged Buzzards, Merlins and Peregrine Falcons nested, but common species included only the Rough-legged Buzzard and non-breeding White-tailed Sea Eagle. Owls and Pomarine Skuas were not recorded. Long-tailed Skuas were common breeders; Arctic Skuas and Ravens were rare but bred. Common Gulls and Herring Gulls were rare, and the latter species bred.

Willow Grouse were common and nested.

Y.N. Mineev, O.Y. Mineev, G.L. Nakul

16. East of Bolshezemelskaya Tundra and Polar Urals, Russia (67°00' – 67°40' N, 63°00' – 65°00' E)

The spring of 2008 was average in the dates of most phenological events. The watersheds were 70-80% snow-covered in early June, while peat bogs were snow-free at this time. Snow melted quickly, and by 15 June remained only in river valleys and in stands of high willow shrubs on watershed slopes. However, snow covered over 70% of the area in the mountains in mid June. Ice-break occurred from 1–5 June on rivers in the forest tundra and on the southern tundra, but the flood was low due to cold weather in June. The ice on the upper reaches of rivers broke in mid June. The second flood was high and occurred on 13–17 June. In the mountains the highest water level was recorded on 19–21 June.

June was generally cool, but sudden drops of temperatures or extreme weather events were not recorded. There was warm weather after 23 June, and it was still warm and often sunny during July, with small to locally moderate precipitation. Late July and the first half of August were cool with little precipitation, although on some days rain lasted for many hours.

Numbers of rodents, primarily voles, were high in early spring as a result of their undersnow reproduction. We observed numerous signs of rodent activities, including mass damage to undersnow stems of willow shrubs, undersnow nests and pathways. The abundance of voles and lemmings had decreased considerably by early June, and this decrease probably continued until mid summer when it stopped due to summer reproduction. We occasionally heard calls of Narrow-skulled Voles in the plain tundra in June and July, and two adult Collared Lemmings and several Grey-sided Voles were seen on the Polar Urals.

Arctic Foxes, Red Foxes and mustelids were not observed and their tracks were not recorded. Brown Bears were common on the Polar Urals.

Rough-legged Buzzards bred locally and in low numbers both in the plain tundra and in the mountains. Clutches mostly contained 2–4 eggs and thus were not large. The breeding of most pairs was not successful. Hen Harriers bred at a low density and only in the plain tundra.

The majority of Long-tailed Skuas did not breed, and the few breeding pairs were found on bogs in the forest tundra. The abundance of territorial birds and flocks of Long-tailed Skuas decreased considerably by mid July in the southern tundra, as they apparently moved away from the area. Common Gulls bred everywhere in the usual numbers. Herring Gulls bred, but some territories were not occupied. Hooded Crows and Ravens nested in the usual numbers.

Breeding conditions were favourable for most species of waders in the southern tundra and forest tundra, as the weather was generally warm, particularly in the period of brood-rearing. Avian predators occurred in small numbers, while mammalian predators were absent or occurred in very low numbers. The considerable number of nests found at an advanced incubation stage and the abundance of adults alarming near broods indicated moderate to high breeding success in all common species, including the Eurasian Golden Plover, Common Ringed Plover, Wood Sandpiper, Red-necked Phalarope, Common Snipe, Temminck's Stint, Terek Sandpiper, and Whimbrel.

V.V. Morozov

17. Voikar River middle reaches, Lower Ob River area, Russia (65°48' N, 63°57' E)

According to observations carried out from 1 May to 17 June 2008 the first notable spring warming occurred in mid May, when rapid snow melt started and the first snow-free patches appeared. Snow melt was aided by light rains. The weather

became colder after 20 May, when snowfalls occurred. However, open water appeared near the river banks at this time. Warm weather was established in late May, followed by a rapid snow melt. Snow cover reduced to 50% on 31 May and completely melted on 11 June. Ice broke on the Voikar River slightly later than usual, on 1 June. The ice-break was followed by adverse weather with frost, strong northern wind and regular snowfalls. The weather became warmer only in mid June, which resulted in a delayed phenological start of summer and greening of birch trees until 18 June. Most birds at this time had completed egg-laying and started incubation. Generally, the season was late, although temperature conditions and humidity were average.

The abundance of rodents was low, with a relative abundance of *Clethrionomys* voles equal to 12.5 animals/100 trap-nights, and of *Microtus* voles 7.5 animals/100 trap-nights. Red Foxes and Minks were common; Ermine was also recorded.

Of owls, only one Short-eared Owl was seen. Rough-legged Buzzards were recorded on migration. The Hen Harrier, Northern Goshawk, Magpie and Raven were rare breeders, the White-tailed Sea Eagle, Merlin, Siberian Jay and Hooded Crow common breeders. As in the previous year several Long-tailed Skuas stayed on the tundra in the first half of June, including one pair, which, however, did not show signs of breeding.

The abundance of Willow Grouse remained low, although the number of unmated males increased compared with 2007. Numbers of Black Grouse were high, and numbers of Capercaillie average.

Dabbling ducks occurred in higher numbers than usual, and the European Wigeon reached the maximum abundance in 20 years of observations. Common Goldeneye among diving ducks were also in higher numbers. The abundance of Long-tailed Ducks was the lowest on record.

Numbers of waders increased notably compared with the previous year. The abundance of the Common Snipe, Black-tailed Godwit and Terek Sandpiper were high and the abundance of the Wood Sandpiper and Greenshank were close to maximum values. Numbers of the Whimbrel, Common Sandpiper and Pintail Snipe were average. Numbers of Arctic Terns increased.

Among common passerines numbers increased in the Yellow Wagtail, White Wagtail, Bluethroat, Redwing, Arctic Warbler, Brambling, Redpoll and Little Bunting, remained close to the long-term average in the Meadow Pipit, and decreased in the Willow Warbler.

Human impact was not large in the area.

M.G. Golovatin

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

The weather was unstable in April 2008, with substantial fluctuations of air temperatures. Temperatures increased to +5°C with heavy rain on 1 April and there was rain on 19-23 April. There was cold weather from 2-18 April with air temperatures dropping to -28°C at night.

Mean monthly air temperature was -2.4°C in May, 0.7°C below the long-term average. Day-time temperatures were above freezing on 3-4, 11-12, and 14-21 May, and did not drop below freezing after 26 May. Rain occurred on 14-16, 18 and 29-31 May. There were heavy snowfalls in the first half of May and also on 23 and 25 May. Ice was moving on the main channel of the Ob River near Salekhard on 28-29 May. The water level was low during ice-break. Most floodplain lakes remained ice-covered until the end of May. The maximum water level was approximately 1-1.5 m below the level in 2007. The flood was of short duration, and flooded areas of the floodplain began to emerge already by 6 July.

Mean monthly air temperature was +8.7°C in June, 0.7°C above the long-term average, although the first half of the month was cool. Air temperatures ranged from +1-7°C during the day on 1-11 June, and minimum morning temperatures were close to 0°C. Snowfalls occurred several times during the first week of June, and in the morning on 10 June. Approximately 30% of the tundra surface at the watershed was snow-covered on 3 June, and lakes were frozen. Temperatures did not rise above +10°C until 13 June, and reached +20°C on 19-20 June. Brief and mostly light rains occurred on 9 days in June. Extreme weather events were not recorded.

July was warm and relatively dry. The mean monthly air temperature (+15.3°C) was above the long-term average (+13.9°C), and the maximum temperatures reached +24°C. Precipitation was most abundant from 24-26 July, while rains on other days were brief or light. August was slightly colder and wetter than July, and September was warm and even wetter. Generally, the season was late, but temperature and humidity were average.

The Hooded Crow arrived with the first spring warming on 31 March. The first observations of White-tailed Sea Eagles and Snow Buntings were made on 4 April in the area 100 km to the south. The migration of Snow Buntings was not intensive in April and May, and we did not record these birds after 20 May. The passage of warm atmospheric fronts was followed by the appearance of Bean Goose, Rough-legged Buzzard and Herring Gull on 11 May, Common Gull and White Wagtail on 16 May, Black-headed Gull and Meadow Pipit on 17 May, Garganey, Northern Pintail, Common Redstart and Chaffinch on 18 May, and Merlin on 19 May. The Mallard, European Wigeon and Hen Harrier were recorded on 20 May, Northern Shoveler on 21 May, Tufted Duck, Redwing, Lapland Bunting and Willow Warbler on 23 May, Common Reed-Bunting and Common Stonechat on 25 May.

Greater White-fronted Geese migrated in high numbers on 27 May. The Common Teal, Eurasian Golden Plover, Greenshank, Wood Sandpiper, Little Gull, Red-flanked Bluetail appeared on 27 May, Brambling and Little Bunting on 28 May, Bluethroat, Siberian Accentor and Lesser Whitethroat on 29 May, Ruff on 31 May, Velvet Scoter and Terek Sandpiper on 2 June, Little Ringed Plover, Ruddy Turnstone, Red-necked Phalarope, Temminck's Stint and Yellow-headed Wagtail on 8 June and Arctic Warbler on 11 June. A number of species that are fairly common for the area, the Common Snipe, Chiffchaff, Sedge Warbler and Bank Swallow, presumably appeared after 11 June.

The delayed and gradual arrival of many species and prolonged migration period (for example, the last Rough-legged Buzzards were recorded on 29 May, Shorelarks on 9 June) were special for the spring migration in 2008. Migrating Herring Gulls, Common Gulls and Black-headed Gulls formed large aggregations in the study area. Ducks and waders were observed in low numbers, while divers and terns were not recorded at all. These differences can be explained by the low flood and the presence of ice on most floodplain lakes.

Rodents, birds of prey and owls were not recorded before the end of observations on 6 July. Potential predators of bird nests included Hooded Crows, Herring Gulls and Common Gulls, but numbers of two latter species decreased considerably after the migration period.

Counts conducted in late June and early July indicated a decrease in numbers of waterfowl and waterbirds in 2008, and movement of gulls to the low floodplain. The most abundant birds in this period included the Little Gull and Black-headed Gull among gulls, Tufted Duck and European Wigeon among ducks, and Terek Sandpiper among waders. Numbers of Little Ringed Plovers, Greenshanks, Wood Sandpipers and Common Snipes were below average. Only one pair of Temminck's Stints was recorded. Common Ringed Plovers and Ruffs were not recorded in the surveyed area. Numbers of most passerines (the White Wagtail, Bluethroat, warblers, buntings, Brambling) were high, and they nested successfully. The Red-throated Pipit and Yellow Wagtail were found in floodplain habitats, which are normally rarely used for nesting by birds of these species.

The low abundance of most species of birds (with the exception of passerines) resulted in a low breeding effort. However, chances for successful reproduction were high due to favourable weather conditions and the low numbers of predators. Human impacts on breeding birds were small in the area. The high numbers of Hooded Crows is a potentially major threat for birds.

S.P. Paskhalny

19. Dvuobie (floodplain of the Lower Ob River), West Siberia, Russia (65°26' N, 64°56' E – 65°51' N, 65°30' E)

Observations and counts of birds were carried out during 18–26 June 2008 on 5 permanent plots and when travelling be-

tween them on a motorboat, in the central part of the Dvuobie floodplain between 65°26' N (Vasypugor site) and 65°51' N (Ryngym site).

The flood was low in 2008. High ridges were not flooded and tussock meadows dried out by the end of June, but floodplain lakes were filled with water. A relatively warm, moderately wet weather was recorded in the second half of June. Air temperatures ranged from +12–18°C during the day time, but dropped below +5°C on two cold nights. Short-term pelting rains or light drizzle occurred on 3 days. There were weak to moderate winds of variable direction in the period of studies. Apart from regular thunderstorms no extreme events were recorded.

The abundance of both rodents and predators was low in the floodplain, and we made no visual observations of rodents or owls. A single female Hen Harrier was seen. Hooded Crows were common, Herring Gulls and Common Gulls were rare. Nesting of the White-tailed Sea Eagle was recorded. Mammalian predators were represented by a Mink recorded on one survey plot and a European Badger on another.

Numbers of waterbirds were slightly below average. Large pre-moult aggregations of ducks were recorded only in the northernmost part of the area on the flooded tussock meadows.

Waders occurred in the usual numbers and were represented by typical species for the area. As in the previous seasons the Common Snipe was the most abundant; the Terek Sandpiper and Wood Sandpiper were common. Alarming pairs and solitary Oystercatchers were recorded everywhere. Two pairs of this species probably failed on the Vasypugor plot, where we found remains of a depredated egg. Flocks of 5–14 of apparently non-breeding Oystercatchers were recorded on the Ryngym plot. Jack Snipes were common, and 1–3 displaying males were observed on all plots. Other species of waders occurred in small numbers. A displaying Green Sandpiper was observed on the Vasypugor plot. Calling Greenshanks were recorded on 3 plots, and a call of a flying Spotted Redshank was heard on one plot on 24 June. A pair of Common Sandpipers was seen alarming on the Vasypugor plot. Single Red-necked Phalaropes were recorded there on 19 June, and probably nested. Ruffs were observed in pairs and as singles, including one alarming female. A flock of 6 Black-tailed Godwits was seen in the vicinity of the Vasypugor plot.

Weather conditions and low predation pressure in the period of observations favoured reproduction by waders. Human impacts on birds were not recorded this year.

M.G. Golovatin, S.P. Paskhalny

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

The spring was relatively late in 2008, and large amounts of ice were still moving along the river when we arrived at the study area on 16 June. This resulted in a late and moderately

high flood. Extreme weather events were not recorded until the end of surveys on 25 July; precipitation was not abundant. The second half of June was cool, and July was warm.

Populations of rodents remained at a low for the second year in a row. Lemmings were not recorded, while vole settlements were rarely recorded and only in floodplains with larch forest. Mountain Hares were common as usual in this area.

Mammalian predators, the Arctic Fox, Red Fox and Ermine, were not recorded, with the exception of the Brown Bear, whose numbers remained high for the fourth year in a row, based on observations of tracks.

Avian rodent-specialists were very rare due to the low abundance of rodents. One wandering Short-eared Owl was observed. Both breeding and non-breeding Rough-legged Buzzards were rare, and only 3 nests were found in the area of approximately 1000 km²; the fate of these nests was not determined. A few non-breeding Hen Harriers were recorded. Long-tailed Skuas were rare and probably did not nest; one Arctic Skua was seen. Pomarine Skuas and Snowy Owls were not observed; these birds are generally rare in this area.

Other species of birds of prey (Golden Eagle, White-tailed Sea Eagle, Gyrfalcon, Peregrine Falcon and Merlin) bred at a usual density for the area. We discovered two new nests of Golden Eagles. At least one nest of Golden Eagles and one nest of White-tailed Sea Eagles were destroyed by Brown Bears, and the chicks were eaten. Numbers of breeding Hooded Crows and Ravens were slightly below average, probably due to the prolonged spring.

Lesser White-fronted Geese and Bean Geese were common, but few pairs nested, probably due to the late spring. Ducks were numerous as previously. The abundance of Willow Grouse increased compared with 2007, and they became common. Among waders the Wood Sandpiper, Terek Sandpiper, Eurasian Golden Plover, Whimbrel and Bar-tailed Godwit were numerous and Common Snipe, Pintail Snipe, Temminck's Stint, Common Sandpiper and Common Ringed Plover were common.

Generally weather conditions (with the exception of late spring) and weak predation pressure favoured reproduction by most species of birds. There was almost no breeding by rodent-specialists due to the absence of rodents.

S.A. Mechnikova, N.V. Kudryavtsev

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

According to observations made from early March to 1 May snow accumulation had been average during the winter, and the tops of hills became snow-free by the end of April. Frequent snowstorms occurred in May, according to the reports of local people. However, spring developed on average dates. Cold weather returned in late May with strong northerly winds. Geese migration was interrupted, and large flocks stayed in the study area until 10 June. The ice-break on large

rivers was delayed for the third year in a row, and occurred on 18-20 June. Several snowfalls were recorded in the first half of June. At the start of the second period of our observations on 25 June the water level in rivers decreased slightly but was still high. Snow had melted almost completely by this time on flat surfaces. The weather was dry and warm, without strong winds, in late June and the whole of July. The weather became rainy from the end of July, but catastrophic events for birds were not recorded. Generally, the season was late, warm and dry.

Neither lemmings, nor their tracks on the snow were recorded in early spring. Undersnow nests of rodents were found in summer considerably less often than in 2007. In spite of a large catching effort only a few Collared Lemmings were captured during summer rodent counts, and not a single Siberian Lemming. Middendorff's Voles, Narrow-skulled Voles and Northern Red-backed Voles were also rare. All species of rodents which were represented in catches bred, and rodent numbers probably increased slightly by the end of the summer. Several nests of rodents contained remains of fur, and were probably used by Ermines or Least Weasels for breeding. Mountain Hares were fairly numerous in early spring on bluffs of the Baidaratskaya Gulf coast and the river, and one group of 20 Mountain Hares was recorded.

The distribution of predators, primarily Arctic Foxes, was studied in the period from 1 March to 1 May in the framework of the Russian-Norwegian project "Arctic predators". Ten automatic cameras were installed near baits (reindeer intestines, fish). The cameras took pictures at 10 minute intervals throughout the day and night. The results of the project indicated that Arctic Foxes were abundant. An eggshell of a duck egg was found when inspecting a single found place where Arctic Fox dug out a cached item. Arctic Foxes were common in summer, but dens with cubs were not found in the 300 km² surveyed area. An Arctic Fox visited our field camp for the first time in 10 years of studies. Tracks of Wolverines were seen several times.

As in 2007, Rough-legged Buzzards did not nest within the 100 km² plot. The only nest with a single chick was found outside the study plot and was situated several tens of meters from a nest of Peregrine Falcons. According to reports of local people Rough-legged Buzzards were numerous in the tundra in September. The only nest found of Arctic Skuas was later deserted. Owls were not recorded.

Gyrfalcons were seen in early March and mid April on one of the bluffs, and on the latter date a bird attacked a Red Fox which was passing by. A Hooded Crow was recorded by one camera on 26 April. Also a Raven was recorded. The first flock of Snow Buntings was seen in mid April.

Willow Grouse were common in early spring, when we counted over 300 birds in one flock, but became rare in summer, when mostly males were seen. Intensive searches resulted in finding 3 nests of this species. It is noteworthy that the abundance of Willow Grouse has been increasing since 2001,

and has remained at a high level during the last 4 years. We found grouse nests which had been destroyed and also feathers of grouse during the summer, and we observed an Arctic Fox catching an incubating female on her nest.

Birds of almost all species had complete clutches by 26 June. Counts on monitoring plots indicated low numbers of most nesting species. The abundance of the Red-throated Pipit decreased notably, while nesting density of the Meadow Pipit and Yellow Wagtail was relatively high. Fieldfares were recorded twice. Numbers of geese were lower than in the previous years. Hatching started in their nests after 12 July, almost two weeks later than usual. The moulting flock of geese, recorded on the Payutayakha River in previous years, was not found in August 2008. We found 3 nests of Tundra Swans, of which chicks hatched in 2 on 12 July. The few nests of ducks we found included one nest of Common Teal, a nest of European Wigeon and a nest of Long-tailed Duck. Also 2 nests of Red-breasted Mergansers and a nest of Common Scoter were found in a colony of Herring Gulls on an island in a small lake. Remains of eggs of waders and ducks were found relatively often. Broods of ducks were not recorded until the end of studies on 10 August.

V.A. Sokolov, A.A. Sokolov

22. Yasavey-To Lake, Yamal Peninsula, Russia
(69°32' – 69°54' N, 70°05' – 70°29' E)

The tundra was mostly snow-free, but all lakes were ice-covered, by the time of the start of studies on 25 June. Ice cracked on the large Yasavey-To Lake on 24 June. These observations indicated a late season. The weather was clear, warm and dry with weak, primarily northern and north-eastern, winds during the whole period of studies until 18 July. Light rains occurred on 3 days, and fogs were recorded in the morning on 4 days. Ice melted on small lakes and covered less than 30% of Yasavey-To Lake by mid-July, but snow still remained in deep river valleys at this time.

The abundance of lemmings was not high, although animals and their burrows were regularly recorded. Collared Lemmings predominated among animals frequently taken by a dog, while Siberian Lemmings were less common. One Narrow-skulled Vole was captured in willow stands on the bank of Yasavey-To Lake.

Arctic Foxes were rare and their breeding was not confirmed.

White-tailed Sea Eagles were constantly present in the lake area as single birds. One Peregrine Falcon was recorded. Rough-legged Buzzards were common, but only one nest with a clutch was found, although territorial pairs were often observed in the vicinity of old, new or nests under construction. A single Rough-legged Buzzard was observed alarming on the bank of the Khunnoyakha River, where 3 uncompleted nests were located at distances of 500 and 100 m apart (one of them almost completed). Long-tailed Skuas and Arctic Skuas bred, and the latter species was more common. Pomar-

ine Skuas were not recorded. Snowy Owls were rare. Herring Gulls and Arctic Terns nested.

Red-throated Divers and Black-throated Divers were common and bred. Nesting densities of Greater White-fronted Geese and Bean Geese were not high, which is typical for the study area. Nesting of Bewick's Swans was recorded. Among ducks the Long-tailed Duck was the only confirmed breeder. Colonial nesting of this species was observed on an island in a medium size lake, inhabited also by Herring Gulls, Arctic Terns and Black-throated Divers. Willow Grouse were common, but their breeding was not confirmed.

Red-necked Phalaropes were the most numerous waders (12 nests examined), and Dunlins were common (7 nests found). The Grey Plover, Pacific Golden Plover, Eurasian Golden Plover, Common Ringed Plover, Ruff, Little Stint and Temminck's Stint were rare breeders, while the status of the Common Snipe and Jack Snipe was not determined. The first brood of Dunlins was observed on 11 July, of Eurasian Golden Plovers on 12 July and of Red-necked Phalaropes on 17 July.

Common breeding passerines included the Bank Swallow, Shorelark and Lapland Bunting. Rare breeding species included the Yellow-headed Wagtail, White Wagtail, Red-throated Pipit, Willow Warbler, Chiffchaff, Wheatear, Blue-throat, Arctic Redpoll and Little Bunting.

N.N. Emelchenko, D.S. Nizovtsev

23. Kharasavey settlement, Yamal Peninsula, Russia
(71°11' N, 66°54' E)

Warm weather prevailed in the period of observations from 24 July to 4 August 2008.

The abundance of rodents was low, although they were regularly captured in snap-traps. Rodents bred, based on examination of captured animals and under-snow nests, but their numbers were still low. Voles were more abundant than Siberian Lemmings, with relative density of 6.5 animals/100 trap-nights and 1.8 animals/ha, respectively (lemming abundance was estimated per area unit). Dead adult and juvenile Siberian Lemmings were found in under-snow nests, and several nests were probably used by Ermines or Least Weasels as they contained fur of rodents.

Predators occurred at a low density. We found corpses of Arctic Foxes that had died during the winter. Approximately 44% of surveyed dens ($n=18$) had no signs of visits by foxes, and 11% were occupied by litters.

Nesting of Rough-legged Buzzards was not successful. Most of recorded birds rarely uttered alarm calls near abandoned nests and some birds were not settled. A single active nest was found on 28 July with a clutch of 1 egg. Numbers of alarming birds indicated a low initial nesting density of buzzards, approximately of 0.9 pairs/10 km². Other birds of prey were not recorded. Non-breeding Snowy Owls occurred in average numbers. The Arctic Skua, the only nesting skua spe-

cies, bred successfully as we found large downy chicks with primaries in pin in early August. Juvenile Herring Gulls and Glaucous Gulls flew well at this time and were able to self-feed.

Nesting density of geese was close to average for this part of the Yamal Peninsula. Brood size was normal in most pairs. The number of Bean Geese with broods was unusually high and comparable with the number of Greater White-fronted Geese with broods. Thus, 6 broods of Bean Geese were recorded on a small impoundment near the settlement. In contrast, nesting density of ducks, represented by the Long-tailed Duck and King Eider, was not high, and their broods were not recorded. Red-throated Divers and Black-throated Divers had chicks; divers were particularly abundant at the mouth of the Kharasavey River.

The abundance of waders, in particular the Little Stint, Temminck's Stint and Red-necked Phalarope, was low, and their broods were rarely recorded. The relatively numerous Common Ringed Plover was an exception; chicks hatched in late July in this species.

Most species of passerines occurred at a low density, including the most common Lapland Bunting. Snow Buntings were common. Well flying juvenile Snow Buntings were recorded during the last ten days of July, while juveniles of other species were recorded on the wing only in early August. A nest of Shorelarks with still blind chicks was found in late July, presumably from the second clutch. A pair of adult Hooded Crows with a fledgling was recorded at the margin of the settlement.

We did not discover notable adverse impact on birds and ecosystems by the construction of the facilities of the Kharasavey gas-condensate field and by the nearby settlement.

M.G. Golovatin, V.A. Sokolov

24. Shokalskogo Island, West Siberia, Russia (72°58' N, 74°28' E)

Snow and ice on the island and in the nearby sea had completely melted by the start of observations on 18 August. Warm sunny days alternated with dull windy and rainy weather until mid September. Air temperatures ranged from +2–15°C. Wet snow fell on 13 September and melted immediately. There was consistent dull and windy weather with rain, fogs and steadily decreasing temperatures during the last two weeks of September. Air temperatures dropped to 0–+4°C, but not below freezing, at night, and increased to +4–9°C during the day time. Snow blanketed the ground on 26 September, and did not melt until our departure on 4 October. On the sandy substrate the snow was 5 cm deep during two days. Clear frosty weather with weak winds and air temperatures dropping to –3.3°C occurred from this time. Northern and north-eastern winds prevailed during the whole period of studies.

Lemming numbers were extremely low in 2008. We did not observe animals or their inhabited burrows, and they were not captured by a dog. A single lemming track recorded at the end of the study period on the snow indicated their presence on the island. However, Arctic Foxes were present on the island and bred, as we often observed young animals. It is possible that lemming abundance decreased during the summer.

Breeding birds of prey were not recorded. Very few Rough-legged Buzzards were seen. Two Gyrfalcons, one White-tailed Sea Eagle and 2–3 Snowy Owls were constantly present on the western coast.

Herring Gulls, Glaucous Gulls and Arctic Terns bred successfully. We counted simultaneously 59 chicks of gulls on one islet in the Gydan Strait. In total 4 colonies of gulls of 23–72 nests were surveyed. Long-tailed Skuas and Arctic Skuas were common, Pomarine Skuas rare.

Red-throated Divers, Black-throated Divers and Brent Geese nested successfully. Greater White-fronted Geese nested, but the number of broods was not high. Willow Grouse and Rock Ptarmigans were rare but bred successfully. The breeding status of other species was difficult to evaluate due to the late dates of our studies on the island.

N.N. Emelchenko, D.S. Nizovtsev

25. Northern part of Oleny Island, the Kara Sea, Russia (72°35' N, 77°40' E)

It was the second season of our studies on Oleny Island, with conditions similar to 2007. The spring was extremely prolonged in 2008. A small-scale return migration of geese was observed during a period of cold weather with a heavy snowstorm in early June. The end of June was also rather cold (+1.5°C) and relatively dry. Snow melted on 50% of the flat surface on 28 June and completely disappeared on 1-3 July. There was warmer, but rainy, weather by 10 July. The island was covered by dense fog on half of the days in the period from 15 June to 23 July. There was warm weather with temperatures +15–20°C from 24 July to the end of surveys on 2 August. The water level in the rivers dropped from 1.5 m during ice-break to 15 cm on 5 July. Sea tides were 50–70 cm high. Sea ice remained within the study area along a 35 km section of coast until 25 July due to a long spit stretching out into the sea. Generally, the season was late, cold and dry.

Lemmings were rare.

Arctic Foxes were rare, and all dens which we surveyed were uninhabited.

Single Rough-legged Buzzards were seen on 6, 8 and 26 June, 2 White-tailed Sea Eagles on 27 July, and a Snowy Owl on 9 June. These predators did not breed in the study area. Among rare and non-breeding skuas, the Pomarine Skua was the most common. Herring Gulls were rare inland, but relatively common on the coast. Glaucous Gulls were recorded only in spring.

Numbers of Black-throated Divers decreased compared with the previous year, but they were still common and probably bred. Red-throated Divers were not recorded.

There were no colonies of Brent Geese, and 2 of 3 nests of this species found in a mire near the northern promontory of the island and along its north-eastern coast were destroyed by predators. Greater White-fronted Geese were common breeders, but their density (0.4 pairs/km² in the area of 31 km²) decreased slightly compared with 2007. The first chick was observed on 19 July, but clutches of eggs were recorded until 24 July. A flock of approximately 300 moulting geese was recorded on a lake near the sea coast on 24 July.

Non-breeding Long-tailed Ducks were common, but only one nest of this species was found. They did not form large aggregations, and we observed several flocks up to 50 birds on coastal lakes. King Eiders were common in spring and rare breeders. Flocks of non-breeding eiders stayed on small lakes. One Steller's Eider was recorded.

Willow Grouse were common in spring, but no signs of nesting were found. Rock Ptarmigans were numerous in spring and summer, but bred only on the dry watershed areas in the central part of the island.

Among 13 recorded species of waders the Little Stint and Grey Phalarope were numerous, Dunlin, Grey Plover and Common Ringed Plover common, and Ruddy Turnstone and Red-necked Phalarope rare. Sanderlings and Bar-tailed Godwits were recorded on migration and as wandering non-breeders. The status of the Curlew Sandpiper, Temminck's Stint, Ruff and Jack Snipe was not determined.

Among 7 species of passerines, the Lapland Bunting was numerous, Shorelark and Snow Bunting were common, and other species were rare.

A.E. Dmitriev

26. Pyasina Delta, Taimyr, Russia (74°08' N, 86°45' E)

Spring was very late, and an unusual amount of snow had accumulated. Snow covered 100% of the tundra on 5 June 2008 with very deep snow. Snowcover was reduced to 50% by 26 June and completely melted by 10 July. Three snowfalls were recorded in the first half of June and one in the second half. Most ice disappeared from the Lidia Bay on 7 July, but Bird Islands and large Farwaterniy Island were much longer surrounded by strong ice, which allowed Arctic Fox from Farwaterniy to visit these islands and cache eggs of Brent Geese and Herring Gulls until 11 July.

From 4 June till the end of July the wind was mainly from a northerly direction and temperatures were low. Minimum air temperature was -6°C on 8 June and the maximum temperature +21°C on 25 July. Between 4-30 June the mean temperature was +0.9°C, minimum -5.8°C and maximum +9.7°C. From 1-31 July the mean temperature was +6.3°C, minimum -1.8°C and maximum +21.3°C. In August between 1-14 August the mean temperature was +8.4°C, minimum +6.7°C and

maximum +19.1°C. Apart from some snowfall in early June there was hardly any precipitation. The tundra was very dry in the end of July. In early August the wind changed to the south and higher temperatures were reached. On 3 and 4 July the melting water reached its highest level (about one week later than usual). The large amount of snow resulted in such a high water level in spring that several low-lying islands in the Pyasina Delta (e.g., Verkhny Island and Beacon Islands) were flooded on 3 July resulting in complete losses of many clutches of Brent Geese, gulls and divers.

Spring was very late, and numerous Siberian Lemmings were recorded on first snow-free patches, which indicated their high abundance during the previous winter. These lemmings were immediately captured by Arctic Foxes and Least Weasels, as well as by abundant non-breeding predators (Snowy Owls, skuas and gulls). By the start of trapping on 27 June lemming numbers dropped dramatically, and their density per 100 trap-nights was evaluated as 1.25 Siberian Lemmings and 0.25 Collared Lemmings. Counts on plots yielded density 4 Siberian Lemmings per 1 hectare. All captured females were either already having bred in this season, or pregnant, and juvenile lemmings were seen in tundra in early August.

Arctic Foxes were seen regularly. Two fox dens were occupied by breeding foxes. One with 10 cubs and one with at least 5 cubs. Two dead foxes in winter fur were found after the snow had melted. One Wolf was seen eating an Arctic Fox on the ice-covered Lidia Bay, and in early August was observed near our camp. After the snow had melted also one dead Polar Bear (young female of about 100 kg) was found. Least Weasels were regularly observed initially, but most seemed to have disappeared by early August. The occurrence of Least Weasels also indicates that lemmings must have been abundant during the preceding winter.

Snowy Owls were present and observed regularly early in the season, but less so in July and August. Snowy Owls did not nest. Rough-legged Buzzards were seen even less often, and they also did not nest. Pomarine Skuas were very abundant on the tundra till mid July, but only one nest was found. Two nests of Long-tailed Skuas were found, but both were predated. A White-tailed Sea Eagle and a Peregrine Falcon were seen.

Waders started to nest extremely late, and predation rate was very high. The daily nest survival was 91.16%, which means that over a 21-day nesting period nest survival is only 14%. 40 nests were predated out of 62 nests found and checked more than once. Surprisingly Pacific Golden Plovers and some Grey Plovers still nested or re-nested very late and managed to hatch some chicks in early August. The last Grey Plover chicks hatched and were ringed on 2 August. The last Pacific Golden Plover chicks hatched and were ringed on 12 August. In case of the Grey Plover this was quite surprising, because we rarely observed Grey Plovers on the tundra after mid July, whereas Pacific Golden Plovers kept displaying until late in the season.

In August larger flocks of Dotterels (up to 35 birds) were observed on migration.

Geese did very poorly. Very few nests of Greater White-fronted Geese were found, and though at least one nest hatched successfully, later not a single brood of this species was observed. Brent Geese did only somewhat better on Bird Islands, and some nests survived until hatching. Only some families with small goslings were seen, but all goslings had disappeared by early August. Red-breasted Geese, though low in numbers, did remarkably better and managed to raise some goslings on Bird Islands.

Herring Gulls did lay eggs, but predation pressure was so heavy, even by conspecifics, that only very few chicks survived. Just like in 2007 Glaucous Gulls were somewhat more numerous than in the years 2004, 2005 and 2006, and also more successful than Herring Gulls.

Among the passerines in particular Lapland Buntings were very abundant, and even though quite a number was predated (a.o. by Arctic Foxes, and presumably also by Weasels, Herring Gulls and skuas). 28 nests of Lapland Buntings were found and checked more than once. Twelve of these were predated during egg-phase, and daily nest survival rate was 94.6%. In 14 of these 28 nests eggs hatched. Parents managed to raise their offspring until fledging in 16 of 19 Lapland Bunting nests with chicks. Snow Buntings nesting in the stony areas, did less well than Lapland Buntings and suffered a lot from predation by Least Weasels. Shorelarks also managed to raise some chicks till fledging, and also a few nests of grouse all hatched successfully. Altogether the daily nest survival of the songbirds was 93.89%, and thus considerably higher than for the waders. Red-throated Pipits were rarely seen in 2008, and were not found nesting. Rock Ptarmigans were common, and chicks hatched in all found nests.

Moult migration of Greater White-fronted Geese from the west in early July was much less intensive than in previous years, and also our standard survey in the Pyasina Delta yielded only half the number of moulting Greater White-fronted Geese. In 2006 92,000 moulting Greater White-fronted Geese were counted on this standard survey of 89 km of streams, whereas in 2008 only 39,000 were counted there. Only about 10 moulting Bean Geese were counted during this survey. No moulting Barnacle Geese were observed in 2008. The number of 4,000 moulting Brent Geese on Bird islands (including the Beacon Islands) was also much lower than in previous years.

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27. Severnaya Zemlya Archipelago, Russia (79°30' N, 95°00' E)

The following localities of the Severnaya Zemlya were visited in late summer: south-east of Bolshevik Island, north-east and north-west of Komsomolets Island, Domashny Island

of the Sedov Archipelago. Additionally aerial and shipboard observations were conducted near the coastline. The late and short-term visit did not enable us to make a proper assessment of bird populations and their breeding conditions. It is noteworthy, however, that the summer was characterized by long-lasting thick snowcover and unusually low ice extent in the nearby sea. Thus, according to the "Golomyanny" Weather Station there was snowcover in the Sedov Archipelago until late July, while it melted there one month earlier in 2006 and 2007. The summer 2008 was the second, after the 2007 season, of the least recorded summer ice extent in the Arctic Ocean for the last century. The ice boundary had moved to the north of the Severnaya Zemlya by the end of summer, and the vast Vostochno-Severozemelskaya polynya was formed along the eastern coast of the Archipelago.

Ivory Gulls nested on the Sedov Archipelago and on Shmidta Island. Their numbers on Domashny Island almost halved compared with 2006–2007, which apparently was due to the extensive snowcover and shortage of suitable nesting sites. Distribution of several bird species moved to the higher latitudes in parallel with the ice boundary's northward retreat along the coasts of Severnaya Zemlya, both in the Kara Sea and in the Vostochno-Severozemelskaya polynya of the Laptev Sea. Large mixed feeding aggregations of Herring Gulls, Black-legged Kittiwakes, Ivory Gulls and Northern Fulmars were recorded near north-eastern and northern coasts of Komsomolets Island, primarily along the ice barriers. Herring Gulls were more abundant than Glaucous Gulls among birds wandering near the south-eastern coast of Bolshevik Island. Pomarine Skuas were numerous there.

Surveys were carried out as an activity of the expedition "Arktika-2008" of the Arctic and Antarctic Research Institute in a framework of the Russian program of the International Polar Year.

M.V. Gavrilov, M.N. Ivanov

28. Geiberg Islands, the Kara Sea, Russia (77°39' N, 101°25' E)

Geiberg Islands were surveyed on 22 August 2008, when a helicopter trip was made around Vostochny Island with a landing on Vostochny and Sredny islands. The weather station on Geiberg Islands was closed in the 1990s, hence detailed weather data are not available. The weather was sunny and warm, with weak wind on 22 August.

Rodents, mammalian predators and tracks of their activities were not recorded.

Ivory Gulls bred on both surveyed islands, with a large colony of over 200 nests found on Sredny Island and a single empty nest on Vostochny Island. A mixed colony of several tens of Glaucous Gull and Herring Gull pairs was recorded on Sredny Island, with Herring Gulls being more abundant. Feathered chicks of both Glaucous Gulls and Herring Gulls were dispersing and hiding on the day of the visit, while chicks of Ivory Gulls were not recorded, and the eggs appar-

ently had not yet hatched. Pomarine Skuas and Snow Buntings were also observed on the islands.

Surveys were carried out as an activity of the expedition "Arktika-2008" of the Arctic and Antarctic Research Institute in a framework of the Russian program of the International Polar Year.

M.V. Gavrilov, M.N. Ivanov

29. Khatanga Village vicinity, Taimyr Peninsula, Russia (71°58' N, 102°26' E)

Water appeared on the ice surface of the Khatanga River on 6–9 May. The first gulls and geese were observed over the village on 19 May, and up to 6,000 gulls concentrated on the river ice at the edge of the village during the following days. Water levels in the river started to increase from 24 May, and ice started to move and separated from the shore on 29 May. The ice broke in the middle of the river on 3 June. Intensive shearing occurred on the next day, the ice field was broken by the current and ice ridges appeared near the shores. The ice started to move on the night on 4/5 June. Snowcover was reduced to 50% in the vicinity of the settlement by 26 May. Ice-break was accompanied by the onset of adverse weather, when air temperatures dropped below freezing (reaching -4.5°C on 7 June). Heavy snowfall resulted in a snowcover up to 15–20 cm, in the period from 5 to 8 June. The total amount of precipitation during these days was 22.7 mm, which is over 80% of the monthly average. The warming occurred on 11 June, when the temperature rose to $+7.4^{\circ}\text{C}$.

White Wagtails were recorded from 26 May, and the first ducks appeared on 28 May. Most birds arrived from 28 May to 5 June. Flowering of herbaceous plants was average in timing.

Microtine rodents were not recorded. Mountain Hares were rare in sparse larch forest.

Rough-legged Buzzards were very rare; gulls and skuas were rare.

The abundance of birds was very low on the bogs of the Khatanga River floodplain during the nesting period. Locally wet sparse larch forest with alder was inhabited by numerous Common Redpolls, Little Buntings and Willow Warblers. The Arctic Warbler, Yellow Wagtail, Bluethroat, Red-throated Pipit, Yellow-headed Wagtail and White Wagtail were common. A proportion of common Redwings could have been Dusky Thrushes. Carrion Crows and Ravens were rare. Common waders of this habitat included snipes, the Red-necked Phalarope, Temminck's Stint, Ruff, Spotted Redshank, Eurasian Golden Plover and Bar-tailed Godwit. Arctic Terns were very rare.

We found a nest of Little Buntings with an incomplete clutch of 3 eggs on 18 June and a nest of Fieldfares with 3 eggs. A nest of Common Redpolls contained 5 downy chicks on 30 June.

A.A. Gavrilov

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

Observations were carried out from 20 June to 24 July in the area of approximately 65 km², where studies had been carried out in the framework of the Wader Monitoring Project in 1994–2003. The study area is situated at the border of the typical and southern tundra subzones. A majority of quantitative data on fauna, distribution and numbers of birds were collected on 6 study plots with a total area of 268 hectares.

Mean monthly air temperatures in the study area were -3.6°C , $+6.1^{\circ}\text{C}$ and $+10.0^{\circ}\text{C}$ in May, June and July respectively in 2008, compared with the long-term average of -6.0°C , $+5.7^{\circ}\text{C}$ and $+11.6^{\circ}\text{C}$. Thus, May was considerably warmer than average in 2008, June slightly warmer, and July considerably colder. The beginning of the study period in June was characterized by variable weather, which ended on 27 June with heavy rain. Precipitation occurred on most days until 7 July, including snowfalls on 30 June, when air temperatures dropped to $+0.8^{\circ}\text{C}$ and strong wind occurred. The weather improved on 8–9 July, but then rains occurred for 3 days in a row. The remaining period from 13 to 25 July was relatively warm, although temperatures dropped on days with precipitation. The total amount of precipitation during the study period was 22.4 mm, which is very close to the median (21.4 mm; range 11.8–29.8 mm) for the same period in the years 2003–2008, when quantitative assessment of precipitation was conducted. The number of days with precipitation was above average in the study period in 2008. Our late arrival to the study area did not allow us to assess date of snow melt at 50% of the flat surface, but the snow completely melted by 24 June. This was a relatively late date for southeastern Taimyr, which we can only explain by high accumulation of snow during the winter. Dates of flowering of early plants in 2008 were very close to the long-term average. The first mosquito was recorded slightly earlier than average in 2008, but mass appearance of these insects, and, in particular, imago of crane-flies (Tipulidae), was considerably delayed, apparently by cold and windy weather in late June and early July. Snowfalls on 30 June and rains in July had no apparent adverse impact on breeding birds. The flood was very low in 2008, and most of the middle floodplain of the Bludnaya River was not covered by the water.

Lemming abundance was low in 2008 as was the density of lemming undersnow nests. Most lemming observations (14 animals) were made immediately after our arrival in the study area, in the period 20–28 June, and only 3 lemmings were observed during the following 3 weeks of July. As usual in the study area Siberian Lemmings were more numerous than Collared Lemmings with 12 of 17 identified animals belonging to the former species.

Arctic Foxes did not breed in the study area in 2008, but their abundance was the highest on record during 11 seasons of observations. Rough-legged Buzzards, Merlins, Gyrfalcons, Pomarine Skuas and Long-tailed Skuas were rare non-breeders in the area. This was the second year since the start of

observations in 1994 when nesting of Long-tailed Skuas was not confirmed in this study area. Owls were not recorded. Arctic Skuas bred at a typical low density (0.07 nests/km²). Chick hatched from one of two nests found, and the fate of another nest remained unknown. A nest of Peregrine Falcons with one egg was found on 20 June by I.N. Pospelov on the bluffs of the Popigay River 8.5 km to the north-east of our camp. Three nests of Herring Gulls were spread in the area, at distances 2.2, 4.1 and 5 km from each other. Willow Grouse were rare, and their nesting was not confirmed.

Breeding phenology was close to the long-term average in Dunlins, Pectoral Sandpipers and Lapland Buntings, but considerably delayed in Grey Phalaropes. Breeding density of waders was considerably below average in 2008 at the main study plot on the river terrace, the lowest on record at the watershed plot and the second highest on record in the floodplain. High density in the floodplain can be explained by the absence of flooding in this habitat, which probably increased its attractiveness to Grey Phalaropes. The abundance of the Lapland Bunting was unusually high everywhere.

Nest success of waders in 2008 (48.5%) was close to intermediate values. It was lower than in all the years since 2000, but not as low as in typical seasons with heavy egg predation. Hatching success of passerines and non-passerines (other than waders) was below average, but still closer to the intermediate than low range of values. Thus, despite the apparently low abundance of lemmings and record high abundance of Arctic Foxes, depredation of bird clutches was moderate. This could have been due to some extent to the very low numbers of avian predators (2 pairs of Arctic Skuas in the whole study area and the absence of breeding Long-tailed Skuas), but the low predation pressure by Arctic Foxes is still difficult to explain. In respect to the nest success of individual species of waders it is noteworthy that the variation between species in 2008, was the highest ever recorded for the study site on south-eastern Taimyr. Among common species of waders nest success ranged from 18.2% in Little Stints to 66.7% in Grey Phalaropes.

Interesting observations of birds included the first breeding record of the Raven, whose nest was found on wooden remains of an old light-house; this is the northernmost breeding record of this species in Eurasia (72°55' N).

M.Y. Soloviev, V.V. Golovnyuk

31. Posledny Island and Popigay River mouth, south-eastern Taimyr, Russia (73°01' N, 105°59' E)

The Popigay River mouth was visited on 20 June and Posledny Island on 21 June. A nest of Peregrine Falcons with one egg was found on the cape in the Popigay River mouth. Two pairs of Red-breasted Geese were observed in the vicinity. A colony of Herring Gulls (7 nests) was found on Posledny Island. Other birds recorded on the island included 2 Glaucous Gulls, 4 Ross's Gulls, common Arctic Terns, approximately 25 Red-breasted Geese, approximately 30 Long-tailed

Ducks (but only 4 pairs), 4 pairs of King Eiders and 4 pairs of Bewick's Swans. The Ruff was the most numerous species among waders, with at least 100 displaying males. We counted approximately 20 displaying Temminck's Stint males and 10-15 males of the Pectoral Sandpiper. Curlew Sandpipers and Little Stints were common; Dunlins were also recorded. Two males of the Willow Grouse were displaying. The Lapland Bunting was an abundant species.

I.N. Pospelov

32. Popigay River, south-eastern Taimyr, Russia (72°31' N, 109° 48' E)

A downstream trip for 100 km along the Popigay River was conducted from the mouth of the Borongko River to the Sopochnoe settlement in the period from 14 to 25 August 2008. The landscape consists of wide alluvial depressions with lakes and hilly plains up to 150 m a.s.l. The depressions are occupied predominantly by polygonal bogs and lakes. Wide areas are covered locally in the upper floodplain of the Popigay River by drift sands. Hilly plains are formed of sand and gravel, with rock outcrops on tops of hills, shallow watercourses with steep banks and deep lakes. River banks are bluff and clayey with long-lasting snow packs along the banks at many places. They are steep and rocky near the Sopochnoe settlement and farther downstream.

Larch trees are rare in the study area, and are mostly represented by the elfin wood. The only small sparse larch forest was found 12 km upstream from the settlement and covered an area of approximately 2 km². Shrubs are represented by willow stands 1.5-2.5 m high mixed with herbs and they occupy a small area in the central floodplain of the Popigay River. Meadow communities are quite common in the floodplain and on steep riverine slopes.

The northern part of the study area is permanently used for reindeer husbandry and hunting, and we found heavily degraded tundra patches in the Derde-Khaya locality, mainly on lake shores, which are, however, under 1% of the area.

The weather was relatively warm in the second half of August. Mean daily air temperatures ranged from +10-15°C, but minimum temperatures dropped almost to freezing at night. Strong wind up to 15-18 m/s was recorded on 4 days. The season was late, cold and rainy, although the amount of precipitation in the period of the downstream trip was lower than earlier in the season. The water level in the river was 1.5 m above the lowest recorded for the year, but dropped by the end of month.

Middendorff's Voles were numerous at the site of our longest stopover, with 17 animals captured per 40 trap-nights. Lemmings were not recorded. The overall abundance of small rodents was evaluated as average.

Mammalian predators were not seen, but we recorded fresh tracks of Arctic Foxes several times and tracks of Wolf once.

The abundance of avian predators was average. Chicks had already fledged from nests of Rough-legged Buzzards by mid August. We found 4 nests of Peregrine Falcons with 1, 3, 3 and 4 chicks along a 55 km stretch of river. Chicks fledged from 3 nests and should have fledged in approximately one-week after our visit from the fourth one. Herring Gulls and Long-tailed Skuas were common everywhere on the trip, and were the most abundant birds in the vicinity of the settlement.

In total 34 species of birds were recorded, but the list is apparently incomplete due to the late period of observations. An observation of a juvenile Golden Eagle 12 km upstream from the settlement is of interest; local people reported that "large eagle" appeared exactly in this area each autumn. The most common species were the Pacific Golden Plover, Ruff, Common Ringed Plover, Temminck's Stint, Long-tailed Duck, Black-throated Diver, Willow Grouse (the abundance of grouse broods decreased notably to the north), Arctic Tern, White Wagtail, Lapland Bunting, Arctic Redpoll, and Raven (in small flocks).

All young of waders and passerines had already fledged. One of the nests of Peregrine Falcons was attacked by dogs and trampled by a herd of domestic reindeers, but a chick managed to escape. We found 1 or 2 probably successful nests of Red-breasted Geese near each nest of Peregrine Falcons, and observed their 2 broods close to each other. We recorded broods of Black-throated Divers, Greater Scaups, Northern Pintails and Long-tailed Ducks.

I.N. Pospelov

33. Fomich River mouth, south-eastern Taimyr, Russia (72°07' N, 110°33' E)

During the period from 19 June to 13 August 2008 we surveyed a region with the total area over 500 km² containing a complex geological structure at the junction of the Popigay and Fomich rivers, on the northern margin of the Anabar Plateau. Marginal areas of the plateau are raised to 180–404 m a.s.l.; the terrain to the north is mostly plain but with numerous rocky outliers. The valleys of the Popigay and Fomich rivers are rather narrow to the south of where they join, locally of canyon type. The fragments of floodplain and terrace are isolated, although locally large in area, with bogs and lakes. The Popigay River downstream from where it meets the Fomich river has a valley up to 10 km wide with bogs and lakes. The area is situated at the northern margin of the forest vegetation with sparse larch forest with canopy cover of 20%. The upper margin of forest vegetation reaches 150–170 m a.s.l. in the Fomich River valley, and at 200–230 m a.s.l. along the Popigay River. Dry tundra with patches of bare soil and vegetation cover of 10–50% occupies areas above the forest belt. Shrubs were represented by dense willow stands up to 3 m tall on small areas in the river valleys. Meadow communities are widespread.

The 2008 season was relatively late, cold and wet in general. Judging by the age of chicks of Bean Geese spring development was probably close to average until early June, but a pronounced drop of air temperatures occurred from 10–20 June, which caused then a delay of 5–7 days in phenological events compared with the normal timing. There was also a pronounced decrease of temperatures from 29 June – 5 July, when minimum temperatures dropped below freezing. Mean daily temperatures ranged from +3.5–5.0°C and several snowstorms occurred, although snow never blanketed the ground. The maximum air temperature (+26.7°C) was recorded on 8 August, while mean temperatures were in the range of +8–14°C in July and early August. The first groundfrost was recorded on 29 July. Precipitation was recorded on over 2/3 of days during the season, with the maximum amount of 19.1 mm on 4 August. Winds were most often moderate, although local people characterized the summer as unusually windy. The strongest wind, up to 15 m/s, was recorded on 30 June. Northerly winds were slightly more numerous than winds from other directions.

According to reports of local people ice-break occurred on the Popigay River on 17–19 June, 5 days later than average. The highest water level was recorded on 22–23 June, followed by a decrease to the lowest summer level on 10 July. Rains in the second half of summer caused water levels on 9–10 August to rise 2 m above the lowest levels.

Only one Siberian Lemming was seen during the period of studies. A total effort of 1,465 trap-nights in different habitats resulted in catching 2 Middendorff's Voles and 2 Tundra Shrews, which indicated very little abundance compared with the previous observations on the Anabar Plateau. Northern Pikas were relatively common, but had patchy distribution probably due to proximity to the northern limit of the species range. The low abundance of small rodents was also indicated by food items in nests with chicks of Rough-legged Buzzards. These included goose carcasses, feathers of passerine birds and paws of Arctic Fox cubs.

Arctic Foxes were rare, we saw only a single animal and tracks on several occasions. Only 5 dens of Arctic Foxes were found in the whole study area, which was a low density. All surveyed dens were uninhabited, and fresh signs of fox visits to dens were very rare. However, the finding of cub paws in a nest of Rough-legged Buzzards indicated reproduction of some pairs. Wolves were not recorded but fresh tracks were seen several times. One Brown Bear was seen.

The Rough-legged Buzzard was the most common breeding bird of prey, and we checked 7 nests each containing 2–4 chicks. The one Merlin nest we found failed probably because the eggs or chicks fell out of the nest which was constructed on top of a thin and dry larch exposed to the wind. Juvenile Merlins were observed at the end of the season. Owls were not recorded, although their presence in the area in favourable years was indicated by abundant pellets. Long-tailed Skuas were seen in small numbers in spring, and one Pomarine Skua was recorded. Herring Gulls were common,

but with very few birds nested. None of the nests which we monitored were destroyed by predators.

In total 47 species of birds were recorded, of which 30 were confirmed breeders (found nests or broods with unfledged chicks). The bird fauna consisted primarily of tundra species with a number of forest-tundra or boreal species (the Pallas's Reed Bunting, Wood Sandpiper, Siberian Accentor, Red-breasted Merganser, Dusky Thrush, Capercaillie). Many tundra species were relatively common (the Long-tailed Duck, Pacific Golden Plover, Bar-tailed Godwit, Ruff, Temminck's Stint, Red-necked Phalarope). The finding of Dunlin, presumably breeding on bogs of the Popigay River valley, was unexpected. However, several tundra species were absent due to unknown reasons (the Grey Phalarope, Little Stint, Lapland Bunting) or occurred in low numbers (the Common Ringed Plover, Shorelark, Wheatear, Snow Bunting). The Grey-tailed Tattler was not recorded, while this species was common in the previously surveyed areas on the Anabar Plateau. The very low abundance of geese was noteworthy, and 3 broods of Bean Geese recorded on the Fomich River could have come along the river from a very distant locality. Black-throated Divers and Willow Grouse were common; Rock Ptarmigans were rare.

In contrast to other areas on the Anabar Plateau we failed to find pronounced altitudinal gradients in the bird fauna, with the exception of associations of strictly boreal and bog species within the lowest belt of the mountains. For example, Pacific Golden Plovers, Eurasian Golden Plovers, Willow Grouse and Rock Ptarmigans were evenly distributed along altitudinal gradient from depressions to the highest plateau.

We monitored 24 nests of different species, of which failure was recorded in the above-mentioned nest of Merlins and in a nest of Redpolls (the latter due to unknown reasons). Chicks hatched successfully in other nests of the following species: the European Wigeon, Long-tailed Duck, Rough-legged Buzzard, Pacific Golden Plover, Temminck's Stint, Red-necked Phalarope, Arctic Tern, White Wagtail, Bluethroat, and Pallas's Reed Bunting. Fledglings were recorded in all breeding species of waders, passerines and grouse. The timing of nesting and hatching was close to average in early breeding species (geese, some ducks, birds of prey), while nesting of most passerines and waders was delayed by 5-7 days compared with dates recorded previously in nearby parts of the Anabar Plateau. Redpolls started nesting on 25 June. First chicks hatched in Rough-legged Buzzards on 2 July, in Bean Geese on 5 July (calculated date), in Long-tailed Ducks on 13 July, in Pacific Golden Plovers on 14 July, in Willow Grouse on 15 July, in Little Buntings and Pallas's Reed Buntings on 17 July, in European Wigeons on 21 July, in Red-breasted Mergansers on 25 July (calculated date). The first flying young of Willow Grouse were recorded on 25 July, Rough-legged Buzzards on 14 August, Arctic Terns on 8 August and Herring Gulls on 14 August. Flying young appeared en masse in White Wagtails on 10 July, in Little Buntings and in Pallas's Reed Buntings on 25 July.

The study area was visited regularly by reindeer herders and hunters from the Sopochnoye settlement. However, anthropogenic disturbance was not large.

I.N. Pospelov

34–35. Southern and eastern parts of the Lena Delta, Yakutia, Russia (72°48' N, 129°19' E) and the mainland tundra to the south of the delta (72°00' N, 126°00' E)

The spring was early and warm in the Lena River in 2008, although slightly colder than in 2007. The mean monthly air temperature was -3.4°C in May, which was 3.3°C higher than the long-term average. The first warming with mean daily air temperatures above freezing (up to $+2.2^{\circ}\text{C}$) occurred on 10–12 May. From then on positive mean daily temperatures were recorded on warm days 22, 24, 25 ($+5.4^{\circ}$) and 28–30 May. Level areas in the delta became completely free of snow during the last 10 days of May, and in the southern part of the delta by 23 May. Four cm of snow blanketed the ground after a snowfall on 28 May. The snow melted during the following days.

The mean monthly air temperature in June ($+4.1^{\circ}\text{C}$) was close to the long-term average ($+4.0^{\circ}\text{C}$). However, cold weather returned during the first 10 days of June, when mean air temperature for that period was 3.2°C below average. Rain and a sudden drop of temperature caused icing in the tundra by the evening on 2 June, and every blade of grass was covered with an ice crust. Aerial conductors in the southern part of the delta were covered with a 3 cm thick layer of ice. According to the information from the weather service in the Tiksi settlement, icing lasting until 6 June was recorded by all weather stations in the tundra and forest tundra zones in Yakutia. The amount of precipitation was 10.0–14.5 mm on 2 and 3 June, and snow continued to fall in small amount on all days until 9 June. There was continuous snow cover in the Lena Delta, with 100% of the surface under snow on 10 June even in the southern, warmer part of the delta. Mean daily air temperatures consistently rose above freezing on 12 June (from -1.2°C on 11 June to $+5.9^{\circ}\text{C}$ on 12 June), which was 6 days later than average. The rapid warming resulted in a rapid snowmelt, and snow disappeared on 13 June. The second half of June was relatively warm, but there was cold weather on 30 June and 1 July with a strong gale (up to 30 m/s) and snowfall. Wet snow covered all protruding objects in the northern part of the delta (i.e. buildings, barrels, driftwood, tussocks). Pools and shallow areas of ponds were filled with wet snow and froze at night. July was relatively cold, rainy and windy, with another snowfall on 28–29 July. However, mean monthly air temperature was $+7.2^{\circ}\text{C}$ in July, only 0.1°C below the long-term average, due to warm weather in the middle of the month.

The early warming and snowmelt resulted in the ice-break in the southern part of the Lena River delta being 9–10 days earlier than average on 31 May. The flood was extremely high, and the water level was 41 cm above the historical maximum. All low parts of the delta islands were flooded, and the

following drop in the temperature resulted in formation of an ice layer 5-7 cm thick that remained on the ground after the flood subsided. All the channels of the delta were ice-free by 10 June.

Populations of lemmings were at a low for the third year in a row in the Lena Delta, but a tendency of population growth was recorded. Lemmings were captured from 13 June – 26 July, and the total catching effort from 603 trap-nights resulted in 18 animals. Several dead lemmings were found under the ice crust that had been formed in early June during the icing of flooded tundra areas. However, it is not clear how these animals got under the crust. The abundance of Narrow-skulled Voles was high in the mountain tundra to the south of the delta. Their abundance was higher than in 2007, with 69 animals captured on 13-14 June and 17-26 July with an effort of 427 trap-nights.

Numbers of Arctic Foxes were higher than in 2007, but they were still rare and did not breed. Adult wandering animals were regularly seen in June and July everywhere in the delta, where they were probably attracted by the early snowmelt and high numbers of voles at the mainland in the south. We observed an Arctic Fox moving from the sea ice to the mainland in the south-eastern part of the delta in early June. As previously, birds suffered from predation pressure by Arctic Foxes which destroyed clutches on the large islands.

Pomarine Skuas were numerous in the Lena River delta on spring migration, and remained common there until early July, but did not breed. Numbers of Pomarine Skuas were higher in the southern part of the delta adjacent to the mainland tundra, compared with its central and northern parts. Arctic Skuas occurred in low numbers as in the previous year. Long-tailed Skuas bred in the mainland tundra to the south and south-east of the delta, but not on the delta islands. Flocks of Long-tailed Skuas of up to 40 birds wandered in the central parts of the delta in early July. Neither Snowy Owls, nor Short-eared Owls were recorded in summer. Rough-legged Buzzards bred at an average density, and only on the riverside cliffs of the Prymorky and Tuora-Sis Ranges in the southern part of the delta, as well as on high banks of islands. These are remnants of the ancient coastal plain.

The weather was unfavourable for birds in 2008, although the early spring allowed them to arrive early. All the typical breeding species for the area, including Ross's Gulls, were present in the delta in late May. The drop of temperatures with icing of the tundra surface and flooding of feeding habitats resulted in a mass mortality of waders and small passerines. We found dead Grey Plovers, Pacific Golden Plovers, a Lapland Bunting and Willow Warbler. Birds probably died in significant numbers everywhere across northern Yakutia, because we received dead Ruffs, a Pacific Golden Plover, Curlew Sandpiper and Red-throated Pipit from the Yana River valley at 69° N. Most species of birds eventually started nesting in the Lena delta in mid June after icemelt and snowmelt. Breeding numbers of all waders, small passerines, Willow Grouse, Brent Geese and King Eiders were low. We found

only 8 nests of Little Stints, 6 nests of Ruddy Turnstones, 3 nests of Temminck's Stints, 3 nests of Grey Phalaropes and 1 nest of Curlew Sandpipers. Ross's Gulls, Sabine's Gulls and Arctic Terns did not nest on the small sandy islands in the delta channels, because they remained flooded for a long time. Very few females of the Steller's Eider nested.

Predation pressure by Arctic Foxes and Pomarine Skuas was high. As in the previous year birds nested successfully mostly in the vicinity of Brent Geese colonies on small islands, inaccessible to Arctic Foxes. All nests of Steller's Eiders in the typical breeding habitat, polygonal tundra bogs on the large islands, failed due to predation, as did most nests of King Eiders, Willow Grouse and Greater White-fronted Geese there. Predators destroyed 3 nests of Little Stints and 1 nest of Grey Phalaropes, among the nests of waders which were found.

V.I. Pozdnyakov, Y.N. Sofronov, N. Winn

36. Dzhukagirskoe Lake, "Kytalyk" Resource Reserve, lower Indigirka River basin, Yakutia, Russia (70°30' N, 145°30' E)

Snow melt started on the usual dates, on 22-23 May, and was completed by the end of month. Cold weather returned from 2 to 9 June, when mean daily air temperatures dropped below freezing with strong wind and snowfalls. The minimum temperature, -7.4°C, was recorded on 8 June. Winds changed direction frequently and reached speeds of 10-12 m/s. Fresh snow was up to 10 cm deep and melted only in mid June. Previously, events of cold weather of comparable severity were recorded in 1996 and 2004. The summer was warm and dry in 2008.

Birds started to arrive after the start of snowmelt. The first Siberian Crane was recorded on 23 May. The Spotted Redshank, Temminck's Stint, Ross's Gull, Arctic Tern and Bar-tailed Godwit were observed on 24 May. A nest of Siberian Cranes, found on 25 May was visited by the pair that had arrived a day before, on 24 May. Waders and passerines appeared in the Chokurdakh settlement on 7 June, during the period of adverse weather. Ruffs gathered near garbage cans in search for food. Birds of 7 species were found dead after the snowfall, including the White Wagtail, Bluethroat, Little Bunting, Lapland Bunting, Ruff, Great Knot and Long-billed Dowitcher. According to reports of local people Ruffs were the most common species among the dead birds, which were found under piles of driftwood, in splits of bluffs, under bushes of dwarf birch and willows.

Mosquitoes emerged *en masse* on 17-18 July, which was considerably later than usual.

Voles were rare and lemmings were not recorded.

Arctic Foxes occurred in average numbers with no signs of breeding.

Rough-legged Buzzards and Peregrine Falcons were observed in the usual numbers, but nesting was recorded only in Peregrine Falcons. One Short-eared Owl and one Raven

were recorded. Skuas and Glaucous Gulls were common as usual. Herring Gulls were numerous. Sandhill Cranes, Siberian Cranes and Willow Grouse bred in average numbers.

Chicks were not recorded before the end of observations on 5 July, and the first nest of a wader, the Grey Phalarope, with chicks was found on 16 July. It is likely that breeding was delayed in birds which arrived during the snowy weather in the first half of June. However, the breeding of large birds was not affected by the adverse weather, and chicks successfully hatched in Siberian Cranes, including pairs that had laid eggs before the snowfall.

S.M. Sleptsov

37. Duvanny Yar, Kolyma River lower reaches, Yakutia, Russia (68°38' N, 159°05' E)

A late spring and then a cold June and July were followed by warm and dry weather in August. No rain was recorded in the period of studies from 2 to 23 August.

Our general impression was that lemmings were common, and voles were rare.

Arctic Foxes were not recorded, and they are probably always rare in this boreal region in the lower reaches of the Kolyma River.

Rough-legged Buzzards and skuas were not recorded. Owls, divers and Willow Grouse were common. Observations of broods indicated successful reproduction of ducks, Willow Grouse, gulls and passerines.

D.G. Fedorov-Davydov

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

According to the reports by residents the snow completely melted on 22 May in this area along the northern tree-line. However, the spring was generally late and the summer cold, as indicated by snowfalls in May, the first half of June and in the second half of July. Our observations were carried out in the period from 17 September to 1 October 2008, when the weather was moderately warm. A snowfall occurred in mid September, but the snow melted during 1-2 days. Night frosts occurred periodically. Small rivers and soil started to freeze in late September. Relatively strong southern and eastern winds prevailed until the end of September, when northern winds were recorded.

Lemmings were abundant, and voles were common.

Arctic Foxes were not recorded. Owls were rare, Ravens and gulls were common. Willow Grouse and ducks were common in flocks. Broods of Bewick's Swans were recorded in high numbers. Geese were observed on migration.

D.G. Fedorov-Davydov

39. Kuryshka area, Kolyma Lowland, Yakutia, Russia (69°28' N, 161°46' E)

June and July were cold and dry, with rare warm days, everywhere in the Lower Kolyma area. Strong northerly winds occasionally occurred and a storm on the Kolyma River was recorded.

Rodents, mammalian predators, Rough-legged Buzzards, owls and skuas were not recorded during the period of observations on 26-28 July 2008. Grouse were not seen. Observations of broods indicated successful reproduction of geese and passerines.

D.G. Fedorov-Davydov

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

The season was the latest on record during the last 7 years, and was cold during the whole summer. Fogs and cold northerly winds were common in July and August. A major snowfall occurred on 1 August, and minor snowstorms were regularly recorded.

Numbers of voles were high according to visual evaluations in the period of observations from 22 July to 2 September. Lemmings were not recorded.

Numbers of Arctic Foxes were low, and they probably bred, but apparently unsuccessfully, because juvenile animals were not seen.

Adult Snowy Owls were common, mostly as single birds, on higher points of the peninsula, but signs of their breeding in 2008 were not found. Short-eared Owls appeared in the area in late August, apparently attracted by the high abundance of voles. Numbers of Rough-legged Buzzards were average (based on the assessment made during 7 years of studies), and a small proportion of them bred, while most birds stayed solitarily. Nesting was proved for 2 pairs of 17 territorial pairs or birds. Broods of 2-3 juvenile Rough-legged Buzzards appeared in the tundra in late August, but they could have come to the peninsula from other areas. Peregrine Falcons were rare and did not breed. Gyrfalcons were not seen. Skuas were not recorded. The breeding success of large gulls was the lowest on record, with a single juvenile observed among 250 birds (0.4%).

The unusually cold weather conditions had diverse impacts on distribution, numbers and breeding success of tundra birds on the Kyttyk Peninsula. The differences were difficult to interpret, because we had no data on rodent abundance in the beginning of the breeding season. Divers did not breed, or their clutches were mostly destroyed. Broods of Red-throated Divers, Black-throated Divers and Pacific Divers were not recorded, although adult birds were common on the sea and on tundra lakes. The proportion of juveniles was 1.1% in the White-billed Diver, based on the data from August counts. Sandhill Cranes bred successfully, as half of the broods at the time of fledging consisted of 2 chicks, which is a good

number for this species. Grouse were very rare and probably did not breed.

The breeding success of Tundra Swans was very low, primarily due to heavy predation. The proportion of breeding swans in July and August was 1.3% of all adults, and the proportion of juveniles 1.7%. Surprisingly, geese bred successfully. The proportion of adult Bean Geese was 37%, and the proportion of juveniles was 34.6% of all birds of this species. Juvenile Bean Geese fledged successfully. Breeding success was even higher in the Greater White-fronted Goose, as 76.2% of adult birds were with broods, and the proportion of juveniles was 47% of all birds. Breeding success was very low in the Common Eider, as 0.7% of females were with broods, and the proportion of juveniles was 2.2%. Broods were not recorded in the Northern Pintail, Common Teal, Greater Scaup, King Eider and Red-breasted Merganser. Broods of Long-tailed Ducks were very rare.

Breeding success of waders was difficult to evaluate, based on observations in the end of July. Broods were recorded only in the Common Ringed Plover and Temminck's Stint. We recorded only 4 juvenile Pectoral Sandpipers in the coastal marshes in the north of the peninsula, while numerous waders of all species had been observed there in August 2007. Presumably, cold weather in spring and summer adversely affected breeding of waders.

D.V. Solovieva, S.L. Vartanyan

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

The spring was prolonged and cold in 2008. When we arrived at the study area on 13 June snow had melted on 80% of the flat tundra surface and over one half of tundra lakes were completely covered with ice. The river mouths became ice-free on 11 June, but iceflow along the rivers was not recorded. The flood was high but of short duration, and the water level decreased dramatically from 18 June. Nesting areas of Spectacled Eiders were not flooded in the study area. Clear, predominantly cool weather alternated with north-westerly gales with fog, rains and occasional minor snowfalls in the period of observations until 12 July. Air temperatures dropped rarely below freezing and then only for a short time, and snow never blanketed the ground. Extreme weather events were not recorded in the study period.

Rodents were not recorded.

Arctic Foxes were very rare, with two adult animals seen by four observers during one month. They apparently did not breed. Red Foxes bred on an island separated from the study area by a wide channel, but they probably failed because the den was uninhabited on the second visit to the island in July.

Birds of prey were very rare, and neither Snowy Owls, nor Short-eared Owls were recorded. The latter species has been a rare breeder in the area, with one nest found in 2004 during the period of studies 2002-2007. In the previous years

Peregrine Falcons and Rough-legged Buzzards were regularly recorded along river banks several kilometres from the river mouths, and the latter species was relatively abundant in some years. Observations in 2008 included a single juvenile Rough-legged Buzzard and a single Gyrfalcon, while the Peregrine Falcon was not recorded.

A single pair of Willow Grouse was observed in the study area on 23 June. In the previous years this species was also rare there, although grouse were reported common and bred in some years in riverine shrubs outside the study area and at the Chaun research station.

One Pomarine Skua was observed on 15 June. Arctic Skuas occurred in the study area in small numbers during the whole period of observations (16 records of 1-4 birds). Observation of a pair attacking a Glaucous Gull in late June was the only indication of possible breeding of Arctic Skuas. In spite of their low numbers Arctic Skuas were responsible for notable predation pressure on nesting birds. We observed Arctic Skuas destroying nests of Spectacled Eiders (3 events), White-billed Diver, Herring Gull and Sandhill Crane (one event in each species). As in the previous years Long-tailed Skuas did not breed. Small flocks of these birds appeared from 15-20 June, and increased in number to 130-150 birds by the end of June and 300 birds by mid July.

The Herring Gull was, as usually, the most numerous gull species. We made special effort to find nests of large gulls, because our main research object, the Spectacled Eider, often nested in the vicinity of gull nests, seeking protection from other predators. There were 4 permanent colonies of Herring Gulls and Glaucous Gulls in the study area of 40 km², and we found 62, 40, 30 and 13 nests of Herring Gulls in these colonies during the first count in 2008, which was close to the abundance in the previous years. The first chicks of Herring Gulls hatched on 30 June. Additional 14 nests were found away from the colonies, and the minimum total density of breeding Herring Gulls in the study area was 4.0 nests/km². Non-breeding birds were also present in the area in considerable numbers. Herring Gulls destroyed clutches and captured chicks of birds. Observations of predation by gulls included 3 failed and 3 successful attempts on clutches of Tundra Swans, 2 events of taking chicks of swans, 2 events of taking diver clutches, one event of taking a Spectacled Eider clutch and one event of taking a Herring Gull clutch. Clutches of Herring Gulls also suffered from predation, and only 5 nests survived to hatching in a colony of 13 nests. Glaucous Gulls were rare as usual with breeding density 0.3 nests/km². We found 12 nests, of which 7 were in colonies of Herring Gulls. The first chick was recorded on 1 July. Sabine's Gulls were rare in 2008, with less than 10 nests found. The first starting of an egg was on 4 July. Ross's Gulls were not recorded. Arctic Terns bred in small numbers, as usual. We found 10 nests of terns with clutches of 2 eggs, and the first chick hatched on 4 July.

Three species of divers bred in the study area. Nesting of the White-billed Diver was recorded in the Chaun-Palyavaam

Delta for the first time. We found 2 nests of Red-throated Divers and 16 nests belonging to Pacific Divers and Black-throated Divers (the species was not identified for these nests). The first nest with a clutch of 1 egg of the latter species group was found on 22 June. Mean clutch size was 1.7 eggs and maximum local density exceeded 2 nests/km². Herring Gulls destroyed two clutches of Black-throated Divers and partially destroyed the clutch of White-billed Divers. Broods of divers were not recorded before the end of observations.

Nest density of Tundra Swans was high in the study area of 40 km² on Ayoupechan Island where 23 nests were found. Locally density reached 3 nests/km² in some 1 x 1 km squares, and could have reached 5 nests/km² after accounting for other potentially nesting birds. Eggging conducted by locals from Rytkuchy settlement in the period of egg-laying and the start of incubation had apparently contributed to a decrease in nesting density. The mean clutch size was 2.7 eggs ($n=22$), but this value could have been below the initial clutch size due to the partial predation of eggs by the time of nest inspection. The pressure of avian predators was heavy on swan clutches. Large gulls were often observed sitting at a distance of several meters from a swan nest, waiting for the incubating bird to leave the nest, when the eggs were immediately predated. The first swan chicks were observed on the water on 9 July. Mean brood size was 2.8 chicks ($n=5$). The ratio of observed broods to found nests indicated higher nesting success in Tundra Swans compared with Spectacled Eiders.

Nesting density of Spectacled Eiders in the study area was 2.4 nests/km² ($n=94$), which was the second highest value after 2007 (2.6 nests/km²) for the 7 year study period. However, the actual density in 2008 could have been higher, because the survey started one week after the start of nesting, and some clutches could have been already destroyed. The calculated date of clutch initiation was 7 June, the latest on record for the study period. Nesting success, assessed by examination of nests, was 11.7% ($n=94$), the lowest value on record. This was due to strong predation pressure, primarily by avian predators. Broods were not recorded before the end of the surveys on 12 July.

King Eiders were rare, and we recorded 5 single males in June and a flock of 7 females in early July. One nest with a clutch of 5 eggs at an early stage of incubation was found on 22 June, and was later predated. Greater Scaups were rare as usual (two nests found, their fate unknown). The Long-tailed Duck is a common breeding species in the area. The first nest of Long-tailed Ducks, with a clutch of 3 eggs at an early stage of incubation, was found on 16 June. In total 4 nests were found, their fate was not determined, and broods were not recorded. According to a visual evaluation the numbers of the Northern Pintail decreased considerably compared with 2003-2007. We recorded 4 pairs and several single birds from 13-20 June, and then only flocks consisting primarily of males flying in northern and western directions were observed. Nests of Northern Pintails were not found.

Rare non-breeders included the Common Teal, Red-breasted Merganser, Brent Goose; rare migrants included the Bean Goose, Greater White-fronted Goose, White-winged Scoter and Northern Shoveler. The Baikal Teal was not recorded.

According to general impression numbers of Sandhill Cranes were similar to the previous years, with local density of 2 nests/km². We found 11 nests. Mean clutch size was 1.8 eggs ($n=5$). The first chick was recorded on 27 June. We observed an event of partial predation of a crane clutch by an Arctic Skua, and we found a dead crane chick with its head damaged by an avian predator. Nesting success of cranes was probably high as we found two broods and made 6 observations of birds conducting distraction displays.

The most common waders were the Dunlin (9 nests found) and Red-necked Phalarope (7 nests). The first recently hatched chicks of Dunlins were recorded on 1 July; later we found one more brood and made 6 records of birds alarm calling near broods. The first nest of Red-necked Phalaropes with a clutch at an early stage of incubation was found on 18 June, and the first brood at an age of approximately 2 days on 9 July. Until 12 July we made 3 more observations of Red-necked Phalaropes alarm calling near broods.

Other waders were considerably less abundant breeders. Long-billed Dowitchers were recorded 11 times, which indicated a decrease in the abundance compared with 2002-2007. One nest with incomplete clutch was found on 13 June, and a bird with brood was recorded on 12 July. Nests with clutches were found in the Temminck's Stint (3) and Ruff (2). Three Pectoral Sandpiper females performing distraction displays near nests were observed in June, and females with broods were recorded on 10 and 12 July. A chick about one week old was found on the latter date. Three broods of Grey Phalaropes were recorded on 3 July. A nest of Ruddy Turnstones containing 1 egg was found on 22 June; the abundance of this species was notably lower than in 2002-2007. A nest of Grey Plovers with complete clutch was found, but these birds were almost never recorded on their territories after 1 July, and one flock of 5 birds was seen. Broods were recorded in the Temminck's Stint, Ruddy Turnstone and Grey Plover. Three records of displaying Common Snipes were made in June, and one record of Common Ringed Plover and one of Spotted Redshank. Curlew Sandpipers were not observed, although previously in some years they had been relatively common at the north of the island.

In waders partial predation of a Dunlin clutch was recorded once, and we never observed events of predation of adult waders or their chicks. It is possible that predation pressure on waders was weaker in comparison with large birds. It is also possible that research activities in the study area caused increased predation of eggs of large birds.

Generally, the season of 2008 was undoubtedly unfavourable, but not catastrophic for birds. The late snowmelt probably resulted in decreased breeding numbers of many wader species. Weather events with potentially large impact on breed-

ing success were not recorded. Numbers of rodent specialists was not higher than in the previous years, with a possible exception of Long-tailed Skuas. The pressure of predators, primarily Arctic Skuas, Herring Gulls and Glaucous Gulls, was strong on clutches of tundra birds, and as a consequence the latter had low breeding success.

A.G. Dondua, D.V. Solovieva, N.I.-F. Vartanyan,
S.L. Vartanyan

42. Sredny Kayemravaam Stream, upper reaches of the
Anadyr River, Chukotka, Russia (66°46' N, 169°34' E)

The weather was mostly warm and dry with short-term drizzle in the period of observations on 4–7 July 2008 in the central part of Chukotka. Workers of the “Kupol” gold mine reported that the beginning of summer had been characterized by frequent returns of cold weather and periodic snowfalls during the whole of June.

A few single non-breeding Rough-legged Buzzards were the only birds of prey recorded in the study area at the upper reaches of the Starichnaya River in the Maly Anyuy River basin and the Sredny Kayemravaam Stream in the Anadyr River basin. The Peregrine Falcon, a breeding species during the previous three years, was not recorded. Wandering Short-eared Owls were rarely seen. The absence of breeding rodent-specialists indicated a very low density of microtine rodents in the vicinity of the “Kupol” gold mine. Arctic Ground Squirrels and Northern Pikas occurred in average numbers.

Mammalian predators were represented by common Red Foxes, two litters of which were found in the shift team camp, in dens under household outbuildings. Other large predators (Wolves, Wolverines and Brown Bears) were very rare.

We found 6 new species of birds for the local fauna: the Black-throated Diver, Red-breasted Merganser, American Pipit, Brown Shrike, Stonechat and Common Redpoll, of which the latter four species nested. The list of the local bird fauna now includes 61 species.

Common nesting waterfowl included Greater Scaup and White-winged Scoter. Greater White-fronted Geese, Black Scoter and Red-breasted Mergansers were less common. We did not observe the Common Teal and Harlequin Duck, which nested in the previous years.

Willow Grouse were common. Sandhill Cranes were recorded in small flocks. Pacific Golden Plovers were common among waders, while other species were very rare and included the Common Ringed Plover, Wood Sandpiper, Grey-tailed Tattler, Common Sandpiper and Red-necked Stint. Contrary to the previous seasons we did not observe Ruffs, Pectoral Sandpipers, snipes and phalaropes. Herring Gulls, as usual, were represented only by flocks of non-breeders. The species diversity and abundance of passerines was higher than in other birds. The most numerous species included the Yellow Wagtail, White Wagtail, Red-throated Pipit, Wheatear, Dusky Thrush, Arctic Warbler, Little Bunting and Arctic Redpoll.

The House Martin, Bluethroat, Pallas’s Reed Bunting, Common Rosefinch and Raven were relatively common in this year, while other species were rare.

I.V. Dorogoi

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

The snow accumulation was low during the winter 2007/2008. However, abundant snowfalls occurred during early spring. Over 95% of the area occupied by the colony of Snow Geese in the Tundrovaya River valley was snow-covered on 29 May. Snow cover reduced dramatically after rain on the night of 29/30 May, but thereafter melting slowed down due to low air temperatures. A snowstorm on 2-5 June resulted in an increase in snow cover on over 95% of the colony area. Air temperatures dropped to –10°C at night on 5/6 June, and snow started to melt again only from 10 June, when temperatures rose above freezing and there was a strong southerly wind, gusting at 11 m/s. Water filled many streams and rivers during 3 days, which resulted in a high, although late, flood. Snow cover halved during these days. June and July were cold with frequent snowfalls. August was generally warm and dry.

Lemming numbers continued to increase in some areas on Wrangel Island, but were low in the area of the main geese colony.

Similar to 2007, the abundance of Arctic Foxes was low at the geese colony. Breeding foxes were observed there, but their litters were not found. Three carcasses of Arctic Foxes in winter fur and one in spring fur were found in the vicinity of the colony. As in previous years, numbers of Arctic Foxes in the study area were considerably reduced by the presence of Wolves and Wolverines.

Snowy Owls did not breed in the study area. At least 100 Glaucous Gulls were simultaneously recorded at the colony in the incubation period of the geese. Up to 80 Pomarine Skuas were present in the colony in mid June, feeding on abandoned eggs, which were available in very high numbers.

Mass arrival of Snow Geese to the main colony was recorded on 29-30 May. Breeding of geese occurred on average dates, but was prolonged. The first nests were recorded on 27 May, the first down in nests on 29 May and the start of incubation on 1 June. The adverse weather conditions occurring during the period of the establishment of the colony resulted in the shortage of snow-free areas. Accordingly, there were two waves of nesting by geese, on 30 May – 1 June and on 7-8 June. Geese continued to settle in the colony until 12 June and laid eggs until 15 June.

Only a small proportion of the colony area was used for nesting by geese (ca. 500 ha), as the largest part was snow-covered. As a result, thousands of eggs of Snow Geese were laid on bare ground, and clutches in thousands of nests were lost

after being snow-covered during the snowstorm and strong frost. Many females, after losing their own clutches, tried to lay eggs in nests of other birds. Clutch size varied from 1 to 12 eggs, and was on average 4.2 ± 0.1 eggs ($n=479$; clutches of up to 15 eggs, abandoned before incubation and representing simply piles of eggs, are not included). A proportion of clutches containing 4 eggs was 28.4%, which indicated poor conditions at the start of nesting.

The total number of Snow Geese at the main colony in 2008 was estimated at 25,000-30,000 pairs, of which approximately 10,000 pairs reached the stage of a shaped nest cup. The first chicks hatched on 25 June, compared to an average date of 27 June for 1970-2004. At least one chick hatched in approximately 3,500 nests, which was 10-12% of the initial number of pairs. The mean brood size when birds left the main colony, was the lowest on record during the last 15 years, 2.6 ± 0.10 chicks ($n=118$), and only approximately 11,500 chicks left the colony in 2008. The proportion of juveniles in small flocks of families leaving the island was $\leq 5\%$. Less than 1,000 juveniles arrived at the wintering grounds in North America, which was $\leq 1\%$ of all birds. We expect a decrease of the Wrangel population of Snow Geese to 130,000-135,000 thousand birds by spring 2009.

Thus, reproduction of tundra birds, and Snow Geese in particular, was extremely low on Wrangel Island in the breeding season 2008, primarily due to adverse weather conditions during the whole season.

V.V. Baranyuk

44. Upper reaches of the Neizvestnaya River, Wrangel Island, Russia (71°14' N, 179°20' W)

The breeding conditions were unfavourable for birds in 2008. The summer was very cold and wet. Frequent rains and snowfalls were accompanied in June and July by strong wind and air temperatures below freezing. The start of breeding by birds was interrupted on 2-5 June by a heavy snowstorm with wind reaching 10-25 m/s and air temperatures dropping to -10°C . Southerly winds resulted in icing of all surfaces during the last 2 days of this period. The next rapid drop of temperatures occurred from 24 to 29 June. Some snow banks in the Neizvestnaya River valley and in the Central Mountains did not melt until 10 September due to the cold summer.

Contrary to expectations populations of Vinogradov's Lemmings and Siberian Lemmings had decreased yet at a stage of growth, before reaching peak abundance. This deviation from the expected population cycle was probably due to heavy icing in autumn and winter 2007/2008, caused by abundant and prolonged rains in September 2007. The overall abundance of lemmings was low on the island in 2008, and apparently insufficient for the successful breeding of rodent specialists. The linear density of undersnow nests of lemmings was 0.9 per 1 km of transect.

Numbers of Arctic Foxes were low everywhere on the island in 2008. Counts of snow tracks in spring indicated that most

animals had left the island in winter, and then returned to breeding territories in the second half of May. This was probably caused by low lemming abundance and low availability of prey due to the icing. The density of Arctic Foxes was 0.1 pairs/km² in the monitoring area of 45 km². Only half of the pairs in this area bred, and many of them did not use dens (presumably, due to predation pressure by Wolves and Wolverines), which made the assessment of pair status and litter size difficult. Mean litter size was 5.6 young.

Death of Arctic Foxes after attacks by Wolves and Wolverines became more common. Numbers of Wolverines increased on the island, but their impact on tundra birds (with the exception of Snowy Owls) is difficult to evaluate. We found 2 downy chicks of Grey Plovers near a den of Wolves in the Gusinaya River valley. Based on the damage to the chick's bodies we concluded that Wolves had crushed the chicks with their paws but had not eaten them.

Numbers of Snowy Owls were extremely low, and considerably fewer birds than usual arrived to the island by the start of the breeding season. The distribution of owls across the island was typical, and optimal territories in the Northern Mountains and in the Gusinaya River valley were occupied first. The maximum density of owls in the monitoring area of the upper Neizvestnaya River was 0.4 birds/km², below average. Non-breeding owls arrived later, and were relatively evenly distributed across the island, usually having no permanent territories. Many breeding pairs failed in the very beginning of the season, and the proportion of breeding pairs was determined only for the upper Neizvestnaya River monitoring area. Nesting density (0.2 nests/km²) was below the long-term average there, and was even lower elsewhere on the island.

In total there were 33 breeding records of owls in 2008. Clutch size varied from 3-9 eggs, with the mean 6.2 eggs ($n=15$). Breeding success was extremely low in Snowy Owls due to adverse weather conditions and low food supply. Approximately 25% of nests were deserted by Snowy Owls during the snowstorm in early June. Brood size after fledging was a maximum of 2 chicks at the end of summer. Lemmings were the main diet of breeding owls (85%); other prey items included Snow Goose, Common Eider, eider eggs, chicks of Long-tailed Skuas and Snow Buntings, and waders.

Pomarine Skuas arrived to the study area on 28 May, and departed from inland parts of the island on 20 June, making no breeding attempts. On the upper Neizvestnaya River monitoring area (45 km²) the maximum density of Pomarine Skuas was recorded at the end of the first one third of June, when it was still low, 0.4 birds/km². The proportion of dark birds was 12.5%.

Long-tailed Skuas arrived to the study area on 28 May and started breeding on 16 June. Average density was 0.3 nests/km² on the upper Neizvestnaya River monitoring area. The abundance of breeding Long-tailed Skuas was average in all areas of the island where counts were conducted, with the excep-

tion of the Northern Plain. Breeding success was extremely low, as most clutches were destroyed or failed due to weather conditions. A single chick of Long-tailed Skuas was found among prey items of Snowy Owls. Long-tailed Skuas started to leave breeding territories in late July, with a few families with young remaining. Most adult skuas left the island by mid August, and we recorded only 5 families with fledglings during counts in different parts of the island in the second half of August.

Numbers of waders were lower than usual in the inland parts of the island due to the mass departure of birds during the snowstorm in early June and mortality in some of the remaining waders and passerines. Bodies of 3 Ruddy Turnstones, 3 Snow Buntings and 2 Redpolls were found in the vicinity of two research stations in the Neizvestnaya River valley.

The number of nests of Common Eiders halved compared with 2007 (52 vs.102). Their clutches contained 3-6 eggs, with a mean of 4.3 eggs ($n=12$). The proportion of successful nests was 79% for females nesting in the vicinity of Snowy Owl nests ($n=47$); nest success was not known for eiders not associated with owls. Owls captured 12.8% of incubating eider females ($n=47$). Numbers of Snowy Geese were unusually low during the nesting period outside of the main colony. Most geese gave up breeding due to adverse weather conditions and the scarcity of nesting Snowy Owls.

Breeding success was extremely low in Black-legged Kittiwakes and Common Guillemots as well. We observed chicks only in nests of cormorants during the survey of the western seabird colonies from the sea in ideal weather conditions on 16 August.

I.E. Menyushina

45. Area to the north of the Anadyr Estuary, Chukotka, Russia (64°41' N, 178°48' E)

The spring was late, and the summer cold but relatively dry based on observations from 4 June to 11 July. Night frosts and occasional snowfalls occurred until approximately 10–12 June. Cold weather with fogs prevailed on the Russkaya Koshka Spit and vicinity from 13 June to 5 July, but prolonged rains were not recorded. Most small tundra lakes on the spit dried out completely and were then clayey patches surrounded by tundra and willow stands; these lakes were filled with water in 2007. Warm sunny days were common on the spit after 25 June. Large lakes in the vicinity of the Izvilistaya River mouth were ice-covered, with some open water near the shores, on 25–26 June, while small lakes were ice-free by this time. The Klinkovstrem Bay near the spit became completely cleared of ice by 20 June. Strong sea storms were recorded on 1–2 July. Warm weather on the Zolotoy Range and vicinity on 5–8 July resulted in mass emergence of mosquitoes; then the weather turned cold again.

Lemmings and voles were not recorded during the period of observations, and Arctic Ground Squirrels were common.

Red Foxes were rare with 3 observations made outside of the Russkaya Koshka Spit. Arctic Foxes were not seen.

Birds of prey were rare with 2 pairs of Rough-legged Buzzards and a pair of Peregrine Falcons nesting in the vicinity of the Anadyr airport. A nest of Peregrine Falcons found on 9 July to the north-east of the airport contained 3 chicks 4–8 days old. Remains of Common Teal and Wood Sandpiper were found near the nest. Owls were not recorded. Skuas were common, although most of them apparently did not breed. Flocks of 20–30 wandering birds were observed from late June. Three nests of Long-tailed Skuas and four nests of Arctic Skuas were found.

A continuing decline of the Spoon-billed Sandpiper population was evidenced by the finding of only two nesting pairs and one unmated male in course of the survey on the Russkaya Koshka Spit. The population of the Aleutian Tern did not exceed 20 pairs on the spit, which was less than 50% of the previous year estimate.

Broods of Willow Grouse became common from early July, and five broods of 4–7 chicks were counted on 6–7 July on a route to the north of Zolotoy Range. Pairs of Rock Ptarmigans were recorded in the mountains. Brent Geese bred, and five nests were found on 19 June at the margin of a colony of Glaucous Gulls and Herring Gulls on an islet at the base of the Russkaya Koshka spit. Bean Geese were common breeders in tundra in the basin of the Izvilistaya River, where 25 territorial pairs were recorded on 25–26 June in an area of 3x3 km. We observed hatching of chicks and broods of 3, 4 and 6 downy chicks at that time. We also observed numerous Sandhill Cranes in this area (up to 30 nesting pairs), and found 3 nests and 6 broods of these birds. Timing of breeding was probably close to average in the Bean Goose, waders, terns and gulls.

The abundance of broods indicated average to high nesting success of passerines, waders, cranes, grouse and Bean Geese.

E.A. Koblik, J. Gregersen

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

Observations were carried out in the period from 24 June to 23 October.

The winter 2007/2008 was cold with a small amount of precipitation across the major part of the Chukotka. The low accumulation of snow resulted in a low water table in spring in the rivers and lakes of the Meinypilgyno lake-river system, and nesting habitats of birds were not flooded. Lakes became ice-free 12-14 days later than the long-term average. Snowbanks in the mountains were small and melted quickly. Water levels dropped to the lowest summer level 10-12 days earlier than usual, and the water level in lakes and rivers in summer and autumn was the lowest on record since 1991. The summer was cool and dry; autumn was relatively warm with brief

rains. The crop of berries and mushrooms was very small. A second flowering of dandelion, Chukotka Locoweed and *Potentilla* spp. was observed in September.

A channel connecting Kaipylgyn Lake (adjacent to the Meinypilgyno lake-river system) with the sea did not break naturally for the first time since the start of observations in 1970, but was made by a bulldozer on 16 July. This date of opening of a channel was approximately 40 days later than usual. A prolonged period of high flood in that area had probably adverse impact on breeding success of some species of waterfowl.

Signs of activities of rodents were rarely recorded, and rodents were not seen. On two occasions we observed Ermines carrying prey, in the foothills of moraine hills, and in one case the prey was identified as a vole.

Brown Bears had a considerable impact on the nesting success of colonial birds, Common Eiders and Herring Gulls. The abundance of bears has increased during the last 8 years. They have even started to visit the settlement, and made 3 such visits in 2008. Bears, including a female with 3 cubs and 4 juvenile males, stayed on the Red Salmon spawning waterbodies, rather close to the settlement. Red Foxes were not recorded in 2008.

White-tailed Sea Eagles were common birds of prey in the area, and 5 birds stayed in the second half of July on the spawning waterbodies of salmon, 12 km from the settlement. Single records of the Gyrfalcon, Peregrine Falcon, Rough-legged Buzzard and Short-eared Owl were made. A nest of Ravens with 4 chicks was found.

Human impact (egging) was the same as in earlier years in accessible colonies of Common Eiders and Herring Gulls.

Observations of broods of the Common Ringed Plover, Lesser Sand Plover, Red-necked Stint, and fledglings of the Snow Bunting, Wheatear and Red-throated Pipit indicated successful breeding of these species. Broods of the Harlequin Duck and Red-breasted Merganser were common on rivers in August. Chicks of Sandhill Cranes were recorded twice. Willow Grouse were common breeders.

The number of Brent Geese was the highest on record during all the years of observations, with 69 birds recorded in late June on a spit in the eastern part of Pekulneiskoye Lake. Signs of breeding were not recorded.

The proportion of non-breeding Greater White-fronted Geese was probably high. Geese were often recorded in flocks of 3-32 birds until mid July, while observations of broods were rare. Numbers of moulting birds were also low compared with previous years.

Locals reported an observation of a Grey Heron, a new species for Chukotka, in late July 20 km to the west of the Meinypilgyno settlement. Afterwards we saw this bird in the

settlement regularly in mornings from mid August to 26 August.

E.V. Golub, A.P. Golub

47. Meinypilgyno vicinity, Chukotka, Russia (62°33' N, 177°05' E)

According to observations by local people the winter was cold, with low accumulation of snow, and coastal spits had remained snow-free before April. Fast sea ice was recorded for the first time in the past 20 years. The amount of precipitation in April equalled the total during all winter months. The spring was average in timing, but snow remained only on the slopes of hills and in ravines by the start of surveys on 3 June. Water levels were unusually low in rivers and lakes at this time, and later increased only on Pekulneiskoe Lake before breaking a channel from the lagoons to the sea. Ice on rivers and lagoons was present until late June. The southern part of Vaamychgyn Lake cleared of ice by 22 June, and the northern part by early July. A proportion of ice reduced on Pekulneiskoe Lake from 70% on 25 June to 30-40% on 5 July. Thus, the ice-melt progressed slower on the lakes in 2008 compared with the previous year, which was probably due to low flood levels.

Light snow-falls occurred on 4 and 6 June, and this snow melted during several hours. June was moderately cold with mean day time temperatures +5-7°C, and rare rain or drizzle. 38% of days were sunny, 28% dull and 34% partly cloudy. From 1 to 10 July only one day was warm and sunny, and other days were cloudy and cold. Fogs from the sea occurred frequently in the period of studies until 20 July. Two days were calm, while moderate to strong winds of south-westerly and southerly directions prevailed on most days. Water areas of some permanent waterbodies at least halved and intermittent ponds dried out completely. A channel connecting the lagoons with the sea was dug on 19 June, and a channel connecting Kaipylgyn Lake with the sea did not break naturally and on 15 July was made by a bulldozer.

Thus, low tundra wetness was characteristic of the season, especially at some distances from permanent waterbodies. Generally the season was cold and dry.

Lemmings were not recorded. Voles were common and locally abundant, particularly in willow stands on river banks at a large distance from the sea. The abundance of microtine rodents increased considerably compared with the previous year. Arctic Ground Squirrels were numerous on coastal spits and in moraine hills, remaining as previously an important component of the diet of the Brown Bear, Red Fox, gulls and Raven.

Arctic Foxes are absent in the area in summer. Red Foxes were often seen hunting for Arctic Ground Squirrels and voles in moraine hills to the north and on coastal spits 10-15 km to the west of the settlement. Ermines were not recorded. Brown Bears were frequently recorded on the coastal spits and in moraine hills, but their abundance decreased com-

pared with the previous year. Brown Bears made purposeful visits to the colonies of gulls on islands in Vaamychgyn and Pekulneiskoe lakes in June, but switched to fish after the start of spawning by salmon. The impact of bears on reproduction of birds was not large outside of the gull colonies.

Rough-legged Buzzards and wandering White-tailed Sea Eagles were recorded several times. One Peregrine Falcon and one immature Osprey were also seen. Nesting of birds of prey was not recorded. Owls were not seen. Arctic Skuas nested in the moraine hills; non-breeding Long-tailed Skuas were recorded in large numbers on coastal spits in late June. Large gulls were numerous everywhere as previously, and nested on islands in Vaamychgyn and Pekulneiskoe lakes and in marginal areas of the spits. Local people made 4–5 rounds of collecting eggs of gulls in the colonies closest to the settlement. Ravens bred successfully in the settlement and in the moraine hills.

Sandhill Cranes were rare on the spits and rather numerous in the moraine hills. Greater White-fronted Geese were common and successfully raised chicks in the moraines, including the southern part which lies closest to the settlement. Brood size was 1-3 chicks. Two of three nests of the Emperor Goose were flooded during the period of increasing water levels and eggs from one were collected by local people. Among ducks breeding was confirmed in the Northern Pintail, Greater Scaup and Common Eider, as broods of these species were observed. Clutches of eiders were destroyed in high numbers by skuas and large gulls on spits and by dogs and humans near the settlement and on islands. It is noteworthy that dogs often wandered as far as 10 km from the settlement in 2008 searching for Arctic Ground Squirrels. Recreational pressure increased on the coastal spits in the vicinity of the settlement.

The abundance of the Skylark remained high. A successful breeding was recorded in the White Wagtail, Wheatear, Snow Bunting and Lapland Bunting, House Sparrow and House Martin. Grouse were not recorded.

Dunlins were common and locally abundant in the moraine hills; Red-necked Phalaropes were relatively common everywhere. The Common Ringed Plover, Pacific Golden Plover and Lesser Sand Plover were common on the spits, where two broods of the Red Knot were also found. The Red-necked Stint, common in the previous year, was a rare breeder in 2008. The abundance of breeding Spoon-billed Sandpipers continued to decline, and their nests were not found in depressions between ridges on the coastal spits, which could be due to comparative dryness of this habitat. The only displaying Temminck's Stint was seen in the beginning of the breeding season, but broods of this species were relatively common in July in the lower reaches of the Pika River, 55 km to the east of Meinypilgyno.

The season 2008 was probably unfavourable for breeding waders and waterfowl due to the relative dryness of nesting and brood-rearing habitats. However, an increase in the

abundance of microtine rodents and decrease in depth of waterbodies resulted in lower predation pressure of gulls and Ravens on tundra birds. We found fish scale, shells of shellfish and fur of Arctic Ground Squirrels in several pellets of Ravens, but in contrast to summer 2007 we did not find eggshells of other birds near nests of Ravens in 2008. Generally, the season was not favourable for breeding by birds of wet habitats, but breeding success was high in birds that did start to nest.

N.N. Yakushev, P.P. Pinchuk, S.V. Golubev

48. Saint George Island, Pribilof Islands, USA (56°34' N, 169°35' W)

The season was late, very cold and rainy based on observations in the period from 10 May to 7 August 2008. Two heavy snowfalls occurred in the second half of May. The snow melted only at elevations below 50 m asl by the start of observations, while snow banks under cliffs of the western coast of the island remained until the end of the studies. Air temperatures mostly ranged from +5–7°C in July, and reached +12–15°C on 2–3 days only.

The abundance of Brown Lemmings increased compared with 2007, and they were numerous in the settlement and elsewhere with a relative density of 2–3 animals recorded per one hour. Lemming numbers did not change notably during the season.

Arctic Foxes occurred in average numbers for the island (5–6 animals observed during a day).

The Bald Eagle was the only bird of prey species recorded. Arctic Skuas and Long-tailed Skuas were rare non-breeders, Herring Gulls, Glaucous Gulls and Glaucous-winged Gulls were common, but did not breed. A Snowy Owl was recorded. Ravens bred successfully for the second year in a row.

Breeding waders were represented by Semipalmated Plovers and numerous Rock Sandpipers. Ruddy Turnstones were common on migration. The Harlequin Duck was the only common species of waterfowl; other species were rare and their breeding was not confirmed.

N.B. Konyukhov

49. Alaska Peninsula, Alaska, USA (57°18' N, 158°05' W)

Compared to the springs of 2005, 2006, and 2007, the spring of 2008 was late. All major rivers were clear by our arrival on 4 May. Locals at the village of Ugashik noted that the Ugashik River broke later than normal, and that spring phenology was late. Typically willows surrounding the village are in bloom by early June, but the catkins had not emerged by mid-June in 2008, nor had leaves yet emerged. Bird arrivals in the village seemed late as well; American Tree Sparrows and Golden-crowned Sparrows typically present and singing vigorously by early June, were largely absent and quiet by mid-June. Temperatures often dropped below freezing during our stay in the village (9–19 June), and wind, sleet,

and rain were common. There was a snow storm on 5 June. Snow cover at low elevation was reduced to 50% sometime in mid-April, while in Aniakchak at higher elevations this happened only on 7 June. The 'final' loss of snow cover on flat areas was estimated at ca. 7 May.

Voles and lemmings were not recorded.

Red Foxes were breeding in small number. Birds of prey were quite diverse (the Bald Eagle, Golden Eagle, Hen Harrier, Rough-legged Buzzard, Merlin and Gyrfalcon), but in small numbers and only the first four species were breeding. Also few Short-eared Owls were recorded. Both Rock Ptarmigan and Willow Grouse were common and bred.

We visited three areas along the central Alaska Peninsula in spring 2008. From May 4-10, a crew of two was present at Cinder Lagoon to monitor spring shorebird migration and collect samples for avian influenza analysis. This was our first visit to this site at this time of year. Upon arrival, sea ice blocked the mouth of the lagoon, and ice covered much of the intertidal zone. On 6 May, the lagoon flushed and extensive mudflat habitat was exposed. The lagoon hosted numerous species of shorebirds, primarily migrant species. Shorebird species present at the site during this period (in order of abundance; * denotes local breeder) were the Dunlin*, Bartailed Godwit, Marbled Godwit*, Western Sandpiper*, Least Sandpiper*, Grey Plover, Ruddy Turnstone, Short-billed Dowitcher*, Rock Sandpiper*, Wilson's Snipe*, Greater Yellowleg*, Red-necked Phalarope, Black Turnstone, and Red Knot. Birds had not yet initiated nests by the time we departed, but males were active in flight displays and territorial defence. Long-tailed Skuas, Glaucous-winged Gulls, and Common Gulls were the primary avian predators at the site; the gulls were common breeders. Most ponds were unfrozen by the time of our departure; large lakes were still frozen, as was the ground.

Next, from 29 May through 9 June, we visited numerous randomly selected sites throughout Aniakchak National Monument and Preserve in order to conduct an all-bird inventory of the region. The results from this effort are summarized in a comprehensive trip report (see: http://science1.nature.nps.gov/naturebib/biodiversity/2009-4-3/RuthrauffD_2009_ANIA_BreedingBirdsFinalReport_090331.pdf). In brief, the weather during our stay was cool, windy, and wet. Most sites below ~400 m elevation were free of snow, and all creeks and rivers were ice free and within their banks. At high elevation sites, extensive snow cover was still present. It appeared that most of the spring thaw occurred approximately one week prior to our arrival. Despite the late spring conditions, the anticipated bird species were present, and birds were singing and/or engaged in flight displays. We found the nests of seven species during our visit; only the Common Raven and American Dipper had hatched by the time of our departure.

Finally, from 9-19 June we conducted a study of breeding Marbled Godwits in the vicinity of Ugashik Bay and Cinder Lagoon. We discovered seven Marbled Godwit nests (one

of which subsequently hatched, and two of which were predated), and encountered two broods during our time in the region. During the springs of 2006 and 2007 we conducted line transect surveys for Marbled Godwits, and it was our impression that the number of breeding birds was consistent across all years. The weather was cold compared to previous years, but did not apparently inhibit the breeding activity of the godwits. Relatively little is known about the breeding schedule of Marbled Godwits in Alaska, but the breeding phenology in 2008 did not appear to differ markedly from the few previously published studies.

There was no human impact. There are a few isolated villages along the coast of the Alaska Peninsula, none of which create a tangible impact on the birds of this region.

D. Ruthrauff

50. Becharof Lake area, Alaska Peninsula, Alaska, USA
(57°49' N, 156°07' W)

The general feeling is that this was the third cool and late spring we have had in a row. In April, ice in the Bering Sea was slow to move out. The monthly air temperature averages for the closest permanent weather station (King Salmon) do not reflect this very well. Ice broke-up on 31 March 2008 on the Naknek River at King Salmon. No major snow falls occurred in the spring and summer months. There was no warm "summer" weather until August. June and July were cool, stormy and foggy in general, but average in humidity.

The below information is based on general impressions for the most part. We did not do extensive avian field studies in 2008. We have some comparative landbird point count data for the same points from 2007–2008.

Voles were rare. Arctic Foxes not recorded, Red Foxes were common. Few Rough-legged Buzzards, skuas, Short-eared Owls were seen, but gulls were common.

We conducted tundra swan aerial surveys in May and August of 2008 that we are in the process of analyzing. Tundra swans appeared to be nesting regularly, but not many young were produced. It seems that production failed late in the season because adults stayed on their nesting territories to moult. Abundance of ptarmigans was evaluated as low.

Human activities are minimal in the study area, especially in the spring and summer. Human activities include sport fishing on targeted streams. In the fall, after many of the migratory species have departed, there is more hunting activity, but it is still limited.

S. Savage

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

Snow melt and habitat availability in 2008 was at least 14 days later than in 2007. We were on the study site from 4-17 June, which preceded hatching of most waterbirds. The first

observed hatching was an Emperor Goose clutch on 15 June. Overall, hatching by waterbirds in 2008 was predicted to be 7-10 days later than in 2007. Late seasonal phenology and cool, wet climatic conditions prior to hatching suggest water-bird productivity may have been below average.

Plant phenology was delayed up to two weeks in 2008. Flowering dates for *Carex* spp. (10 June), *Petasites frigidus* (7 June), *Cornus canadensis* (7 June), *Salix* spp. (10 June), *Rubus chamaemorus* (13 June), *Sedum roseum* (7 June) and *Rumex arcticus* (7 June) were 2-15 days later than in 2007. Green-up of *Hippuris vulgaris* (16 June) was 12 days later than in 2007 and the first large mosquito emergence in 2008 was 16 June versus 1 June in 2007. Midges (*Chironomidae*) appeared 12 days later in 2008 (10 June) than in 2007 (30 May).

The Naskonat Peninsula is dominated by low elevation, wet sedge/grass habitats. As in 2007, there was little evidence over-winter or spring activity of rodents adjacent to the uplands and none in the lowland marshes and only one individual was seen. Microtine populations are making a slight positive response towards recovering from storm surge flooding in 2006 and earlier.

Arctic Fox tracks were few, but more common than in 2007, and only one individual was heard (none seen). Fox predation on eggs and adult waterbirds appeared moderate, an increase from 2007. We have not seen Mink or their tracks on the Naskonat, we suspect because the preferred habitat (i.e. uplands) is limited.

Arctic Skuas are common and although few nests are found, they are likely breeding on most or all of the plots surveyed. Being opportunistic predators, we suspect fluctuation in vole numbers merely alters their impact on birds. Overall, we haven't detected a trend up or down in Arctic Skua numbers. Long-tailed Skuas are uncommon on the Naskonat. Lower proportions of upland habitats which are preferred for nesting is a factor and probably also vole abundance. As for Willow Grouse, we see or hear individuals on roughly half of the plots we do each summer (~10-15) and usually find only less than 5 nests because our focus is on waterbirds. We have been at the Naskonat since 2002 and trends in grouse numbers or nesting birds have not changed in response to predation or flooding.

General observations in 2008 include Grey Phalarope (less than 10 seen) and Ruddy Turnstones (none seen) which continue to be species of concern due to low numbers. These species are well below historic levels based on subjective observations by long-term field biologists. Single male and female King Eiders, common offshore migrants during migration in early May, were present through 15 May.

C.P. Dau, S.P. Afcan, T. Sharpe

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

The timing of spring snowmelt and ice breakup on the Yukon-Kuskokwim Delta (YKD) was near average, as was the nesting phenology of most goose species. White-fronted, Emperor and Brant, was about one day earlier than the long-term average and two days earlier in Cackling Geese.

Surveys conducted on the YKD during 2008 indicated clutch sizes were slightly below average in Greater White-fronted Geese but that nest success was near average. Good production and autumn numbers larger than that of 2007 was expected in this species. Since 1999 the index for the Pacific Population of Greater White-fronted Geese was based on an autumn population estimate derived from spring surveys of adults on the YKD and Bristol Bay. The 2008 autumn estimate is 627,000, 4% higher than the 2007 estimate and another record high. These estimates have increased an average of 6% per year since 1999 ($p=0.003$).

Brant nest densities at five primary colonies on the YKD in 2008 were 40% lower than in 2007, and 43% below the long-term average. Low nest density, frequent Arctic Fox predation of Brant nests, and lower than average clutch sizes indicated Brant production on the YKD was poor this year.

As to Emperor Geese, aerial surveys during the YKD coastal survey indicated slight decreases in the number of pairs and total birds from 2007 levels, but a long-term increasing trend in both indices is still apparent. Nesting surveys indicated clutch sizes were near average and that Emperor Geese were not greatly affected by the increased Arctic Fox predation observed on Brant Geese and Cackling Geese. Good production and autumn numbers similar to that of 2007 were expected.

Clutch sizes were slightly below average in Cackling Geese and fox predation reduced production substantially in some areas. Overall, near-average production and autumn numbers similar to that of last year were expected. The primary index of Cackling Geese population for 2008 is 193,300 geese, 12% higher than that of 2007. These estimates have increased an average of 1% per year since 1999 ($p=0.622$).

U.S. Fish and Wildlife Service. 2008. Waterfowl population status, 2008. U.S. Department of the Interior, Washington, D.C. USA. <http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2008.pdf>

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

From 14 June to 8 July 2008, we studied Pacific Golden Plovers at various sites along the Nome-Teller Road. The entire region was essentially snow-free when we arrived, and vegetative development along with substantial numbers of mosquitoes indicated a relatively early spring. We had typical subarctic weather. It was variable 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 saw no evidence 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. An Ermine was also seen.

The following avian predators were recorded: the Long-tailed Skua (abundant), Arctic Skua (uncommon), Pomarine Skua (rare), Rough-legged Buzzard (uncommon), Short-eared Owl (common), however, we only have evidence of breeding for Long-tailed Skua. Willow Grouse were abundant breeders and Rock Ptarmigans were also recorded in small number.

We located 15 nesting pairs of plovers and banded both members of each pair. At each nest, we took blood samples from the parent birds and collected their clutch. We are presently analyzing the DNA in these materials to explore the possibility of extrapair paternity in this species. After collection of eggs, we were able to monitor subsequent events at 12 nesting sites. Of these, six pairs (each pair consisted of the same partners) plus the male in a seventh pair remained on their nesting territories, and five pairs apparently deserted their territories and could not be found again. At least four of the persistent pairs re-nested with the females producing replacement clutches. Among the five pairs that went missing, four had clutches that were in early stages of incubation (3–5 days) when we collected them in late June at a time when most other clutches in our study group were close to hatching. These early stage clutches were probably already replacements that had been laid in response to natural losses from predation and other factors. By further disrupting the nesting cycle, we apparently caused the birds to desert. Our observations suggest that Pacific Golden Plovers re-nest commonly on subarctic breeding grounds. We departed before hatching began at the nests being monitored so we have no knowledge of either subsequent predation or reproductive success. For a detailed account of our replacement laying findings see *Wader Study Group Bulletin* 115: 157–160, 2008.

O.W. Johnson

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

Our 2008 field season (6–19 June) was characterised by unusual cold, snow, a record prolonged period of heavy fog, and intense Red Fox predation. These conditions resulted in an almost total loss of Ruddy Turnstone nests and an exceptionally delayed breeding season for Grey Plover at our study site. Our colleague (O.W. Johnson) saw Grey Plover on nests as late as 6 July. In our 20 years at Woolley Lagoon Grey Plover typically hatch at least by mid-June.

Over the course of our four year Ruddy Turnstone work we have had both males and females skip one or two breeding seasons only to return in subsequent years. Skipping breeding seasons has never happened in the 20 years of our work

on Pacific Golden Plover, American Golden Plover and Grey Plover breeding at Nome. We had our first example of Ruddy Turnstone mate retention in the following season. Prior to this our only other mate retention was between a 2004 pair that reunited in 2007.

Ruddy Turnstone extra pair mating data from 2007 yielded a male which was not the father of three of the four chicks in his nest and another male which was not the father of one of his four chicks. These findings were not unexpected. We did, however, have one nest in 2007 in which surprisingly the female was not the mother of one of her four chicks. This begs the question of what she did with her fourth egg. Our 2008 results again produced a cuckold male. The previous season he was not the father of one chick in his nest and in 2008 two of the four chicks were not his. Although these data are based on a very small sample, cuckoldry in our insular population would appear to be fairly common. Over the next few seasons we hope to better resolve the frequency of this behaviour.

P. Bruner, A. Bruner

In: Liebezeit, J. (ed.) 2008. Summaries of ongoing or new studies of Alaska shorebirds during 2008. December 2008. No. 7. http://alaska.fws.gov/mbsp/mbm/shorebirds/pdf/2008_summaries_ASG.pdf.

55. Barrow, Alaska, USA (71°17' N, 156°38' W)

Snowy Owl research at Barrow was in its 17th year; 1993–2008. In 2006, a very big Brown Lemming year, 35 Snowy Owl nests were found, thus being one of the most productive years since the study started. In 2007 with very few lemmings no Snowy Owl nests were found, and therefore it was one of the lowest years for numbers of Snowy Owls since the study started. The year 2008 once again was very big lemming year, and as a result 35 Snowy Owl nests were found. This year was not quite as good of productivity as 2006, but still high.

D.W. Holt

56. Barrow, Alaska, USA (71°17' N, 156°38' W)

In 2008, we conducted the sixth year of a long-term shorebird study at Barrow. The season started a bit later than normal with snow melt occurring a few days later than in the past. The date of estimated 50% snow cover was 8 June and the 'final' loss of snow cover took place on 15 June 2008. June and the first half of July were fairly normal, but the weather got cold and windy towards the end of July and early August.

Lemming numbers were very high in 2008, even higher than in 2006, which was the last high lemming year during our long-term study. Counts of over 500 lemmings per day were being made by the crew. Lemmings were more common at beginning of June with numbers dropping down in late July. Tundra Voles were observed on 3 days of 60 day field season that lasted from 2 June to 10 August 2008.

In 2008, Arctic Fox were removed (killed) again from the study area as part of a Steller's Eider Recovery Management Action. Nevertheless Arctic Foxes were common and denning in the study area. Ermines were also recorded.

We had large numbers of Snowy Owls (average of 1 per plot) and Pomarine Skuas (average of 2-3 per plot) nesting on or near our 6 plots. A few Short-eared Owls were also recorded. Only small numbers of Arctic Skuas and Long-tailed Skuas were present with the former species breeding at Barrow.

We located and monitored nests in six 36-ha plots in 2008. All six plots are the same as those sampled in 2005–2007. We used the same search intensity and methodology as before. The breeding density of all shorebird species on our study area averaged 88.1 nests/km² across all years (2003–2007). In 2008, we documented the second highest nesting density of shorebirds within our plots. As in 2005–2007, our ability to find nests was probably enhanced by a fox removal program that allowed many nests to survive through to hatching, giving us more time to find the nests.

In 2008, we recorded the highest breeding density of American Golden Plovers, Baird's Sandpipers, Long-billed Dowitchers, Red-necked Phalaropes, Semipalmated Sandpipers, and Western Sandpipers during the five years of our study. Long-billed Dowitchers, with 22.2 nests/km², showed one of the most dramatic increases; nest densities were twice as high as the previous highs seen in 2006 and 2007, and three times higher than the six-year running average. Western Sandpiper densities reached 2.8 nests/km² (6 nests); no nests for this species had been found in 2003 and 2005–2007, and only a single nest was found in 2004. The most abundant species in the past (Grey Phalaropes, Dunlin, Pectoral Sandpipers) occurred at near average levels based on our six-year average. A total of 233 nests were located on our plots and another 137 nests were found outside the plot boundaries. This was nearly 100 nests below the long-term high, which occurred in 2006, but more than in any other year during our long-term study. Nests on plots included 34 Pectoral Sandpiper, 59 Grey Phalarope, 35 Dunlin, 27 Semipalmated Sandpiper, 48 Long-billed Dowitcher, 8 Red-necked Phalarope, 13 American Golden Plover, 6 Western Sandpiper, 2 Baird's Sandpipers and 1 White-rumped Sandpiper. Buff-breasted Sandpipers were not observed nesting on our plots in 2008.

The first shorebird clutch was initiated on 6 June in 2008. This date was later than in the five prior years, which averaged about the 3 to 4 June. Peak initiation date was the 10 June and median initiation date was the 16 June; these dates were later than in 2007. Compared to 2003–2006, median nest initiation was on the late side but peak initiation was earlier than normal. Median nest initiation dates for the more abundant species were the 12 June for Dunlin, 11 June for Semipalmated Sandpipers, 16 June for Grey Phalarope, and 20 June for Pectoral Sandpipers. These dates are either the latest or tied with the latest dates of nest initiation documented during our 6-year study. Predators destroyed 24.1% of the nests in 2008 – a marked increase from the 11.1% in 2007,

8.3% in 2006, and 11.2% in 2005, but still much lower than the 67.9% and 42.6% recorded in 2004 and 2003, respectively (fox control occurred in 2005–2008). Across the more abundant species, hatching success (no. hatching at least one young/total number of nests) was highest in Pectoral Sandpiper (91.9%, $n=37$), followed by Semipalmated Sandpiper (78.1%, $n=32$), Dunlin (70.0%, $n=90$), Grey Phalarope (59.7%, $n=62$), and Long-billed Dowitchers (43.2%, $n=37$). These numbers are slightly lower than in the prior three years (all of which had fox control), but were much higher than in 2003 and 2004 without fox control. A comparison across study plots indicated that hatching success was between 50 and 60% for all plots except plot 5 that had only 37% hatching success. We suspect that the relatively high hatching success in 2008 was due to the absence of foxes on our study area. Some reduction of hatching success in 2008 is likely due to the high number of skuas, combined with the lack of nesting cover resulting from intense grazing by lemmings on our plots. Breeding success is evaluated as good.

In 2008, we captured and colour-marked 358 adults. This is the greatest number of adults ever banded in a single year, exceeding the 2006 high of 342 birds. Forty-two of these adults (36 Dunlin, 5 Semipalmated Sandpipers, and 1 American Golden Plover) had been banded in a prior year. We captured and colour marked 465 chicks in 2008. This was tied for the second highest number captured but far below the number banded in 2006 (707) – a reflection of the far fewer Pectoral Sandpiper and Grey Phalarope nests in the study area.

We have had a small number of Semipalmated Sandpipers, Western Sandpipers, and Long-billed Dowitchers observed during migration or on their wintering grounds in North America. However, a large number of Dunlin were resighted in East Asia. As of September 2007, 130 Dunlin marked in Barrow have been resighted on migration or on their winter grounds in Japan (98), South Korea (4), Mainland China (4), and Taiwan (4). In addition, we have observed Dunlin captured and marked in both China (2) and Taiwan (1), breeding in Barrow.

In 2007, we initiated a study to evaluate how Dunlin responded to experimental clutch removal during early incubation. In 2008, we expanded our study by experimentally removing clutches during both early and late incubation.

Of the 21 clutches in the early treatment (removed an average of 5.2 days into incubation, range 3–8 d), 91% of the Dunlin pairs produced replacement clutches: 16 pairs renested, 1 pair divorced and both members of the pair renested with new mates yielding two replacement clutches (the female moved 2.0 km to lay her new clutch), and 1 pair in which only the female was banded also renested. Of the 20 pairs in the late treatment (collected between 21–27 June, an average of 13 days into incubation, range 12–16 d), only 35% or 7 pairs renested, and all remained with their original mates. The average time between collection of the first clutch and initiation of the replacement clutch was 4.8 days (range 3–7 d) and 6.5 days (range 4–8 d) for early and late treat-

ments, respectively. Most early-replacement clutches had 4 eggs, the rest contained 3 eggs (5%, $n=19$). Late replacement clutches were mostly 4-egg clutches, however a greater number of 3-egg clutches (28%, $n=7$) were laid by the late treatment group. Early replacement clutches were laid on average 161 m from their initial clutch (range 22–451 m), late replacement clutches were laid on average 185 m from their initial clutch (range 84–549 m).

Results of this experiment suggest that a Dunlin female's propensity to lay a replacement clutch is not likely due to physiological constraints, but may be more strongly related to when in the breeding season her first nest is lost. The presence of such nests over-estimates nest density and population size.

See annual summary of all shorebird studies conducted in Alaska at the following website (done for 2002-2008): http://alaska.fws.gov/mbsp/mbm/shorebirds/working_group.htm.

Barrow is a community of over 5000 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

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

During coastal aerial surveys from 24-26 June 2008, ice conditions in the Chukchi Sea were extensive with considerably more ice cover than in 2007. Shore fast ice increased from one kilometre in width near Point Lay to 8 km or more near Point Barrow. Sea ice was deteriorating with considerable surface melt. Estuaries from Icy Cape (Kasegaluk Lagoon) north to Point Barrow were 90% plus ice covered while the southern portion of Kasegaluk Lagoon and Omalik Lagoon were ice free. Beaufort Sea ice cover was less extensive than in 2007. From Point Barrow to the Colville River, bays and estuaries were 40-50% covered by eroding ice with surface melt except Elson Lagoon near Point Barrow which was 98% ice covered. Shore fast ice was intermittent with 1.5-8 km of open water along exposed shorelines. Open water was present near all river mouths. Central Beaufort Sea estuaries were mostly ice covered (i.e. Simpson Lagoon 50%, Gwydyr Bay 90%, Prudhoe Bay 10%, Foggy Island Bay 30%, Mikkelsen Bay 10%, Stefansson Sound 80%) while eastern Beaufort Sea estuaries were mostly ice free (i.e. Canning River lagoons 10%, Camden Bay 70%, Kaktovik area lagoons 5%, Beaufort Lagoon 5%, Demarcation Bay 10%). North of central Beaufort Sea barrier islands and along exposed shorelines there was 0-400 m open water with deteriorating ice

beyond while similar areas along the eastern Beaufort Sea coast had up to 40 m of shore fast ice with mostly open water to 8 km or more offshore. Snow was absent in onshore habitats throughout the survey area in 2008 as in 2007. Some larger lakes throughout the survey area had remnant ice and smaller ponds were ice free.

Most Beaufort Sea barrier islands, favoured nesting sites of numerous waterbird species (e.g., Common Eiders, Glaucous Gulls and Sabine's Gulls and Arctic Terns) were accessible to terrestrial predators due to ice cover (as also occurred in 2007). Lesser Snow Geese on Howe Island, and at other colonies to the west, were incubating suggesting delayed nest chronology in both 2008 and 2007. Very few broods of Greater White-fronted Geese were seen along the Chukchi Sea coast indicating slightly earlier hatching than in 2007.

Snowy Owl ($n=2$) and Pomarine Skua ($n=8$) numbers were very low in 2008, similar to 2007, indicating low microtine populations. Microtines were reported in locally high numbers in the Barrow area.

C.P. Dau

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

Studies aimed on the Smith's Longspur were undertaken during the period between 25 May and 10 July 2008, which was our second year at the study site. It was generally cooler and snowier in the early part of the year compared to the previous year. During the entire season temperatures were slightly cooler in 2008. Thus, this season was late and cold. Two major snow falls occurred in late May and one in the first half of June. Less than 50% of snow cover was left on flat areas at our arrival on 25 May, and the snow was gone completely before 10 June in 2008.

Northern Red-backed Voles were seen a couple of times per week. No change in their abundance was recorded during the summer. No capture data are available.

There was an active Red Fox den at the study site.

Diurnal birds of prey (the Rough-legged Buzzard, Hen Harrier, Golden Eagle, Merlin, and Peregrine Falcon) as well as Short-eared Owls and Long-tailed Skuas were observed in small number without signs of breeding. 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).

In comparison with 2007 clutch sizes in Smith's Longspur tended to be smaller in 2008 and the youngest chicks were more frequently abandoned at the nest (i.e. the older chicks fledged but younger chicks didn't fledge). Clutch initiation dates were similar in the 2 years. Rock Ptarmigans were rare, while Willow Grouse were common breeders.

S. Kendall

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

Snow melt occurred earlier in 2008 than in the 5 previous years. 2008 was the second warmest year (during the breeding season) since we began monitoring at this site. On 7 June, when we initially began monitoring snow cover, it was at < 0.5%. The Sagavanirktok River broke on 2 June. Temperature information is available on-line at www.wunderground.com. This year was very dry with little precipitation. Water levels in all water bodies (rivers, creeks, ponds, etc.) were lower than usual and this was particularly noticeable as the season progressed. There were no major snow storms during the field season. The first mosquitoes emerged in mid-late June.

We did not capture lemmings. During incidental surveys for lemmings (i.e. tallied lemmings during 179.2 hours of observation time we were on our study plots on predator count days) we detected 14 lemmings this year compared to one seen in 2007. Thus, in 2008 lemming abundance increased to moderate levels from the low observed in 2007 (from 0.002 to 0.039 lemmings encountered per 30 minutes). Abundance of the Arctic Ground Squirrel was low in 2008.

We conducted point count surveys for potential nest predators on each plot at eight different times during the course of the season. A total of six potential predators were detected (n = no. of detections): Glaucous Gull ($n=72$), Arctic Skua ($n=24$), Long-tailed Skua ($n=16$), Common Raven ($n=7$), Arctic Fox ($n=2$), and Short-eared Owl ($n=1$). Apart of that the Snowy Owl and several species of birds of prey were recorded, but we found no evidence that they nested at this site this year. Both Arctic Skua and Long-tailed Skua nested. Pomarine Skuas were detected at the site but were only seen rarely. Arctic Foxes were common breeders and a Red Fox was recorded.

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 found 93 nests of 12 species from 7 June to 21 July. Of the 93 nests, four were found off-plot. Fifty-one nests successfully hatched/fledged and 31 failed. We were unable to reliably assess the fate of 11 nests. Nest predation was the most important cause of nest failure (29 of 31 nest failures, 94%). Other sources of nest failure were abandonment ($n=1$) and an observer accidentally stepping on a nest ($n=1$). Mayfield estimates of nesting success for the four most common species were: 30.1% in Lapland Bunting ($n=21$), 46.8% in Red-necked Phalarope ($n=10$), 61.3% in Stilt Sandpiper ($n=7$), and 100% in Semipalmated Sandpiper ($n=20$).

Following the early snow melt and high June air temperatures, nest initiation dates were noticeably earlier than the other seasons monitored. In 2008, we documented both overall nest density (71.7 nests/km²) and nesting success to be average compared to previous years though noticeably lower than the high nest density in 2006. Despite the overall rise in

nest densities from the low of 2007, Pectoral Sandpiper nest density was the lowest at this site since we began monitoring (4.2 nests/km²). As in 2007, we did not find any plover nests this season. Both Willow Grouse and Rock Ptarmigans were breeding and had moderate numbers.

J.R. Liebezeit

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

This year early season (20 May to 30 June) average air temperature were similar to 2005 and 2007 (within ~0.5°C) but was noticeably colder than in 2006 (by ~3.5°C). Despite the colder temperatures, snow melt was completed the earlier than the other 3 years monitored. Very little snow was present when we arrived at the site on 5 June (<5%). The ice on the stream next to our camp broke prior to our arrival at the site on 5 June, at least a few days earlier than in 2005 and 2006. This year was very dry with little precipitation. Water levels in all water bodies (rivers, creeks, ponds, etc.) were lower than all other years and was particularly noticeable as the season progressed. There were no major snow storms during the field season. The first mosquitoes emerged on 20 June, about 10 days earlier than in 2005 and one day earlier than in both 2006 and 2007.

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 Brown Lemmings and Greenland Lemmings 4 times during plot visits this year (total time on plots = 484.4 hours) compared to 7 seen in 2005, 159 in 2006, and 26 in 2007. For the second year in a row lemming abundance was low contrasting with the high numbers observed in 2006. Arctic Ground Squirrel were common in 2008.

We conducted point count surveys for potential nest predators on each plot at nine different times during the course of the season. A total of eight species of potential nest predators were detected (n = no. of detections): Arctic Skua ($n=41$), Glaucous Gull ($n=22$), Long-tailed Skua ($n=20$), Pomarine Skua ($n=4$), Short-eared Owl ($n=2$), Arctic Fox ($n=1$), Golden Eagle ($n=1$), Arctic Ground Squirrel ($n=1$). Correspondingly to low lemming abundance, Pomarine Skua abundance was also much lower than in 2006 and these skuas were rarely seen at the site. We found no evidence that they or Snowy Owls nested at this site this year. Arctic Foxes were denning, and they were common.

We discovered and monitored all bird nests on (or near) 16 10-ha study plots every 2-6 days until nest fate was determined. We discovered and monitored 181 nests (14 of these were found off plot) of 17 species from 7 June to 18 July. One hundred eight nests successfully hatched/fledged, 62 failed and 11 nests were of unknown fate. Nesting success was similar at this site last year. Nest predation was the most important cause of nest failure (94%). Other sources of nest failure included abandonment from unknown causes ($n=3$)

and predation due to observers accidentally attracting predators to a nest ($n=1$). Mayfield estimates of nesting success for the 4 most common species were: 53.3% in Lapland Bunting ($n=74$), 22.1% in Long-billed Dowitcher ($n=10$), 34.0% in Red-necked Phalarope ($n=12$), and 91.7% in Semipalmated Sandpiper ($n=16$).

Overall nest densities were very similar to last year (98.8 vs. 100.1 nests/km²). Pectoral Sandpiper nest densities have declined significantly from the 2005 and 2006 densities. It is worth mentioning that Willow Grouse were abundant and Rock Ptarmigans common breeders this year.

J.R. Liebezeit

61. Komakuk Beach, western North Slope, and Shingle Point, Yukon Territory, Canada (69°35' N, 140°11' W)

Mark-recapture live trapping on two 9 ha grids in late June and late August at Komakuk Beach indicated low densities of small mammals (total of 2 to 4/ha), increasing a little during the summer on both grids. There were no *Dicrostonyx* lemmings, and *Microtus* voles are most common. Densities were a little lower than in previous two years. Total captures of 21 on index lines are very similar to the previous two years. Winter nest counts on the same grids were much lower than on Herschel, and a low proportion (ca. 5%) occupied by weasels. Only one shrew was caught this year. Small mammal numbers declined over winter, which means poor winter conditions and ongoing weasel predation. Small mammals were held at a relatively low densities through the summer due to predation. *Microtus* voles are becoming more dominant in this area since 2006.

A total of 105 fox den sites were recorded on the North Slope from Alaska border east to Babbage River – a mix of previously recorded, new, and collapsed dens. Three reproductive dens of 12 dens used by Arctic Fox and 0 reproductive dens of 2 used by Red Fox were revealed. The dynamic balance between the two fox species continues since the 1970s, though Arctic Fox seem to be more resilient to low prey abundance on the mainland. At the Arctic Fox natal den on the airstrip ca. 2 weaned pups were recorded. Least Weasels bred in summer, and were active throughout.

Common Ravens fledged 3 young (late June), Peregrine Falcons fledged 3 young (August); and Rough-legged Buzzards fledged 3 young from a nest on the ground. Thus there was quite high density of predators, despite low densities of small mammals.

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

In: Arctic WOLVES - 2008 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2008.pdf

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

Snow depths were typically 10–40 cm in relatively open and wind-swept areas, increasing to >200 cm on steep lee slopes. Herschel Island, with lots of relief, provides a relatively large area of deep snow for lemming winter habitat. A winter of relatively little snow accumulation, plus an earlier onset of melt, resulted in tundra being exposed much earlier in 2008 than 2007. Full snow cover in low elevation wetland was almost completely gone before start of field session in late May. Both emergence of arthropods and their peak in abundance took place much earlier in 2008 than in 2007. Arachnids dominated early, with coleopterans, dipterans and crane flies dominant in July. There was an increasing rate of capture, with strong variability related to weather.

Two upland 9 ha grids (“Fence” and “Ridgetop”) and one 2 ha alluvial fan grid (“Graveyard”) were trapped in early June, July, August, and September. There was no trapping on relative abundance index lines. In the upland, lemmings and voles were fairly abundant in spring (ca. 6/ha), decreasing in mid summer, and generally recovering to moderate density in autumn (6 to 11/ha); densities on alluvial fan followed the same pattern, with 18/ha in spring to 20/ha in autumn. *Microtus* voles expanded from fan into upland wet habitats during summer. 2007/2008 winter nests were counted on all grids in June. On snow enhancement areas nests were noticeably concentrated in areas of deeper snow, but also suffered very high rates of weasel depredation (ca. 50%). There were four principal small mammal habitats: gravel-grass spit by habitation (commensal Tundra Vole); Carex-moss wetlands in drainages and alluvial fan (*Lemmus* and *Microtus*); upland Dryas-Salix heath (*Dicrostonyx*); and Eriophorum tussock - Salix (*Lemmus* and *Dicrostonyx*) communities.

Ground search for all dens of foxes was undertaken, including those dens recorded in 1984–1990, a total of 59 dens were found. Of 38 dens from 1984–1990 26 were found; the remainder had collapsed. There were two natal Arctic Fox dens and 12 dens were used intermittently by Arctic Fox. There were no natal Red Fox dens, but 3 dens were used by Red Fox (NE of island). One of the natal dens had been depredated by Brown Bear.

Least Weasels were infrequently captured in lemming traps. They probably were the main predator in winter, especially on upland sites. One Ermine using driftwood at Pauline Cove in September, and one set of tracks of Mink at the same locality were recorded. At least one Wolverine occasionally used the island. There were occasional observations of Brown Bear and none of Polar Bear.

The eastern half of the island (ca. 50 km²) was well searched for nests of raptors. Snowy Owls nested in 2008 when lemming densities were similar to 2007; timing of snow melt (earlier in 2008) may be the key to the onset of their nesting. Lemming densities were high enough for high fledging rates in Rough-legged Buzzards and Peregrine Falcons, if their

nests did not collapse. Fledging took place earlier in 2008. Nests with eggs were found in Snowy Owls (6), Rough-legged Buzzards (4), Peregrine Falcons (4), Short-eared Owls (1), and Long-tailed Skuas (2). Short-eared Owls failed. Heavy Snowy Owl chick mortality was recorded; apparently this species had insufficient resources of lemmings to support the survival of the majority of their nestlings. One Rough-legged Buzzard and two Peregrine Falcon nests failed when their cliff nest sites collapsed. Four adult Snowy Owls captured at nests were fitted with satellite tags. Birds were successfully living with the tags, and started longer movements in September. By mid October, 3 of them were west into Alaska, and one was south near Old Crow. Prey remains at Snowy Owl nests indicated heavy use of birds (ducks, ptarmigan, passerines). The diet of Peregrine Falcons included many passerines and shorebirds.

Two full (12 ha) PRISM plots were established and run in upland wet and dry communities as well as one smaller (6 ha) plot on alluvial fan. Few shorebirds were nesting in the upland areas; most upland nesters were the Lapland Bunting, Savanna Sparrow and American Pipit, with scattered Greater White-fronted Goose and Rock Ptarmigan. Nesting densities on alluvial fan were higher, being the most productive habitat for shorebirds – Semipalmated Sandpiper, Semipalmated Plover, Baird's Sandpiper. The majority of the island is not productive shorebird habitat.

A sample of at least 140 shorebird and passerine nests were followed from some time during incubation through to hatching, and some to fledging. Data indicate earlier mean hatching dates for prominent species (e.g., Semipalmated Sandpiper and Lapland Bunting) compared to mid-1980s.

Experiments with two trials run with quail eggs (40 nests per trial) revealed low rates of nest depredation in 2008, compared to 2007.

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

In: Arctic WOLVES - 2008 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2008.pdf

63. Taglu and Fish Islands, Mackenzie Delta, Northwest Territories, Canada (69°22' N, 134°55' W)

According to observations during the period from 5 June to 14 July 2008 the season was average in timing. Weather was warmer and drier than in the previous years.

The abundance of both Brown Lemmings and Greenland Lemmings was probably higher this year compared with 2003-2007. They were seen once or more per day.

Arctic Foxes and Red Foxes were common, but ground predators appeared to be less active overall. The Ermine and American Mink was not recorded.

Avian predators were also common including breeding Rough-legged Buzzard, Short-eared Owl, Arctic Skua, and

some gull species. The Hen Harrier was common as well, however, without evidence of breeding. A few non-breeding Long-tailed Skuas were recorded.

The abundance of breeding Willow Grouse was moderate.

The hatching success of monitored shorebird nests (56%) was higher than in previous years.

Human activities in the area are minimal to none.

J. Rausch, L. Pirie

64. Mackenzie Delta, North-West Territories, Canada (68°13' N, 134°24' W)

The Mackenzie Delta region and nearby parts of the Western Arctic mainland are one of the most important breeding areas for Tundra Swans in North America and support about one-third of the Eastern Population of this species. Surveys carried out in the region in June and August 2008 indicated good numbers of nesting swans and a relatively early nesting season. Overall, 61% of the investigated pairs nested and 61% of those nests produced broods, meaning that 37% of the pairs successfully raised broods. These estimates are above the long-term average and well above those measured during 2001–2003 when the three parameters averaged 39%, 35% and 14%, respectively.

Canadian Wildlife Service Waterfowl Committee. 2008. *Population Status of Migratory Game Birds in Canada: November 2008*. CWS Migr. Birds Regul. Rep. No. 25. http://www.cws-scf.ec.gc.ca/publications/status/nov08/nov08_e.pdf

65. Parsons Lake, Mackenzie Delta, Northwest Territories, Canada (69°01' N, 133°35' W)

During intensive nest searches for Whimbrel from 4-21 June 2008 we noticed that the season was average in timing, in temperatures and humidity.

We did not catch lemmings, but daily sightings of these rodents (the Brown Lemming and Greenland Lemming) indicated they were common.

Only few foxes (both the Arctic Fox and Red Fox) were recorded in the area.

The Rough-legged Buzzard, Hen Harrier, Arctic Skua, Long-tailed Skua and Common Raven were the avian predators seen commonly; however, breeding was recorded only for the Common Raven. The Bald Eagle, Merlin, Peregrine Falcon and Short-eared Owl were rare non-breeders.

Willow Grouse were common.

J. Rausch, L. Pirie

66. Cambridge Bay, Victoria Island, Canada (69°07' N, 105°03' W)

Ice still covered most of the salt water and larger lakes in the Cambridge Bay area at arrival on 3 July 2008. Snow had

largely melted, except for drifts in the lee of hills. The vegetation was about one week behind 2007. Likewise, nesting activity was behind the previous year.

Lemming numbers were low, although up a bit from last year when they were virtually absent.

Arctic Fox numbers were also low; during the period of observations from 3 to 7 July we saw only a few individuals.

The Rough-legged Buzzard was the only diurnal raptor noted, with a daily maximum of about 5–6 birds. Three ground nests with eggs were found on hills northwest and west of town. No owls were noted.

Up to 8 Long-tailed Skuas were tallied daily and a few nests with eggs were found. Three Arctic Skuas were seen drifting over on 4 July, but not at any other time. No Pomarine Skuas were present. Glaucous Gulls were common, and a few nests were noted but no young were seen. The Sabine's Gull was the next most common larid, but no nesting activity was noted. A few Common Ravens were seen most days, but never more than 3–4.

The most common waterfowl were the Long-tailed Duck, King Eider, Cackling Goose, Tundra Swan, Common Eider, Northern Pintail and Greater White-fronted Goose, in descending order. Only Cackling Geese were noted on nests. Five Brent Geese were present on 3 July, but only a couple were noted on later dates. These appeared to be migrants. An out-of-range Common Goldeneye female was at the town's sewage lagoon on 3 and 6 July. No Rock Ptarmigans were found.

The most common shorebirds were the Red-necked Phalarope, Semipalmated Sandpiper, Stilt Sandpiper, Baird's Sandpiper, Semipalmated Plover and American Golden Plover, again in descending order. Semipalmated Sandpipers were the most common breeders; several nests with eggs were found. Red-necked Phalaropes were not yet breeding. Although expected, Grey Phalaropes could not be found. Noteworthy nests included one of the Grey Plover (4 eggs) about 5 km northeast of town and one of the Buff-breasted Sandpiper (4 eggs) about 5 km northwest of town.

R. Koes

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

Based on general impressions of conditions in the central Canadian Arctic, timing of nesting appears to have taken place in 2008 within 2 days of the long-term average. Preliminary estimates for both Ross's Geese and Lesser Snow Geese suggest a mean nest initiation date of 12 June compared to a long-term average of 10 or 11 June for 1991 to 2007. The record late date of 17 June 2007 for Ross's Geese at Karrak Lake resulted in only 7% juveniles among Ross's Geese migrating through Saskatchewan in the fall of 2007. Similarly, late nesting by other species resulted in only 5% juveniles among both Snow Geese and Greater White-fronted Geese

in 2007. Notwithstanding favourable weather for the rest of the incubation and brood-rearing periods, the percentage of juveniles in the 2008 fall flight of Ross's Geese through Saskatchewan, predicted from the mean 2008 nest initiation date, is expected to be close to the long-term average of about 20-30%. Likewise, production of Snow Geese, Greater White-fronted Geese and short-grass prairie Canada Geese / Cackling Geese from Queen Maud Gulf should also be average in 2008.

Population estimates for nesting Ross's Geese and Lesser Snow Geese are not yet available for 2008. Nevertheless, population growth over the longer term seems unabated for Ross's Geese, but has slowed down for Lesser Snow Geese at Karrak Lake. For example, the number of light geese that nested on Karrak Lake in 2007 was about 1.16 million, with record breeding numbers of Ross's Geese (800,984), although Lesser Snow Geese declined by 38% from 579,858 in 2006 to 358,029 in 2007. Much of the decline in nesting Snow Geese was related to the very late nesting conditions of 2007, which resulted in fewer Snow Geese attempting to nest. From 1993 to 2007, the long-term average rate of annual population growth at Karrak Lake was 11% for Ross's Geese and 6.5% for Lesser Snow Geese. The combined long-term average was 8.6%.

S. Alisauskas

Canadian Wildlife Service Waterfowl Committee. 2008. Migratory Birds Regulations in Canada: November 2008. CWS Migr. Birds Regul. Rep. No. 25. http://www.cws-scf.ec.gc.ca/publications/status/nov08/nov08_e.pdf

68. Arviat and the Baker Lake, Nunavut, Canada
(61°07' – 61°55' N, 94°04' – 96°39' W)

During the Arctic shorebird monitoring undertaken from 27 May to 30 June 2008 snow was still present in the area on our arrival.

Surveying multiple plots each 4-12 ha in size we recorded neither rodents nor Arctic Foxes in the study areas.

The Bald Eagle and Hen Harrier, the only birds of prey, were rarely seen. Owls were not recorded. The Arctic Skua, Long-tailed Skua and Herring Gull were common breeders; the Common Raven was recorded occasionally.

Most local birds were present in usual numbers and bred. Among ptarmigans the Willow Grouse was common breeder, while few Rock Ptarmigans were seen.

J. Rausch, L. Pirie

69. Churchill, Manitoba, Canada (58°46' N, 94°10' W)

Upon arrival on 5 June 2008, a fair amount of snow still covered the ground, especially at edges of open areas where drifting had taken place. All larger bodies of water were ice-covered, except around the edges, but smaller and shallower ponds were open. The mouth of the Churchill River broke

open on 6 June. Vegetation was somewhat behind schedule, but caught up during our stay from 5 to 12 June 2008, when there were mostly mild temperatures. Spring up until just a few days earlier, had been late.

Lemming and vole numbers were low.

Red Foxes were common this year.

Of the diurnal raptors, the following should be noted: Bald Eagles, although still uncommon, continue to increase. This year a longtime Osprey nest was usurped by a pair of Bald Eagles, which had at least two juveniles on 5 June. The Hen Harrier continues to be the most common raptor, with up to 10+ noted daily. Only one pair of the Rough-legged Buzzard was present. American Kestrel numbers were very low, as has been the pattern for the last several years. Short-eared Owl numbers were low; never more than two records per day were noted. A pair of Hawk Owls successfully fledged at least two young.

Herring Gulls and Common Ravens, together with Red Foxes, continue to take a heavy toll on nesting birds or their eggs and nestlings. Very few Arctic Skuas were present; only two territorial pairs were noted.

Snow Geese and Ross's Geese were virtually absent; they had departed for breeding colonies to the east and north with the recent onset of milder weather. Other waterfowl were present in expected numbers, except for higher than normal numbers of Lesser Scaup, which is normally an uncommon species found mainly around town. Without much effort, 38+ were tallied at various locations on 5 June. Most ducks appeared not to be nesting yet. A male Barrow's Goldeneye at the mouth of the river on 12 June was rarity. Scoter concentrations in the mouth of the river were low, as were those of divers (Red-throated Divers and Pacific Divers are sometimes present in the hundreds at this time of year, but they reached only double digits this year).

A Rock Ptarmigan at Cape Merry from 8 to 11 June was unexpected; the species normally departs for the breeding grounds in April or early May. Willow Grouse were present in excellent numbers, as in 2007.

Shorebird migration was still in full swing, with the Ruddy Turnstone, Semipalmated Sandpiper, White-rumped Sandpiper and Red-necked Phalarope being most common. No Grey Phalaropes were seen this year. Nesting activity of locally breeding shorebirds was only just getting underway; many birds hadn't yet set up territories, and consequently the tundra was rather quiet. The overall consensus is that virtually all locally breeding shorebird species continue to decline.

Bohemian Waxwing and White-winged Crossbill were very scarce, but both Common Redpoll and Arctic Redpoll were widespread. Rarities reported by others included a Great Egret on 3 July (a first for the Churchill area), a Black-legged Kittiwake on 4 June, a Say's Phoebe on 1 July and a Northern Mockingbird on 13 June.

The overall success of the breeding season is not known at this time.

R. Koes

70. Churchill, Manitoba, Canada (58°41' N, 93°59' W)

In general, the spring of 2008 was rainy and cold, with break up (15 June) occurring on a more or less average date, although late for the past couple of years. After break up, however, we had a relatively warm and dry summer that caused many of the ephemeral wetlands to dry out by mid-July. There was one severe storm that occurred on 10–13 June. During this period there were 60+ kph winds, heavy rain, and temperatures around +2–3°C. This occurred in the middle of the laying period for most shorebirds. Snow cover on flat areas reduced to 50% on 1 June and disappeared completely only on 21 June.

Meadow Voles were seen daily, lemmings (species not identified) monthly.

This was my first full season (lasted from 23 May to 1 August) at this site, so I cannot comment on between year changes in abundance in either shorebirds or predators. That said, cyclic predators, such as skuas, did not seem to be overly abundant. Arctic Foxes were common and denning, also an Ermine was seen. A wide range of avian predators was recorded with the Osprey, Bald Eagle, Merlin, Arctic Skua and Short-eared Owl as common breeders. Most predators were ravens and foxes, which were both concentrated near man-made structures such as buildings and towers. One area that adjoined the airport had 4 Whimbrel nests and 3 Hudsonian Godwit nests. To the best of our knowledge, only one of those nests (a Hudsonian Godwit nest) hatched and none fledged young, all due to predation by Common Ravens. We even witnessed the ravens depredate 2 of the Whimbrel nests in one afternoon.

Productivity for shorebirds in general seemed to be very low given how many nests were able to hatch. I attribute this to the drying of the ephemeral wetlands fairly early in the month of July. These wetlands are surrounded by higher and, relatively, drier sedge tundra and thus attract basically all of the young of locally nesting species. This includes Least Sandpiper, Whimbrel, Stilt Sandpiper, Dunlin, American Golden Plover, Short-billed Dowitcher, Red-necked Phalarope, and Wilson's Snipe. We found at least two, and sometimes over a dozen nests and young for each of these species, but only observed less than 5 fledglings for each species in our main study area, which encompasses ~5 km². Willow Grouse were abundant and breeding and a few Rock Ptarmigans were also recorded.

One interannual change I can comment on is the disappearance of Semipalmated Sandpipers. Jehl and other previous researchers have commented on this decline. During our extensive searching this summer we found no nesting attempts by the species. This completes a very dramatic decline.

During the breeding season there is no direct hunting and very little disturbance. The main issue, as mentioned above, is the ability of species such as Arctic Fox, Common Raven, and Herring Gull to use man-made infrastructures for nesting, etc. We noticed significantly higher nest loss around these structures.

Much of the area surrounding the village of Churchill is a wildlife management area and thus there is little if any development or disturbance. Most hunting during the summer months is focused on Reindeer. Spring and fall hunting is mainly focused on geese. Shorebirds and waders do not seem to be targeted.

N.R. Senner

71. Akimiski Island and Hudson Bay Lowlands to the west and south of James Bay, Canada (53°00' N, 82°00' W)

Above-average snow pack and a cold April resulted in a later melt in 2008. However, this was followed by above-average temperatures, contributed to near-average nesting phenology of Canada Geese in 2008, later than that observed during the previous three years. Nesting studies on Akimiski Island indicated above-average nesting effort, but slightly below-average clutch sizes. Average hatch and brood rearing conditions resulted in a good production of goslings in 2008. Biologists anticipate the fall flight in 2008 to be near average. The total spring population of Canada Geese was 13% more than in 2007.

The spring population of Canada Geese has been surveyed annually since 1990 and there has been no real change in the size of the breeding population during the survey period. The total breeding population in 2008 was estimated at 110,409.

U.S. Fish and Wildlife Service. 2008. Waterfowl population status, 2008. U.S. Department of the Interior, Washington, D.C. USA. <http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2008.pdf>

Canadian Wildlife Service Waterfowl Committee. 2008. *Population Status of Migratory Game Birds in Canada: November 2008*. CWS Migr. Birds Regul. Rep. No. 25. http://www.cws-scf.ec.gc.ca/publications/status/nov08/nov08_e.pdf

72. Coastal lowlands of Ungava Bay, Québec, Canada (58°30' N, 69°30' W)

A Canada Goose nest survey was conducted in early June between Kuujuaq and Aupaluk. Compared with their long-term average (1996-2008), in 2008 the mean nest initiation date was earlier (24 May vs. 28 May) and overall average clutch size (4.7 vs. 3.9) was considerably higher. In 2008, nesting success of the sites varied between 60% and 100%.

Between late July and mid-August, 3,234 Canada Geese (adults and juveniles) were banded along the coastal low-

lands of Ungava Bay and 3,235 geese along the Hudson Bay. In addition to clutch size, the juvenile:adult ratio from the banding drives gives a good index of annual productivity, and in 2008 this ratio for geese banded along Hudson Bay was lower than for geese banded along Ungava Bay, 1.7 vs. 2.4. Nevertheless, the ratios for both areas in 2008 were higher than their long-term average (1.5 in Hudson Bay and 1.5 in Ungava Bay). In summary, in 2008 overall productivity of the Atlantic Population of Canada Geese from the Ungava Peninsula was very good.

Cotter R. 2008. Nesting study and pre-season banding report of Atlantic Population Canada Geese in northern Quebec - 2008. http://www.qc.ec.gc.ca/faune/sauvagine/html/can_goose_breeding.html.

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

My opinion was that spring progressed not much earlier than in a normal year – it was not as early at East Bay as it was in other parts of the Canadian Arctic. Snow cover on flat areas reduced to 50% on 10 June and melted completely on 27 June 2008. There was markedly less precipitation in 2008 compared with 2007. There were many sunny days and warmer temperatures. There were no major snowfalls after the very beginning of June and that meant the snow melted without interruptions. It was a relatively dry season and the water levels in the ponds were markedly lower (and even dry in some cases) than 2007. We also noticed a difference in the progression in Reindeer moult and flowering plants.

Three Richardson's Collared Lemmings were trapped in snap trap transects indicating lemmings continue to be abundant (higher than average). They were present upon our arrival on 29 May, and young were seen in June and until we left on 26 July. No Brown Lemmings seen.

Arctic Foxes were much more prevalent this year than last; we cannot say whether there were numerically more foxes around but they were more obvious.

There were no notable changes in avian predator numbers (i.e. skuas, gulls). Arctic Skuas were breeding with density 0.3 pairs/km². The Peregrine Falcon was the only raptor recorded in small number. Owls and ptarmigans were absent.

Detailed studies of all shorebirds species were made. We studied terns, gulls and waterfowl less intensively. The number of nests found was much higher than 2007. However correcting for search effort will probably remove the difference. Breeding success was very similar to 2007, i.e. above average.

P. Smith

74. Central Baffin Island, Nunavut, Canada (75°30' N, 111°30' W)

Snap-trapping conducted at both Mary River and on central Baffin Island indicated a high abundance of lemmings at

these two sites. Our data are indicative of a high abundance of lemmings possibly over all of Baffin Island.

We successfully tracked over a full year the movements of 9 of the 12 female Snowy Owls radio-marked in 2007. In 2008, 8 of these females settled throughout Baffin Island, from Mingo Lake in the south to Erichsen Lake in the north. At all of these sites, we resighted our radio-marked female and we found nests for 7 of them during our visits. All of them had chicks, which indicated that they bred successfully.

G. Gauthier, M.-C. Cadieux, J. Lefebvre, J. Bety, D. Berteaux, A. Reed 2009. Population study of Greater Snow Geese on Bylot and Ellesmere Islands (Nunavut) in 2008: a progress report. http://www.cen.ulaval.ca/bylot/files/Report_Bylot_2008.pdf

75. Bylot Island, Nunavut, Canada (73°08' N, 80°00' W)

Fieldwork was conducted over a total study area of about 400 km² on Bylot Island. Within this area, we had 2 camps as usual, 30 km apart from each other. Most activities were conducted on foot in two core areas of about 50 km² around each camp. Camp-1 (Base-camp) is a prime brood-rearing area for Snow Geese whereas Camp-2 is located in the centre of the Snow Goose nesting colony.

The spring was exceptionally warm and sunny but from mid July to our departure in August we had cooler and wetter weather. Our snow-depth transects showed that snow-melt was the earliest ever recorded, in part because the snow-pack was very thin at the end of the winter, and we had warm temperatures in May and June. Air temperature averaged -1.07°C between 20 May and 20 June (1.21°C above normal), which corresponds to the period of goose arrival and egg-laying, and 1.67°C (0.35°C above normal) during 1–15 June, the normal pre-laying and laying period. In contrast, the second part of the summer was cool, cloudy and wet. From 15 to 31 July, 86 mm of rain fell and 41 mm from 1–20 August, the highest precipitation on record since 1995.

We conducted small-mammal live-trapping in two grids (12 x 12 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 conducted a snap-trapping survey in July at the Camp-1 and Camp-2 areas. We also ran a large number of transects for lemming winter nests.

Our different indices of lemming abundance yielded variable results. Live-trapping at Camp-1 indicated a high abundance of lemmings, much higher than in 2007 and comparable to 2004. Brown Lemmings greatly outnumbered Greenland Lemmings in live captures, contrary to last year. Abundance was also higher in the wetland grid than in the 2 mesic grids. Snap-trapping in July suggested a moderately low abundance of lemmings at both camps (lower than in 2007) but heavy rain during this period flooded many of the trapping sites at Camp-1 and probably biased our abundance estimates. Win-

ter nest surveys also indicated high lemming abundance and we collected 229 winter nests for analysis in the laboratory.

We inspected all known dens of Arctic Foxes in the study area ($n=103$, including 4 new ones found in 2008) for signs of use by foxes and presence of cubs. We found a total of 58 fox dens with signs of activity and 24 were used for reproduction (23% of known denning sites). We found 23 litters of Arctic Fox ranging from 1 to 13 cubs (average: 7.8 cubs/litter) and one litter of Red Foxes with a minimum of 2 cubs. Dens where reproduction took place were scattered all over the research area, though most of them (16/24) were located around the goose colony. A few families used multiple dens to rear their cubs once they were old enough to follow the adults.

We captured 17 adults (7 females, 10 males) and 50 cubs (31 females, 19 males). Seven of the captured adults had already been captured and tagged between 2003 and 2007. All new individuals captured were tagged with coloured and numbered plastic tags. We collected hair and blood samples, which will be used for stable isotopes and genetic analyses. These analyses will allow us to monitor yearly changes in the diet of foxes, and to determine family relationships between individuals.

We ran several transects to find raptor and seabird nests. Contrary to last year, more than half of the avian predator nests were found during these systematic searches. We revisited most nests found to monitor their success, and collected pellets at owl, skua, buzzard and gull nests.

For the second year in a row, Snowy Owls were nesting on Bylot Island. We found 20 Snowy Owl nests, 9 near Camp-1 and the rest were scattered over a large area between Camp-1 and Camp-2 (up to 300 km²). At least 15 of these nests were successful at fledging with one or more young. We also found 8 Rough-legged Buzzard nests but these were scattered over a very large area and few of these nests could be monitored. We found 30 Glaucous Gull nests, 78 Long-tailed Skua nests and 2 Parasitic Skua nests, which is much higher than last year. Nesting success (proportion of nests successful in fledging at least one young) of these birds was generally good and higher than in 2007: in particular for owls (100% vs. 60% in 2007), skuas (70% vs. 9% in 2007) and gulls (60% vs. 40% in 2007). Average clutch size was 7.2 eggs for owls (vs. 6.4 in 2007), 2.8 eggs for gulls (vs. 2.3 in 2007), and 2.0 eggs for skuas (vs. 1.9 in 2007).

We successfully tracked over a full year the movements of 9 of the 12 female Snowy Owls radio-marked in 2007. In 2008, 8 of these females settled throughout Baffin Island, from Mingo Lake in the south to Erichsen Lake in the north (none on Bylot Island). At all of these sites, we resighted our radio-marked females and we found a nest for 7 of them during our visits. All of them had chicks, which indicated that they bred successfully. The last bird settled in Prince Patrick Island in the western Arctic but only in early June, thus it is unlikely that this bird bred this year. The average distance

between the site where the birds nested in 2007 and where they settled in 2008 is 733 km (range: 235–1228 km).

Snow Goose arrival was early, possibly due to good conditions encountered during the spring migration in northern Quebec where the spring melt was also early this year. By the time geese started to appear on Bylot Island, most of the lowland areas were already free of snow (an unusual situation) and geese proceeded immediately to the nesting areas. Median egg-laying date was 10 June, which is earlier than the long-term average and considerably earlier than in 2007. Nest density in the colony was higher than last year (4.3 nests/ha vs. 3.0 nest/ha in 2007) and above the long-term average. A visual aerial survey of the Camp-2 area during incubation also indicated that the spread of the colony was larger than in previous years. Twenty-three nests were found at the Base-camp Valley (predominantly a brood-rearing area) compared to none in 2007. The overall, average clutch size was 4.1, the highest value reported in over 10 years. The nesting success (proportion of nests hatching at least one egg) was high this year (74%, a value well above the long-term average). Activity of predators at goose nests, especially Arctic Foxes, was low, similar to 2007, and thus nesting success was high. The peak hatch was on 6 July, which is earlier than the long-term average. Overall, nesting conditions for geese in 2008 were therefore excellent. Survival of the young during the summer was apparently good because the young:adult ratio in our banding drives in August was above the long-term average.

We documented the presence of a total of 8 shorebird species at Camp-1 and Camp-2. Thirty-seven shorebird nests of 5 species were monitored. The most abundant nesting birds were the Baird's Sandpipers and American Golden Plovers. Nest density was lower than in previous years but arrival and lay dates were early relative to last year. In addition to the monitoring of natural nests, 160 artificial nests were deployed. Predation pressure on natural and artificial nests was low probably due to an increase in the abundance of lemmings on Bylot Island. The Arctic Fox was the only shorebird egg predator identified using remote cameras. We also found 107 nests of Lapland Bunting with mean clutch size 5.7 eggs (vs. 5.7 in 2007); 29% of these nests were successful (62% in 2007).

G. Gauthier, M.-C. Cadieux, J. Lefebvre, J. Bety, D. Berteaux, A. Reed 2009. Population study of Greater Snow Geese on Bylot and Ellesmere Islands (Nunavut) in 2008: a progress report. http://www.cen.ulaval.ca/bylot/files/Report_Bylot_2008.pdf

Arctic WOLVES - 2008 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2008.pdf

76. Fosheim Peninsula, Ellesmere Island, Nunavut, Canada
(79°50' N, 84°30' W)

Field studies were undertaken from 7 July to 8 August 2008. In July, we conducted winter nest and burrow surveys at the

Eastwind Lake site. A snap-trapping survey was also done at the end of July – early August in wet and dry habitat. We captured 10 Greenland Lemmings (*Dicrostonyx* spp.), 10 times more than last year. Field impressions suggest that lemmings were quite abundant and that Weasels were present.

The two known dens were found with signs of activity this year. No new dens were found on the Fosheim Peninsula.

We conducted a 16-km transect along the Blacktop Ridge to find raptor nests. No nest was found and we only had one incidental observation of a Gyrfalcon in mid-July. A few Snowy Owls were observed on Fosheim Peninsula during aerial surveys.

We found 16 Glaucous Gull nests and one Sabine's Gull nest on Brant Island. Due to distance between this site and the main study area, and the limited flying time, we did not go back to determine breeding success.

On 8 and 12 July, we surveyed the south part of Axel Heiberg Island, Brant and Shamrock Islands and the Fosheim Peninsula of Ellesmere Island to evaluate the relative abundance of Greater Snow Geese and Eastern High Arctic Brent Goose. Since the spring snow melt was early in eastern Arctic this year, we missed the nesting period and only observed groups of moulting adults and broods. On Brant Island, 13 depredated Brant nests were found and none on Shamrock Island. Between 31 July and 5 August, a total of 72 broods were observed on a survey with an average of 4.1 young/brood. At the end of the field season, we banded more than 560 Greater Snow Geese. Furthermore, we recaptured 89 banded Greater Snow Geese including 2 adult males banded on Bylot Island (in 2000 and 2006) and two in southern Québec (Île-aux-Oies in 2007 and Cap Tourmente National Wildlife Area in 1997). Seeing that brood size was generally higher this year than last, we assume that reproduction was quite good in this area during the summer.

The nesting period for shorebirds was over when we started our survey in early July due to early snow melt. To determine breeding phenology, we captured 20 chicks (12 Ruddy Turnstone and 8 Red Knot) in different broods to determine their age.

J. Lefebvre, C. Maurice, F. St-Pierre

Arctic WOLVES - 2008 Project Field Report.
2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2008.pdf

77. Alexandra Fiord, Ellesmere Island, Nunavut, Canada
(78°53' N, 75°55' W)

I conducted breeding bird surveys during the period from 7 June to 1 August 2008 by doing walking transects and also rope dragging within 5 plots, to obtain a measure of how many birds were being spotted on the walking transects. This was a comparison of a breeding bird survey done at the same site in the early 1980s.

The spring and summer season of 2008 was average in timing, warm and dry. Ice broke-up on major rivers on 15 June. On the same date snow cover on flat areas decreased to 50%, and snow melted completely two days later. No extreme weather events occurred during the observation period.

Only 5 Greenland Lemmings were seen over the course of the field season of 2008 indicating their low abundance. No capture data are available.

Arctic Foxes were common and bred. We recorded neither owls, nor raptors, apart from Gyrfalcon. Glaucous Gulls were common and the only gulls breeding in the area. A few Ravens were also present, without evidence of breeding.

In the lowland, there were 8 species breeding this year (Snow Buntings, Arctic Redpolls, Lapland Buntings, Arctic Skuas, Long-tailed Ducks, and Baird's Sandpipers). There was also evidence of few Rock Ptarmigan, common Arctic Turns, and a pair of Gyrfalcons nesting (though the Gyrfalcons nest failed this year). The survey results from 2008 indicate very similar results in breeding bird species composition and abundances compared to the earlier surveys done at the site. Species like skuas and ducks were very susceptible to Arctic Fox and Wolf predation if their nests were found. I think it is fair to say that skuas and duck breeding success was low, but this is probably normal at this site with low breeding density of these birds.

Snow Buntings were abundant this year, and the Lapland Buntings and Baird's Sandpipers also seemed to be present and breeding in numbers comparable to or slightly higher than found in the surveys conducted in 1980–1982 at the site using similar methods. Snow Buntings were also abundant last summer at the site. More Red Knots were observed in 2007 than in 2008, but I saw no evidence of breeding this year and don't know if they were breeding or not last year, either.

Climate data for the site shows ambient warming in temperature over the past twenty years, but as of yet the breeding birds appear to be relatively comparable over time.

S. Trefry

78. Alert, Ellesmere Island, Nunavut, Canada (82°29' N, 62°15' W)

Within the frames of IPY activities field studies were undertaken from 21 May to 6 August 2008. For estimate of lemming abundance 6 trap lines (180 snap traps in total) were installed in late July, three in wet/damp habitats and three in dry habitats. Only one Greenland Lemming was caught in the wet/damp habitats.

Eleven plots, which were generally 12 ha in area, were surveyed by a team of two. All plots were rope dragged. We found a total of 31 nests, 11 during plot surveys and 20 op-

portunistically. One recaptured Long-tailed Skua had originally been banded 21 years previously at Alert.

R.I.G. Morrison, F. Vezina, C.E. Hodgetts, J.-R. Julien, J. Carrier

Arctic WOLVES - 2008 Project Field Report.
2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2008.pdf

79. Zackenberg, Greenland (74°28' N, 20°34' W)

According to observations from 9 May to 2 September 2008 heavy snow fall over winter and a very warm June resulted in snow melting being just a little later than average, which was followed by quite stable warm summer. It was rainier than usual, but still not much rain, because north-east Greenland is fairly dry. Snow cover on levelled areas reduced to 50% approximately on 22 June (please note that this date is estimated from a vantage point in the field, and not determined by the analysis method usually used at Zackenberg) and melted off completely on 27 June. Ice broke-up on major rivers on 7 June.

Few Greenland Lemmings were seen, and the number of winter nests within the lemming census area (75.5 nests/km² found) suggests that it was medium to low year in terms of population size.

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

Contrary to recent years, many pairs of Long-tailed Skuas bred this season. Of 19-25 territories, breeding was recorded on 13. Three of nine clutches hatched, but only 4 chicks were alive when ringed at 7-8 days of age.

Sanderlings were recorded in high numbers, but the Dunlin remains the most numerous wader species. Common Ringed Plover numbers were very low in 2008.

Only 6.7% of the egg layings in all wader nests were initiated before 10 June and just under 61.3% before 20 June. In other words, nest initiation was fairly synchronous. Median first egg dates were on 15 June, or later, in the five focal species.

It turned out that most wader species had quite low nest success at Zackenberg. Dunlin had the lowest on record nest success, nest success in the Ruddy Turnstone was low (although the highest of the focal species) and very low in the Sanderling. The all-wader-predation rate was 84%, which is very high. Arctic Fox was the suspected culprit of nest loss in most cases. A research project on Sanderling breeding behaviour (led by Jeroen Reneerkens), meant more than usual traffic in the territories. It is uncertain to what extent this might have contributed to the higher predation rates of Sanderling, but some effect must be expected.

Chick survival is assumed low, but we no longer complete the low tide counts, that we used to use for estimation of chick survival.

Inside the census area, two pairs of Rock Ptarmigan were encountered during the census period. The number of Rock Ptarmigan territories was comparable to 2006 and 2007. During the census, two to four pairs were registered in the 15.8 km² census area. This year much fewer ptarmigan remains were recorded at Arctic Fox dens.

The number of Snow Bunting territories was high, although lower than during the last five summer seasons.

J. Hansen

see also: Jensen, L.M. & Rasch, M. (eds.) 2009: Zackenberg Ecological Research Operations, 14th Annual Report, 2008. National Environmental Research Institute, Aarhus University, Denmark. 116 pp. http://www2.dmu.dk/pub/ZERO_09.pdf. Accessed 24 Feb. 2010.

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

Despite an increase in winter 2007/2008, the lemming situation on Traill remained intermediate (around 700 winter

nests) with densities of the order of one lemming/ha. This is below the threshold required of breeding Snowy Owls. Therefore, there were no owls on Traill Island. But in contrast, with this noticeable recovery among lemmings, there were 5 Arctic Fox dens in the whole valley with pups, and some pairs of Long-tailed Skuas were breeding. The trapping sessions (after the melt in late June and early August) suggested the typical summer decline among lemmings.

B. Sittler

81. Iceland (63°23' – 66°03' N, 16°33' – 22°45' W)

Arctic Foxes were rare in Iceland during our visit from 5 to 15 August 2008. Avian predators were represented by numerous Lesser Black-backed Gulls, common Ravens, Great Skuas and Pomarine Skuas and rare Merlins, Gyrfalcons and Short-eared Owls. Juveniles were observed in most species of waterfowl, waders, gulls, skuas and passerines, which indicated their successful breeding.

E.Y. Loktionov

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



Common Eider female incubating a clutch of five eggs on Wrangel Island in July 2008. A brood of five chicks left the nest several days later. Photo by Vasily Baranyuk ©.

BIRD BREEDING CONDITIONS IN THE ARCTIC IN 2008

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Information about breeding conditions for tundra birds in summer 2008 was received from 81 localities across the circumpolar Arctic region, including 42 survey forms filled in by respondents, 25 free-form text notes, and 14 Internet publications. The contributions had the following geographic distribution: 2 in western Europe (Iceland and Norway), 46 in Russia (15 in European Russia, 9 in Western Siberia, 8 on Taimyr, 6 in Yakutia, and 8 on Chukotka and Wrangel Island), 13 in Alaska, 18 in Canada and 2 in Greenland. Hence, the total number of contributions in 2008 was below average for the period since 2001 (Fig. 1), when the survey acquired international recognition and received for the first time good number of reports from Alaska. The decline in 2008 was primarily due to declining numbers of reports from all regions of Russia, in particular Chukotka at the Russian Far East. Noteworthy is the record high number of contributions from Canada, which partly related to booming activities of International Polar Year projects. As in the previous years, the amount of available information is not sufficient to adequately interpret the situation in several regions.

Weather and other abiotic factors

Weather conditions determine timing of phenological events, and in the summer 2008 some unusual weather events had strong impact on animal populations.

Snow melt and the arrival of many species of birds occur in June across the major part of the Arctic. Mean air temperatures in June 2008 were above the long-term average in Iceland, Greenland and in the north and east of the Canadian Arctic (Fig. 1 on page 67). There were less extensive areas of increased June temperatures in the north of Alaska, extreme south of Chukotka, western Yakutia and in the north-east of Europe. Low June temperatures were recorded in the south-west of Canada, northern Fennoscandia, Western Siberia, northern Chukotka, and western Alaska, and particularly cold weather prevailed across vast regions from the north-eastern Yakutia to Wrangel Island, and in the south of Alaska, including the Pribiloff Islands.

Information from observers about spring phenology was generally in agreement with the assessment of air temperature anomalies based on weather station's data. Average or early spring development was reported from the major part

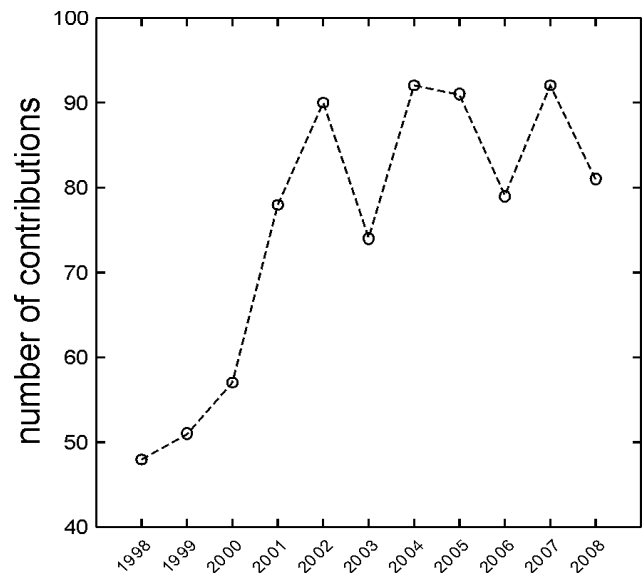


Figure 1. Number of contributions to the ABBCS in 1998–2008.

of Canada and north-eastern Alaska, while late spring reports prevailed in the south of Alaska and almost everywhere across the north of Eurasia. Discrepancies between June temperatures and spring phenology can be found in some Subarctic regions (south of the Hudson Bay, western Alaska, Kola Peninsula in Europe), where spring development normally starts in May. Slightly increased mean monthly air temperatures in June in the center of northern European Russia do not tally well with reports of the late spring from this region. Another three sites with apparent discrepancies include two localities in Yakutia (the Lena Delta and Indigirka River), where early snowmelt and bird arrival were followed by the return of cold weather, and one site in the north-eastern Greenland, where late snowmelt resulted from the abundant snow accumulation during the winter, rather than from cold June temperatures.

Conditions in July are critically important for Arctic-breeding birds, as chicks of many species hatch during this month. Weather conditions at this time have strong impact on survival and development of chicks, both directly and indirectly depending on the availability of invertebrate food. Figure 2 on page 67 shows that the distribution of air temperature anomalies across the circumpolar area did not change dramatically in July compared with June. The vast area of the above-average temperatures remained in the western Hemisphere, and included Iceland, almost entire Canadian Arctic and the extreme north-east of Alaska. The area of high temperatures in the north-east of Europe extended into Western Siberia. The principal areas of low temperatures in June remained cold also in July; they included a relatively small area in Fennoscandia, a vast, almost continuous region from Yakutia to southern Alaska. A cold area in the north of Yakutia extended to the west and included the major part of the Taimyr Peninsula.

Information from observers about weather conditions in July showed an even better agreement with assessment of air temperature anomalies based on weather stations' data than in June. Almost all respondents reported cold summer from the areas of low July temperatures, and warm summer from the areas of high temperatures. The most pronounced and unexplained discrepancy was represented by a locality in the Indigirka River basin in Yakutia, where the report of warm summer by a researcher contrasted with the cold July air temperatures.

Abiotic factors, that had strong impact on distribution, numbers, and/or breeding success of tundra birds, were mostly reported from localities in Russia. Thus, high flood occurred in the Chaun River delta in the north of Chukotka, and in the Pyasina River delta on Taimyr; in the latter locality this resulted in the loss of many nests of Brent Geese and large gulls. Sabine's Gulls and Ross's Gulls did not nest on small islands in the Lena River delta, because they remained flooded for a long time. In contrast, the flood was low in 2008 in the Lower Ob' River area, on south-eastern Taimyr and southern Chukotka; on Taimyr this resulted in increased densities of breeding birds in floodplain habitats. In the end of June to early July long-term rains caused death of chicks in nests of passerine birds in the area of the Kandalaksha Bay of the White Sea. However, the return of cold weather with snowfalls in June had the strongest adverse impact on birds. These snowfalls were observed in the extreme north-east

of Europe (the Syadeiyu-Korotaykha River), on the Yamal Peninsula (the Erkatayakha River), on Oleny Island and in several localities on south-eastern Taimyr, but the conditions were really catastrophic for birds in Yakutia and on Wrangel Island. Following early snowmelt and the arrival of many species of birds, rapid drop of air temperatures in early June spread across vast areas in the north of Yakutia. The return of cold weather occurred at the same time on Wrangel Island, although it was less prolonged there. Death of waders and passerines was reported from several localities (the Lena Delta, lower Yana and Indigirka rivers, Wrangel Island) within this vast region stretching ca. 2,000 km, and it was possibly a mass and widespread event there. Snowfalls occurred also in late June in the Lena Delta and on Wrangel Island, but apparently they had no catastrophic impact on breeding birds.

Rodent abundance

Microtine rodents represent a critically important component of the Arctic ecosystems, because their long-term cycles of varying amplitude and period affect the abundance of predators and the pressure of the latter on clutches of land-nesting birds; they may also have other indirect ecosystem influences as well. Hence, evaluation of rodent abundance is an important aspect in the assessment of bird breeding conditions.

According to information from respondents there were no large regions in the Arctic with high abundance of rodents in 2008 (Fig. 3 on page 68). However, rodents occurred in high

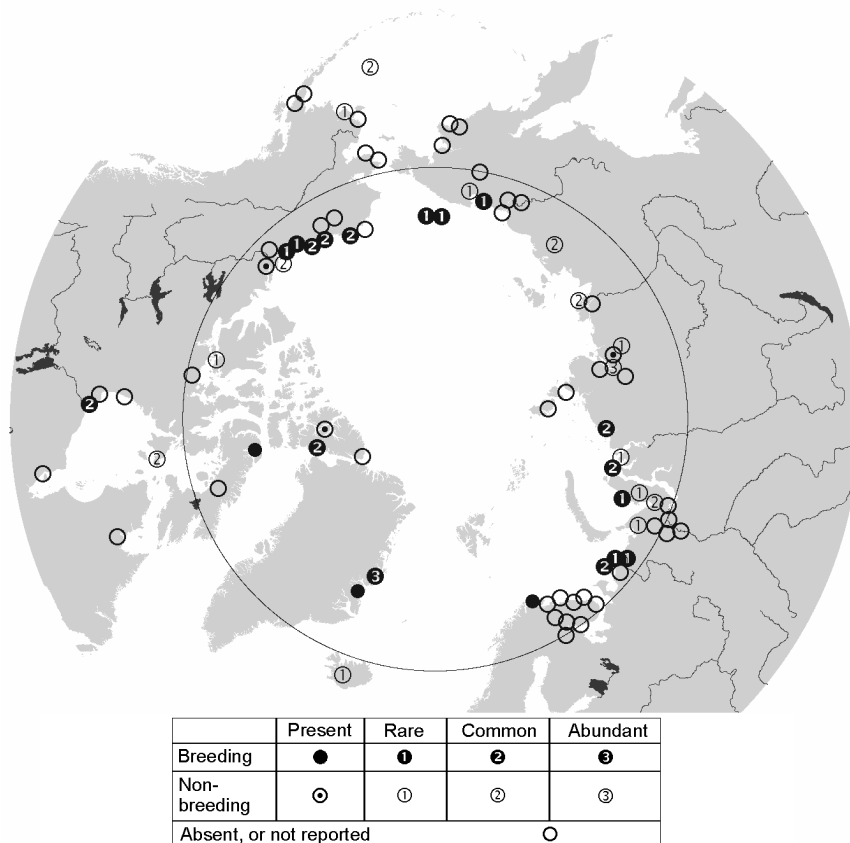


Figure 2. Abundance of Arctic Foxes in the Arctic in 2008

numbers in several smaller regions and isolated localities. The largest regions with high rodent abundance included the Kola Peninsula in Europe, where voles peaked across the whole area and Norway Lemmings were abundant in the north, and the area of Baffin Island and Bylot Island in the eastern Canadian Arctic, where lemmings of two species were numerous. Lemmings were also abundant on Saint George Island, Cape Barrow in Alaska and at one site in the Kolyma River delta in Siberia. Voles occurred in high numbers at two other sites in Siberia, on mainland tundra to the south of the Lena Delta and extreme north-west of Chukotka.

Some sites in Canada and northern Alaska with low and moderate abundance of rodents had not change in 2008 from 2007. However, a slight increase in the number of sites with high rodent abundance indicated a general increasing tendency in rodent populations. In Eurasia rodent populations declined almost everywhere in 2008 compared with 2007, with the exception of areas of increasing numbers on the Kola Peninsula and the north-west of Chukotka. The number of sites with high or moderate abundance of rodents notably decreased there, whereas the number of sites with low abundance of lemmings and voles increased.

Predators

Arctic Fox is usually considered the principal predator of egg clutches and chicks of ground-nesting birds in the tundra, with the strongest pressure in seasons of low rodent abun-

dance. The abundance and breeding status of the Arctic Fox did not change notably in the summer 2008 compared with 2007 in Greenland, Canadian Arctic, on Chukotka, Kola Peninsula and Kolguev Island in Russia (Fig. 2 on page 48), but in other regions noteworthy changes were observed. Arctic Foxes became more abundant breeders in the north of Alaska and adjacent parts of Canada, apparently due to the increased abundance of rodents. A decline in the rodent abundance across the major part of Eurasia from the White Sea to the Kolyma River resulted in a notable decline in a proportion of sites with breeding Arctic Foxes (36% of the sites with reported breeding status compared with 63% in 2007). However, no major change in the abundance of Arctic Foxes was observed. Death of Arctic Foxes during the winter, probably due to starvation, was reported from two sites, Pyasina River delta on Taimyr and Wrangel Island.

Red Foxes were observed everywhere, with the exception of Greenland, Taimyr, and Yakutia, and they were most common on the Kola Peninsula, Chukotka and in North America. Information about Red Foxes was available in 24 reports in 2008 compared with 13 reports in 2007.

Ermines were observed at 8 sites with 1-2 sites in different regions, Least Weasels at 4 sites including 3 sites in Canada and Minks at 5 sites including 3 sites on the Kola Peninsula. It is noteworthy that for the second year in a row the American Mink was not encountered in the Yukon-Kuskok-

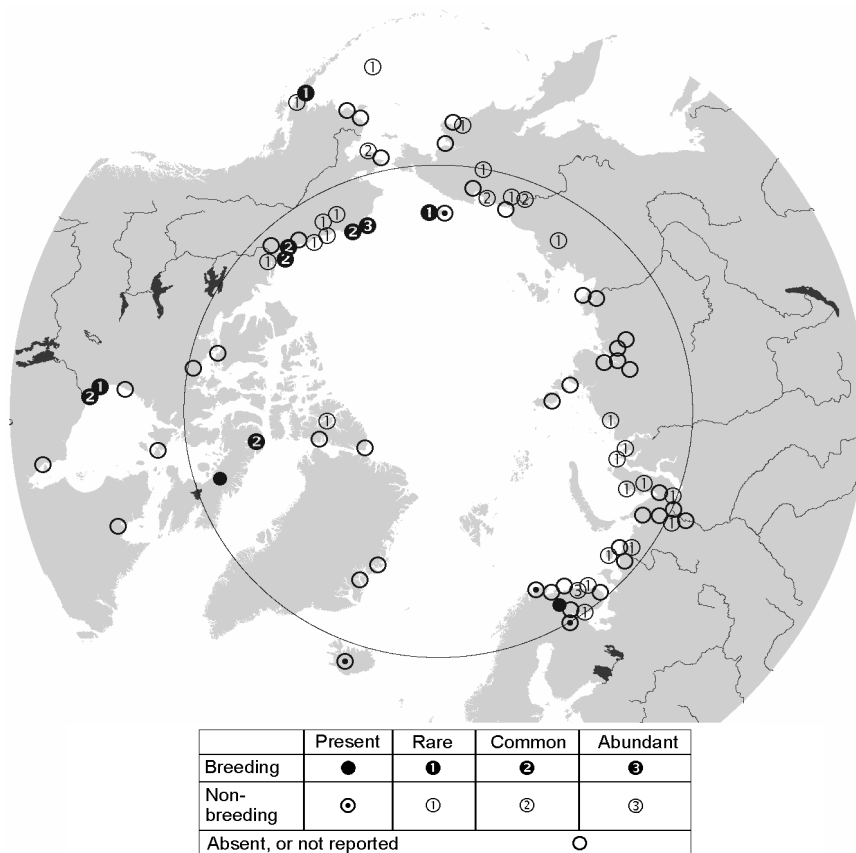


Figure 3. Abundance of owls in the Arctic in 2008

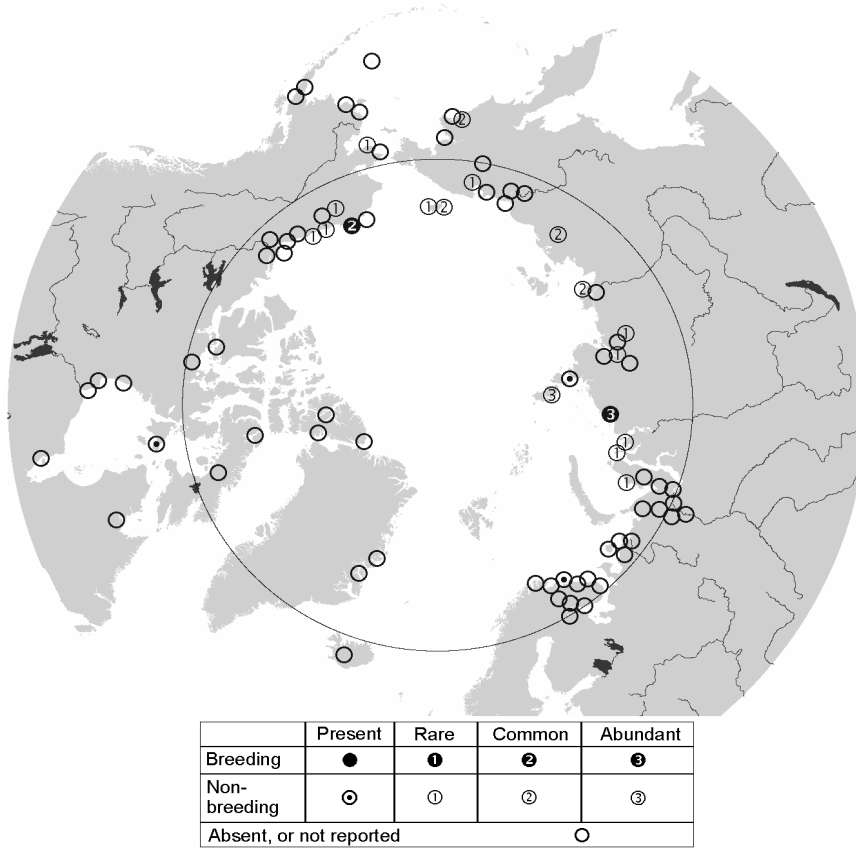


Figure 4. Abundance of Pomarine Skuas in the Arctic in 2008

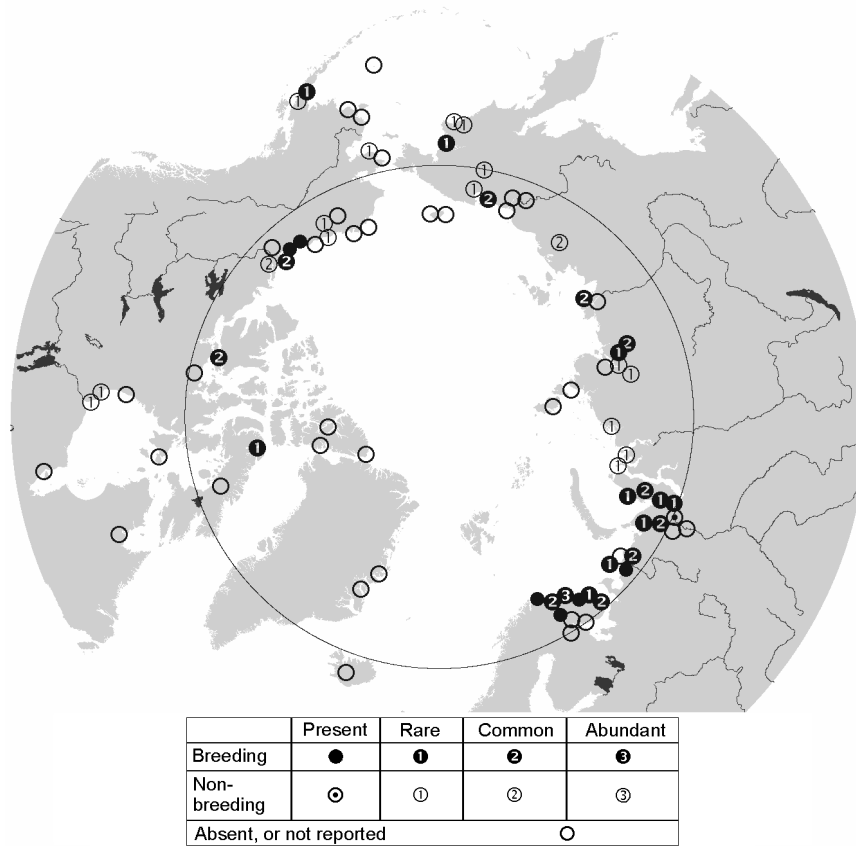


Figure 5. Abundance of Rough-legged Buzzards in the Arctic in 2008

wim Delta, where their abundance had been high in some years previously. Observations of Wolves were reported from Taimyr and Chukotka, of Wolverines from several sites, and of Brown Bears from many sites. Brown Bears had adverse impact on the breeding success of birds of prey on the Yamal Peninsula and of gulls and waterfowl in their colonies on islands in southern Chukotka.

Arctic owls belong to rodent specialists, and their abundance and breeding status usually correlates with the abundance of rodents. Wrangel Island is the only area, where Snowy Owls breed in most years, although the number of pairs is low in years of low lemming abundance, as in 2008. The decrease of rodent populations across the major part of northern Eurasia resulted in the low numbers of owls and extreme rarity of breeding records (Fig. 3 on page 49). Boreal species of owls nested in the Laplandsky Nature Reserve, and non-breeding owls were observed in high numbers at another site on the Kola Peninsula, where rodents were abundant in 2008. In contrast, the increasing abundance of rodents in the New World Arctic allowed owls to breed at 8 sites there in 2008 compared with two sites in 2007. As usual, Snowy Owls were common and bred in the northern part of the region (Cape Barrow, Herschel Island, Bylot Island, and Baffin Island), whereas Short-eared Owls bred at southerly sites. In total observations of owls, including accidentals, were made at 42 sites, of which they bred at 11. This was very close to the

numbers in 2007. Information about Snowy Owls and Short-eared Owls was given in 18 and 21 reports, respectively.

Pomarine Skua is a rodent specialist in the breeding period. The distribution of this species, its precise breeding requirements, and relationships with the Snowy Owl are not sufficiently understood. Unlike Snowy Owls, the common breeders in North America in 2008, Pomarine skuas bred in moderate numbers only at a single site, Barrow area, while elsewhere in America (mostly in northern Alaska) they were rare non-breeders (Fig. 4 on page 50). In Eurasia non-breeding Pomarine skuas were abundant at two sites in the north of Central Siberia, with a single breeding pair recorded at one of these sites, the Pyasina River delta on Taimyr. Lemming abundance decreased dramatically at the latter site from spring to mid summer in 2008, which probably resulted in a low breeding effort by skuas. Non-breeding Pomarine skuas were common at several sites in the north of Siberia.

Compared with owls and the Pomarine Skua, Rough-legged Buzzard is a more opportunistic species in respect to the choice of food, which allows them to have a vast breeding range in the Arctic and to nest when there is moderate or sometimes even low abundance of rodents.

In 2008 Rough-legged Buzzards bred at many sites on the Kola Peninsula, and reached high abundance at one of them, Cape Krutik (Fig. 5 on page 50). Buzzards bred almost everywhere farther eastward, in north-eastern Europe and on the

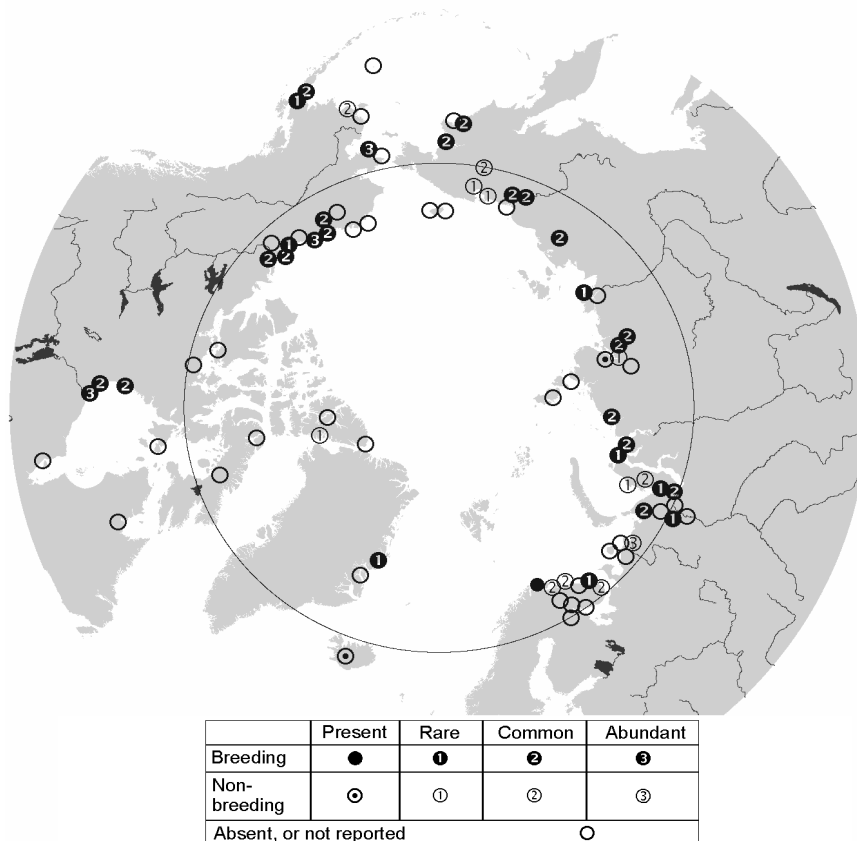


Figure 6. Abundance of grouse in the Arctic in 2008

Yamal Peninsula, but their numbers were low at most sites. They were common breeders in the Bolshezemelskaya Tundra, but most pairs failed there. Rough-legged Buzzards were rare at most sites elsewhere in Siberia and in the north of the Far East, and bred at 5 of 14 sites where they were observed. Small clutches and nest failure were mentioned in several reports from Europe and Asia, which contributed to the general pattern of low breeding effort caused by an apparent shortage of food. Rough-legged Buzzards were rare everywhere in the north of Alaska, but they were common and/or bred at several sites to the north of the Arctic Circle in Canada. Reasons for the absence of breeding records from more southerly localities in Canada remain unclear.

Distribution and numbers of tundra birds

As usual, survey contributors reported a number of interesting observations indicating changes in the distribution of birds, as well as unusual vagrants. A nest of Ravens found in the lower Khatanga River area at the latitude 72°55' N was the northernmost in Eurasia, and the observation of a Hooded Crow in Kharasavey settlement on Yamal was the northernmost for the region. The first record of the Grey Heron was made on Chukotka, and of the Great Egret in the Churchill area in Canada. The observation of a vagrant Common Goldeneye on Victoria Island is also of interest.

Information about changes in abundance of different species was available from many localities. However, the data were rarely sufficient to distinguish annual fluctuations in the abundance from long-term trends. In most cases it was difficult to make judgments about spatial scale of annual fluctuations, based on reports from isolated localities. A comparison of information from 2008 with the data from the previous years indicated the continuation of the long-term decline in numbers of several species of Tetraonidae on the Kola Peninsula, the Dunlin and Ruddy Turnstone on Kolguev Island, Spoon-billed Sandpiper on southern Chukotka, Grey Phalarope and Ruddy Turnstone in the Yukon-Kuskokwim Delta in Alaska. The Semipalmated Sandpiper has become a non-breeding species in the Churchill area in Canada. The long-term increasing trends were confirmed for the Ross' Goose in the Karrak Lake area and Bald Eagle in the Churchill area. Low numbers of breeding Pectoral Sandpipers and Grey Phalaropes in the north of Alaska for the second year in a row apparently reflected their re-distribution within the breeding ranges rather than declines of the local populations due to low recruitment, because breeding of waders was generally successful in this region during recent years.

Information about abundance of Willow Grouse and Rock Ptarmigans was submitted in many contributions by respondents with variable background in scientific research (Fig. 6 on page 51). Changes in grouse abundance in 2008 compared with the summer 2007 were reported from several localities. However, these changes did not indicate apparent population trends. It is noteworthy that Willow Grouse were not reported in observations from the Kola Peninsula. The population of this species declined by 2007 in the north-east of European

Russia and Western Siberia, and remained low or moderate there for the second year in a row with the exception of one site in the Pechora River delta area where Willow Grouse were reported as abundant. Evaluations of this species abundance as moderate prevailed elsewhere in the Arctic, although numbers were also reported low at several sites in Asia and high at several sites in the north of Alaska and Canada.

Rock Ptarmigans were observed at fewer localities than Willow Grouse, 17 and 33, respectively. Observations of the former species in low or moderate numbers were relatively evenly distributed in the north of the Kola Peninsula, Central Siberia and North America.

Breeding success

The pattern of the breeding success of tundra birds changed considerably in summer 2008 compared with 2007 (Fig. 4 on page 68). In spite of the late spring and the cold start of summer birds bred successfully on Kolguev Island and adjacent mainland areas in Europe, apparently due to the low abundance of predators. Observations of high nest survival in several species (the Common Eider, Arctic Skua, Common Gull) and general impressions of the respondents indicated good reproduction of tundra birds on the Kola Peninsula, although available data were not sufficient for a reliable evaluation. There were evaluations of moderate bird breeding performance in Bolshezemelskaya Tundra in the north-east of Europe and in the lower Ob River region in Western Siberia. Reports of low breeding success prevailed farther east across Siberia, which contrasted with good reproduction there in 2007. It is noteworthy that the results of reproduction in northern Yakutia were adversely affected by the weather anomaly in spring and summer 2008, when birds were dying, and some of them could have cancelled breeding. A failure of bird reproduction in Yakutia was confirmed also by the low proportions of juveniles in populations of Siberian waders on the non-breeding grounds in Australia during northern winter 2008/2009 (see Minton *et al.* in the current issue).

Information from southern and western Alaska was too scarce and inconsistent to make general conclusions about breeding success. However, waterfowl had probably average or slightly below average breeding success in the vast Yukon-Kuskokwim Delta. High reproductive success of the Alaskan Bar-tailed Godwit, primarily breeding in the Yukon-Kuskokwim Delta, was also indicated by a high proportion of juveniles in this species in winter (see Minton *et al.* in the current issue).

The situation with bird breeding success with good to average evaluations in the north of Alaska remained generally similar to 2007. In Canada reproduction by birds was more successful in 2008 compared with the previous year. A proportion of sites with low, average and high breeding success changed there from 5:3:1 in 2007 to 2:4:3 in 2008. Nest success of birds remained low in north-eastern Greenland due to strong predation pressure by numerous Arctic Foxes.

Comparison with predictions for 2008

Predictions of bird breeding performance in several Arctic regions for 2008 were made in the "Arctic Birds" No. 10 (page 49) 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 diverse patterns in various regions, with generally low breeding success across the major part of Siberia and an improving situation in Canada.

Two possible scenarios were discussed for the Kola Peninsula and the extreme north-east of Norway. One of them implied that persisting areas of high rodent abundance would enable successful reproduction by ground-nesting birds, while the other, that appeared more likely to us at that time, implied a decline of rodent populations with associated adverse impact of predators on bird reproduction. Apparently the situation followed the first scenario, and bird breeding was probably successful there, although the little data did not allow us to demonstrate it clearly. However, this did not apply to colonial seabirds, whose very low reproductive success in 2008 was caused by feeding conditions in the sea and not by predator-prey interactions in terrestrial ecosystems.

An increase in the abundance of rodents with associated successful reproduction by birds was expected in the north-east of Europe and north-west of Siberia. This did not happen, and moderate abundance of rodents was reported from two sites of 14, including Bolshezemelskaya Tundra where rodent numbers were rapidly declining. However, there were several sites with high (the Pechora River area) or moderate (Bolshezemelskaya Tundra and the Ob River) breeding success due to the low abundance of predators.

A pronounced decline in the abundance of rodents was expected on Taimyr, in the western and north-central Yakutia in the beginning or the middle of 2008, with consequent declines in bird productivity. Indeed, lemmings were present in moderate and decreasing numbers at a single site across this vast region (the Pyasina Delta on Taimyr), and voles occurred in moderate or high numbers at two other sites. Thus, rodent abundance actually decreased in the region, and a corresponding low bird breeding success was reported from those few sites for which evaluations were available.

We expected increasing lemming numbers and good reproduction by birds on Wrangel Island for the second year in a row. In contrast, lemming abundance decreased, although at a stage of population growth. This was probably due to the icing of the tundra surface in autumn and winter 2007/2008. A combination of low lemming abundance and extreme weather in June and July resulted in very low breeding success of birds. A pattern of rodent abundance, predation pressure and bird breeding success was mosaic on Chukotka, and we could not make a clear interpretation of the data from the small number of surveyed sites.

A beginning of recovery of vole populations and successful reproduction by birds was expected in the Yukon-Kuskok-

wim Delta in the west of Alaska, but available data did not allow us to verify this prognosis.

A decline of rodent populations was expected in northern Alaska, and bird breeding success should have been determined by winter survival of terrestrial predators. The decline of the rodent populations did not occur there; in contrast, their numbers increased at some sites. Several evaluations of bird breeding success did not include low values, although Arctic Foxes occurred in notable numbers there.

In agreement with expectations, rodent abundance increased in the Canadian Arctic and bird reproductive performance improved, also favoured by early spring and warm summer weather across the major part of the region.

Generally, the predictions for summer 2008 were confirmed for vast areas in Siberia and Canada, and were totally wrong for Wrangel Island and northern Alaska. The situation was ambiguous for the Kola Peninsula and a region adjacent to the Polar Urals (north-eastern Europe and extreme north-west of Siberia). Available information from other regions is too insufficient to make any conclusions.

Predictions for summer 2009

Relationships between population dynamics of rodents, their predators and tundra birds, observed in some regions, enable us to make predictions for the state of "prey-predator" systems in summer 2009 and to consider the anticipated impact of the predators on bird breeding success.

The high abundance of rodents, observed on the Kola Peninsula during three years, should give way to decline in 2009, while increased pressure of abundant predators will result in low breeding success of birds.

In spite of the low abundance of rodents in north-eastern Europe and Western Siberia bird breeding was successful at several sites there in 2008 due to scarcity of Arctic Foxes. We do not expect an increase in the abundance of predators in the region in 2009 and this should create favourable breeding conditions for birds.

The patterns of rodent and predator abundance were variable in 2008 in the central Siberian Arctic. Arctic Foxes were common and even numerous locally, but their reproductive effort was low. High abundance of rodents is not expected in this region in summer 2009, and breeding success of tundra birds will primarily depend on the winter survival of predators. If there is high survival of Arctic Foxes then they will have a strong negative impact on bird populations; otherwise bird breeding can be successful.

Breeding conditions for birds were unfavourable in summer 2008 across the major part of northern Yakutia, but reproduction by Arctic Foxes apparently was not very successful either, and we do not expect high fox abundance there in summer 2009. This can enable successful reproduction of tundra birds in northern Yakutia, potentially aided by the start of recovery of lemming populations.

Lemming abundance has remained low for several years on Chukotka, while the peaks of vole abundance did not spread across vast areas. This could have been a cause of the low abundance of Arctic Foxes on Chukotka in 2008, and we do not see preconditions for an increase in their population by summer 2009. Accordingly, there are chances for successful reproduction by birds on Chukotka, and these chances will increase if lemming abundance starts to increase. Lemmings populations had started to increase on Wrangel Island in 2007, but they suddenly collapsed in summer 2008. Low numbers can continue on the island into summer 2009, or rapidly develop into moderate or high abundance in the case of favourable conditions during the winter. In either case the Arctic Fox population should remain low there in 2009, resulting in low predation pressure during bird reproduction.

The low abundance of microtine rodents, Arctic Foxes and American Minks in the west of Alaska should result in successful reproduction by birds in 2009. Bird breeding success was high during recent years in the Barrow area in the north of Alaska, apparently due to combined effects of good lemming numbers and the Arctic Fox elimination program. However, observations indicated that a decrease of nest success in 2008 was caused by high number of skuas, combined with the lack of nesting cover resulting from intense grazing by lemmings. It is difficult to predict future development of predator-prey interactions and their impacts on breeding birds in this modified ecosystem.

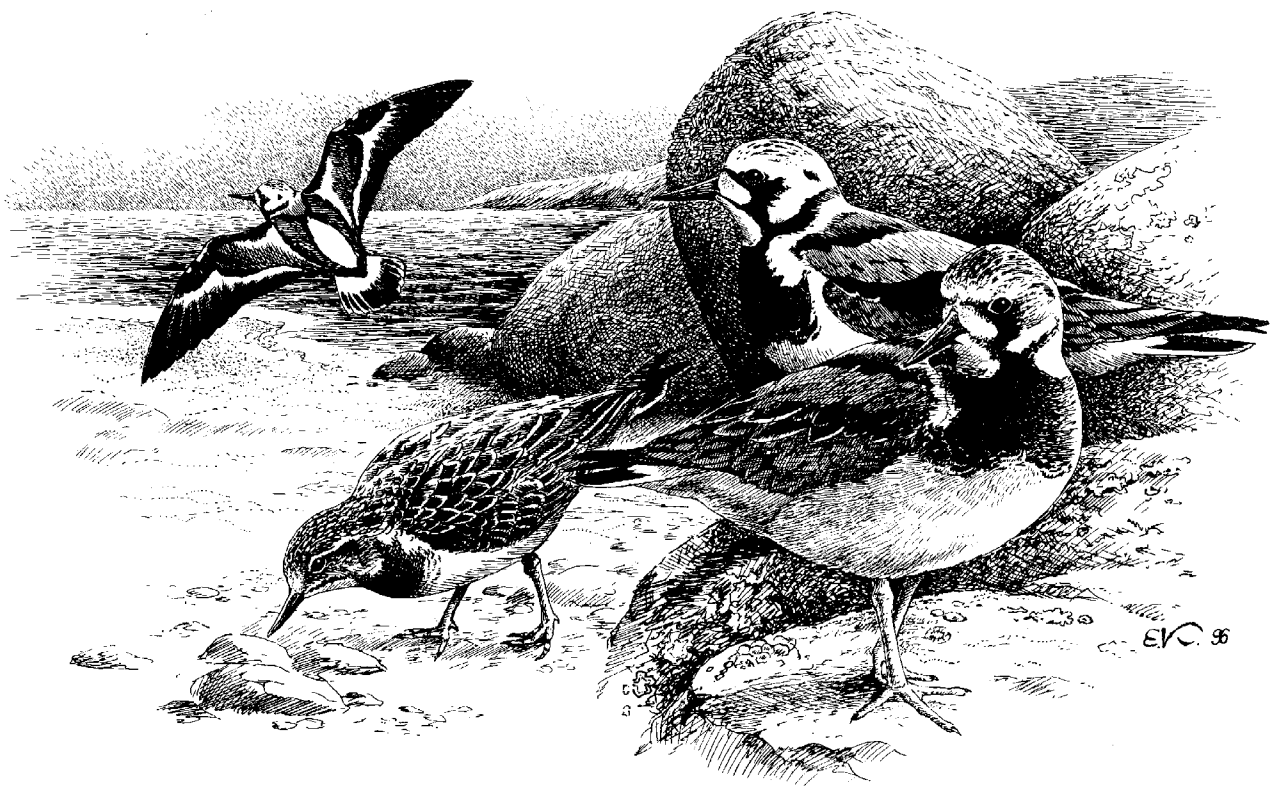
Information about lemming cycles at other sites in northern Alaska is not sufficient for us to predict the future stage of the populations, but breeding effort by Arctic Foxes was rela-

tively good in summer 2008. In this situation it is difficult to infer Arctic Fox impact on birds in 2009, because it can weaken if the increasing tendency in lemming populations further develops.

The Canadian Arctic is vast and geographically divided, which, along with the scarcity of sites with available information, makes predictions difficult. Lemming populations will probably collapse in the extreme north-west of Canada and on Baffin and Bylot islands in 2009, although in the first of these regions populations still have some potential for increase. Rodent populations in the Karrak Lake area were at a low in 2008, and this stage will probably continue in 2009, with associated strong predation pressure by predators on breeding birds. The knowledge of population trends in rodents and Arctic Foxes is insufficient elsewhere in the Canadian Arctic to make any predictions about breeding conditions.

Greenland Lemmings occurred in moderate numbers in north-eastern Greenland during recent years, while the abundance of Arctic Foxes was high in summer 2008. Accordingly, high predation pressure on bird clutches can be expected there also in summer 2009.

In summary, successful reproduction by tundra birds is expected in summer 2009 in north-eastern Europe, Western Siberia, Yakutia, Chukotka, Wrangel Island and western Alaska. Low breeding success is predicted on the Kola Peninsula in Europe, on Baffin Island in Canada and north-eastern Greenland. The situation remains ambiguous in the north of Central Siberia, northern Alaska and the major part of the Canadian Arctic.



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WADER BREEDING SUCCESS IN THE 2008 ARCTIC SUMMER, BASED ON JUVENILE RATIOS OF BIRDS WHICH SPEND THE NON-BREEDING SEASON IN AUSTRALIA

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Introduction

Monitoring of the proportion of juveniles in wader populations in two different parts of Australia, 3,000 km apart, was again continued during the 2008/2009 non-breeding season. This systematic long-term data collection program was commenced in south-east Australia (SEA) in the 1978/1979 season and in north-west Australia (NWA, Broome and 80 Mile Beach) in 1998/99. The results of the monitoring program have been published annually in *Arctic Birds* (Minton *et al.* 2000, 2008), ever since the second edition in 2000.

Breeding productivity is assessed using the percentage of juvenile birds in cannon-net catches of waders in the November/March period, when populations in the non-breeding areas are relatively stable. There are many potential shortcomings to this method of assessing reproduction rates (Minton *et al.* 2005), but at present it is the main method which is employed to obtain a measure of breeding success over a prolonged period on a wide range of wader species. It is not claimed that the figure obtained is other than an *index* of annual breeding success. But it should enable valid comparisons between years to be made and any longer term trends to be identified.

It is also recognised that these measures are obtained on average some six months after birds fledge and that other events in this period (including their first migration) may have variable effects between years. Nor are the figures necessarily an absolute measure of recruitment for the whole population of a species in the flyway as different segments or age groups may migrate to different areas. Marked examples of the inhomogeneity of the distribution of juveniles in non-breeding areas occur in Red Knot* and Bar-tailed Godwit with many of the juvenile birds of the New Zealand populations spending their first non-breeding season in SEA. This has the effect of magnifying the proportion of juveniles in SEA e.g. it

averages more than 50% in Red Knot in SEA whereas it is normally less than 5% in North Island New Zealand (Adrian Reigen *pers. com.*).

This paper presents the data collected in the 2008/2009 season on a range of wader species in SEA and NWA. These figures are a measure of the breeding success in the 2008 Northern Hemisphere summer.

Methods

The fieldwork program in 2008/2009 closely followed that of previous years. Only birds caught by cannon-netting are included. The collection dates were the same as used previously except that Ruddy Turnstones caught in King Island between 28th March and 2nd April 2009 were also included. The normal cut-off date for data is the 21st March but the visit to King Island took place rather later this year. Our flag-sighting and recovery data show that Ruddy Turnstones do not start leaving there until the end of the first week in April. In any case no juveniles were caught so the figures could not have been affected by adult departures!

As in other recent years the SEA data was collected at various places along the coast of Victoria, on the south-east coast of South Australia and on King Island, Tasmania (Ruddy Turnstone only).

The data in NWA was collected during the three week annual expedition in November and an intensive four day catching program in February.

No mist-netting data is included in this year's report. Too few waders were mist-netted in NWA for meaningful figures to be obtained.

Note that two measures of the norm for breeding success are given for SEA. In Table 1 the *median* of the long term dataset is given, together with the number of years for which data exists. In Table 3 the *average* of the mean percentage juvenile figures for the last 11 years is given. This also facilitates a comparison with the NWA data, where datasets are still too short for medians to be an accurate measure.

Results

Adequate samples were obtained in the 2008/2009 season for five of the six species monitored annually in SEA. Red Knot were scarcer than in any previous summer of the 30-year monitoring period and it proved impossible to catch samples at either of the two (only) locations where the species was present. It was also a struggle to build up an acceptable total of Curlew Sandpipers as they were much less numerous than in the previous year. The catch sizes and totals, and the number of juveniles, for SEA are given in Table 1.

Satisfactory catch samples were obtained in NWA for all the main study species, both Arctic and non-Arctic breeders, except Ruddy Turnstone (Table 2). Additionally a good sample was obtained in the 2008/2009 year for Sanderling and Whimbrel, species which are not able to be caught in most

* – scientific names are given in tables and *Index* on pages 63-66

years and so which are not therefore part of the portfolio of regularly monitored species.

Great Knot and Bar-tailed Godwit numbers were noticeably lower in NWA in 2008/2009, particularly at 80 Mile Beach, and consequently the numbers of each caught were lower than in the preceding year. The number of Curlew Sandpiper caught was also greatly reduced after the bumper year in 2007/2008.

Discussion

South-east Australia (SEA)

The overall outcome of the Northern Hemisphere 2008 breeding season for the migratory wader populations which are monitored annually in SEA was probably the poorest of any of the 30 years for which data has been collected. Only Bar-tailed Godwits, which breed in Alaska, had an above average outcome, whether measured by median or mean percentage juvenile figures. Red-necked Stint and Curlew Sandpiper productivities were only slightly below the norm but Ruddy Turnstone, Sanderling and Sharp-tailed Sandpiper figures were exceptionally poor. Indirect evidence (low overall population, complete absence from areas frequented by juveniles) suggest it was also a poor year for Red Knot breeding success.

It is now five years since Red-necked Stint (Table 3) had an above average level of breeding success. Count data shows that their population has declined significantly from the extremely high levels of the late 1990s/early 2000s, when a series of exceptionally good breeding seasons occurred.

Curlew Sandpiper continued their roller coaster ride with good and bad years alternating. The relatively poor outcome this year followed an exceptionally productive 2007 breeding season. A sustained period of above average breeding success is badly needed to reverse, as opposed to halt, the long downward trend in numbers of this species.

Sharp-tailed Sandpipers had their worst breeding outcome for 20 years. The long run of above average breeding success which this species experienced between 2002 and 2007 seems to have come to an abrupt end with only 3.6% juveniles in the 2008/2009 summer populations. Overall numbers of Sharpies are, however, still at much higher levels than they were between the late 1980s and early 2000s, as a result of the extended breeding bonanza period.

Sanderling quite regularly seem to have extremely poor breeding outcomes, but these are partly offset by occasional exceptionally good breeding success years. The 2.9% juveniles in 2008/2009 is the sixth time in the 18 years of data collection that the figure has been below 3%. Ruddy Turnstone fared even worse with only 0.7% juveniles – just three juveniles in 396 birds caught in 12 catches. This is the lowest ever figure for Ruddy Turnstone and is the second really bad breeding outcome in the last three years. Turnstones populations are noticeably reduced in Victoria, the south-east of South Australia and in King Island.

The sole good breeding outcome for SEA wader populations in 2008 was Bar-tailed Godwit. The figure was particularly good when measured against the long-term median. Four of the last five years have now had an above-average percentage of juveniles. One result is that the over-wintering population in 2009 at the main habitat in Victoria (Corner Inlet) was high and has only been exceeded in three of the last 28 years. Catch data has shown that over-wintering birds are predominantly one- and two-year old birds with just a small number of three-year-olds.

The overall conclusion is that the 2008 breeding season was universally poor in the regions of the Siberian Arctic from which waders come to spend the non-breeding season in SEA. In contrast the Bar-tailed Godwits, which come from Alaskan breeding grounds, experienced a good breeding season.

North-west Australia (NWA)

The outcome of the 2008 breeding season for waders which travel from Arctic Siberia to spend the non-breeding season in NWA was the worst since regular monitoring commenced in 1998/1999. All six Arctic-breeding waders showed poor or very poor breeding success. Although the Ruddy Turnstone sample was too small to obtain a realistic measure, this species also probably had a very poor breeding year.

The result for Great Knot (6.3%) was the lowest since 2004 and the Bar-tailed Godwit figure (3.7%) was the lowest since 1998. Whilst it is tempting to attribute this to the major loss of feeding habitat at Saemangeum in South Korea and other parts of the Yellow Sea in China, it is not possible to separate any such effect from the clearly widespread effects of poor weather conditions throughout the Siberian Arctic breeding region in the 2008 summer.

The Red-necked Stint and Curlew Sandpiper figures were similar to each other and close to the figures obtained for these species in SEA. It would appear that the outcome of the breeding season in 2008 was more uniform than usual over most of the area in Arctic Siberia from which wader populations come to both NWA and SEA. Ruddy Turnstone and Sanderling also seem to have had disastrous breeding seasons, again similar to the populations of those species which go to SEA. The Red Knot sample was only small but again suggested low breeding success.

In marked contrast, wader populations breeding in non-Arctic regions of Siberia and southwards into north-west China appear to have had a generally good breeding outcome for 2008. Grey-tailed Tattlers (37.9% juveniles) appear to have fared exceptionally well, the figure being higher than in any of the previous ten years of monitoring. This exceptionally high figure was exhibited in almost all the 11 individual catches.

Little Curlew seem to have been the exception amongst these less northerly breeding waders. In all previous years in which they have been sampled they have shown an exceptionally

high proportion of young birds (30–57%). A complete breeding failure, as the 2008/2009 figures suggest, is therefore unexpected. It is unfortunate that a second catch was not made to check for extreme sampling inhomogeneity (or even incorrect age classification?).

Whimbrel and Common Greenshank are caught too irregularly for any datum to be obtained on what is the norm for these species. In absolute terms the percentage juvenile figures appear low. On the other hand in most years when samples have been obtained no juveniles at all have been caught. So the figures could indicate a good outcome for these species in 2008. This is supported by an exceptional number of one year old Whimbrel still present in NWA in the Austral “winter” of 2009.

Conclusion

The 2008 breeding season for wader populations which visit NWA and SEA in the non-breeding season *was the worst ever recorded in these long-term monitoring programmes*. No detailed examination of snowmelt and weather conditions, and predator levels, has yet been made by us but it is likely that an extremely unfavourable combination of these occurred widely across the Arctic breeding regions of Siberia in the Northern Hemisphere summer of 2008. The only previous comparable summer was in 1992 when widespread breeding failures occurred right around the Arctic regions, mainly because of a 2°C lowering of temperature by the cloud and ash cover from the recently erupted Mount Pinatubo in The Philippines (Ganter and Boyd 2000). But in that year somehow the Sanderling population which visits SEA managed to breed quite successfully.

In contrast breeding conditions in 2008 in Alaska for the SEA population of Bar-tailed Godwit and in the more central regions of Siberia for a range of other wader species seem to have been quite favourable. Grey-tailed Tattlers in particular had a record breeding year.

As we assemble these figures and write the text of this paper the 2009 breeding season will be unfolding across the Arctic. As always we shall be most anxious to commence our monitoring programs next November to find out what happened. Let us hope it is a big improvement on 2008 – it can't be worse!

Acknowledgements

The fieldwork programs which are necessary to generate sufficient data each year in SEA and NWA for an accurate assessment of breeding success are extensive and demanding. Without the tenacity, perseverance, and considerable physical effort of a great many people these extremely valuable long-term datasets could not have been obtained. Each year we face again the daunting task of keeping the program up to previous levels of achievement. It has only been done, and can only be continued, by the dedicated efforts of the large number of wader banders who take part in cannon-netting activities in SEA and NWA each summer. Huge thanks to everyone who has been involved.

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Table 1. Percentage of juvenile/first year waders in cannon-net catches in south-east Australia in 2008/2009

Species	No. of catches		Total caught	Juv./1st year		Long term median* % juvenile (years)	Assessment of 2008 breeding success
	Large (>50)	Small (<50)		N	%		
Red-necked Stint <i>Calidris ruficollis</i>	8	3	2564	376	14.7	13.8 (31)	Average
Curlew Sandpiper <i>C. ferruginea</i>	0	4	80	8	10.0	10.0 (30)	Average
Bar-tailed Godwit <i>Limosa lapponica</i>	3	1	270	78	28.9	18.6 (20)	Very good
Red Knot <i>C. canutus</i>	0	1	1	1	(-)	52.1 (17)	?
Ruddy Turnstone <i>Arenaria interpres</i>	3	9	396	3	0.7	9.3 (19)	Very poor
Sanderling <i>C. alba</i>	1	2	172	5	2.9	12.4 (18)	Very poor
Sharp-tailed Sandpiper <i>C. acuminata</i>	2	2	224	8	3.6	11.1 (28)	Very poor

All birds cannon-netted in period 15 November to 28 February except for Red-necked Stint, Ruddy Turnstone, and Sanderling, for which catches up to 21 March are included. King Island Ruddy Turnstones, 28 March to 2 April, are also included.

* Includes 2008/2009 figures

Table 2. Percentage of juvenile/first year waders in cannon-net catches in north-west Australia in 2008/2009

Species	No. of catches		Total caught	Juv./1st year		Assessment of 2008 breeding success
	Large (>50)	Small (<50)		N	(%)	
Great Knot <i>Calidris tenuirostris</i>	5	5	797	50	6.3	Poor
Bar-tailed Godwit <i>Limosa lapponica</i>	5	7	454	17	3.7	Poor
Red-necked Stint <i>C. ruficollis</i>	1	13	317	32	10.1	Poor
Red Knot <i>C. canutus</i>	0	7	33	4	12.1	Poor
Curlew Sandpiper <i>C. ferruginea</i>	3	9	283	28	9.9	Poor
Ruddy Turnstone <i>Arenaria interpres</i>	0	3	7	0	(0)	?
Sanderling <i>C. alba</i>	0	3	43	0	0	Very poor
Non-Arctic northern migrants						
Greater Sand Plover <i>Charadrius leschenaultii</i>	6	10	541	147	27.2	Good
Terek Sandpiper <i>Xenus cinereus</i>	0	10	110	17	15.4	Average
Grey-tailed Tattler <i>Heteroscelus brevipes</i>	0	11	153	58	37.9	Very good
Common Greenshank <i>Tringa nebularia</i>	0	5	45	2	4.4	?
Little Curlew <i>Numenius minutus</i>	0	1	49	0	0	Very poor
Whimbrel <i>Numenius phaeopus</i>	1	1	79	3	3.8	?

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 2008/2009

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	Average (11 yrs)
Ruddy Turnstone <i>Arenaria interpres</i>	6.2	29	10	9.3	17	6.7	12	28	1.3	19	0.7	12.7
Red-necked Stint <i>Calidris ruficollis</i>	32	23	13	35	13	23	10	7.4	14	10	15	17.5
Curlew Sandpiper <i>C. ferruginea</i>	4.1	20	6.8	27	15	15	22	27	4.9	33	10	16.8
Sharp-tailed Sandpiper <i>C. acuminata</i>	11	10	16	7.9	20	39	42	27	12	20	3.6	18.9
Sanderling <i>C. alba</i>	10	13	2.9	10	43	2.7	16	62	0.5	14	2.9	16.1
Red Knot <i>C. canutus</i>	(2.8)	38	52	69	(92)	(86)	29	73	58	(75)	(-)	53.1
Bar-tailed Godwit <i>Limosa lapponica</i>	41	19	3.6	1.4	16	2.3	38	40	26	56	29	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) but include 2008/2009 figures

Table 4. Percentage of first year birds in wader catches in north-west Australia 1998/1999 to 2008/2009

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	Average (11 yrs)
Red-necked Stint <i>Calidris ruficollis</i>	26	46	15	17	41	10	13	20	21	20	10	21.7
Curlew Sandpiper <i>C. ferruginea</i>	9.3	22	11	19	15	7.4	21	37	11	29	10	17.5
Great Knot <i>C. tenuirostris</i>	2.4	4.8	18	5.2	17	16	3.2	12	9.2	12	6	9.6
Red Knot <i>C. canutus</i>	3.3	14	9.6	5.4	32	3.2	(12)	57	11	23	12	17.0
Bar-tailed Godwit <i>Limosa lapponica</i>	2.0	10	4.8	15	13	9.0	6.7	11	8.5	8	4	8.4
Non-Arctic northern migrants												
Greater Sand Plover <i>Charadrius leschenaultii</i>	25	33	22	13	32	24	21	9.5	21	27	27	23.2
Terek Sandpiper <i>Xenus cinereus</i>	12	(0)	8.5	12	11	19	14	13	11	13	15	12.9
Grey-tailed Tattler <i>Heteroscelus brevipes</i>	26	(44)	17	17	9.0	14	11	15	28	25	38	20.0
Little Curlew <i>Numenius minutus</i>	57	33	-	36	30	-	(40)	-	-	47	0	33.8

All birds cannon-netted in the period 1 November to mid-March. Averages (for last 11 years) exclude figures in brackets (small samples) but include 2008/2009 figures



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INTERESTING LINKS AND PUBLICATIONS

- Arctic Predators IPY Project. <http://www.arctic-predators.uit.no/index.cfm>.
- Arctic WOLVES - 2008 Project Field Report. 2009. http://www.cen.ulaval.ca/arcticwolves/files/WOLVES_field_report_2008.pdf.
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- U.S. Fish and Wildlife Service. 2008. Waterfowl population status, 2008. U.S. Department of the Interior, Washington, D.C. USA. <http://www.fws.gov/migratorybirds/NewReportsPublications/PopulationStatus/Waterfowl/StatusReport2008.pdf>

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- Meltofte, H., Christensen, T.R., Elberling, B., Forchhammer, M.C. & Rasch, M. (ed.). 2008: High-arctic ecosystem dynamics in a changing climate: ten years of monitoring and research at Zackenberg Research Station, Northeast Greenland. Oxford: Elsevier (Advances in ecological research; vol. 40) 563 pp.

MAP COLLECTION

Four maps below (pages 67-68) are provided to illustrate various aspects of bird breeding conditions in the Arctic in 2008.

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 2008 from the mean June/July air temperature averaged for the period 1994-2003. This deviation indicates whether the respective month in 2008 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.

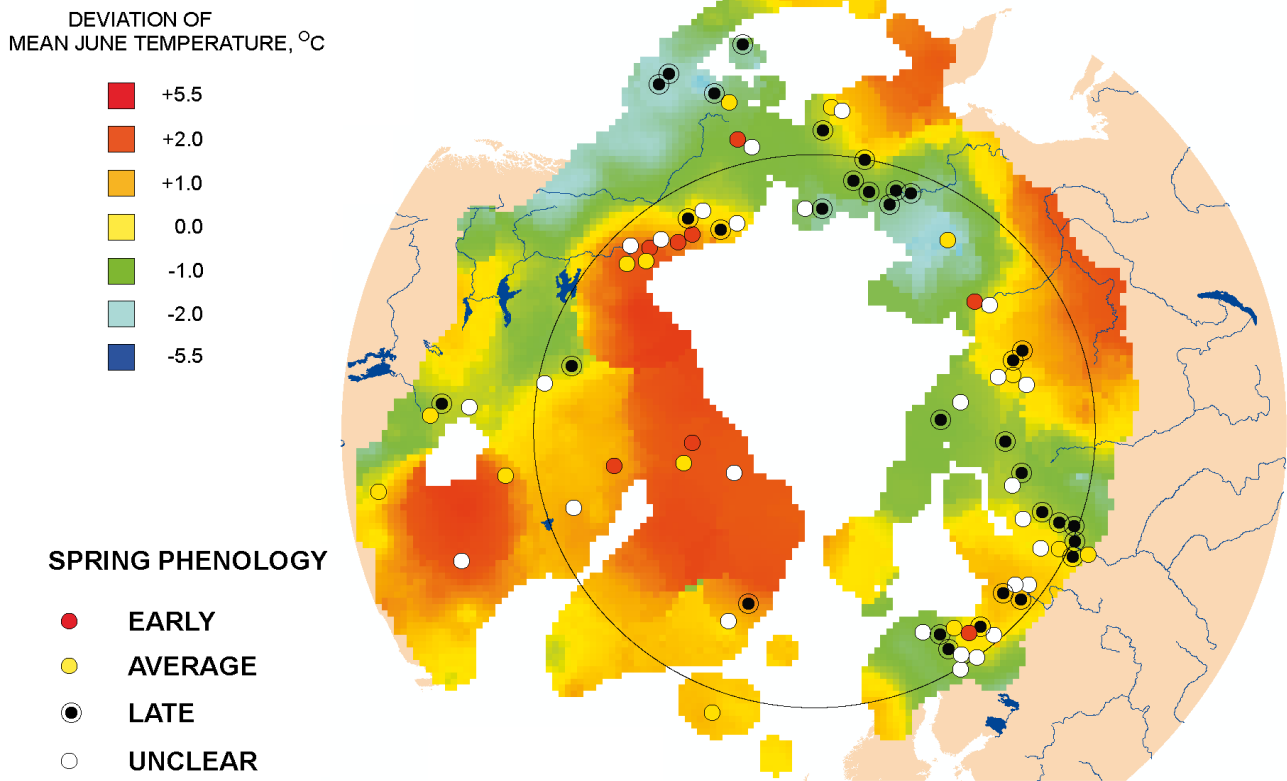


Figure 1. June air temperature and phenological characteristics of spring in the Arctic in 2008. See text above for legend

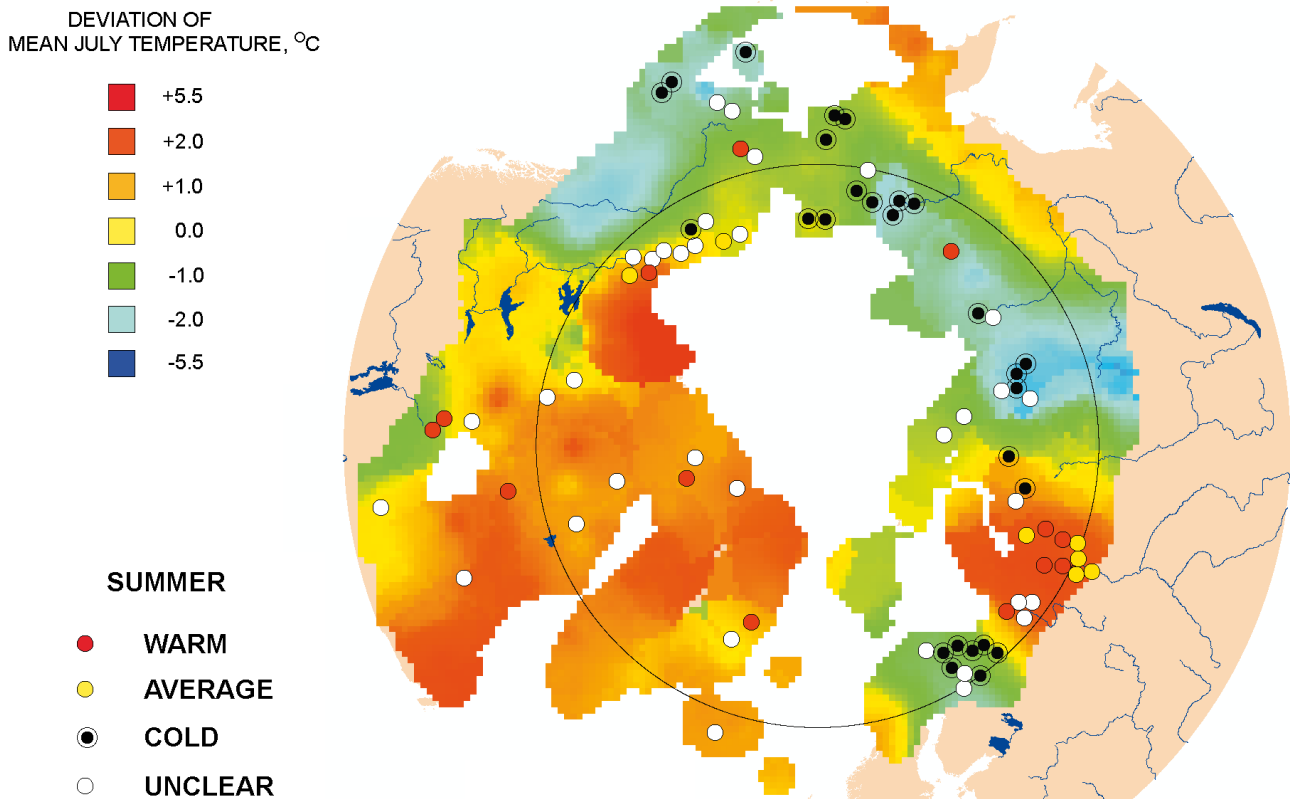


Figure 2. July air temperature and phenological characteristics of summer in the Arctic in 2008

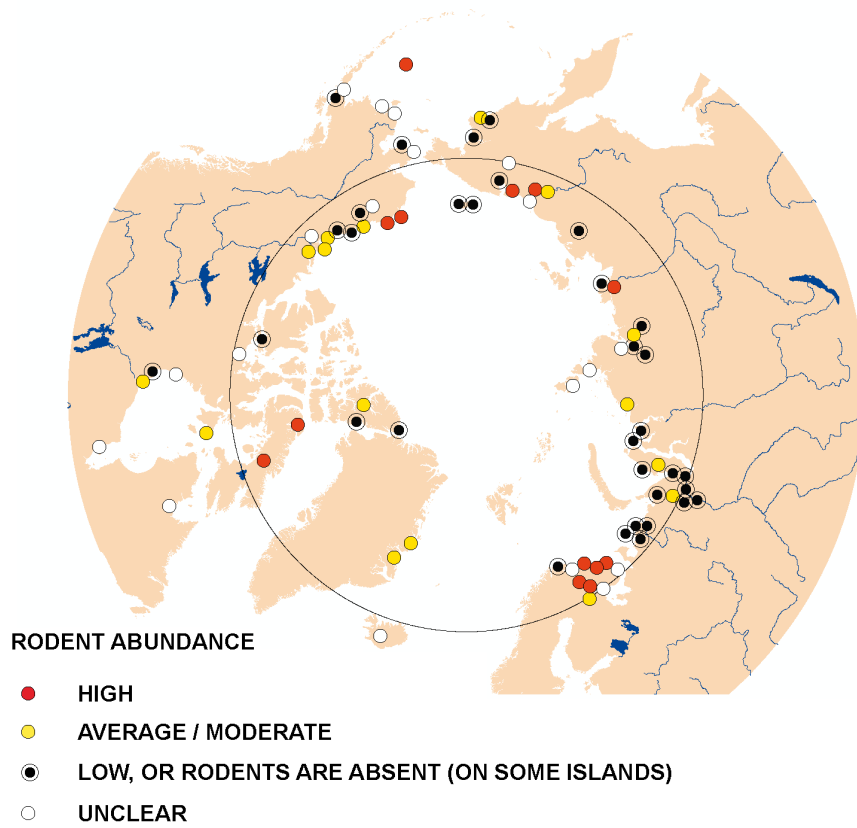


Figure 3. Rodent abundance in the Arctic in 2008

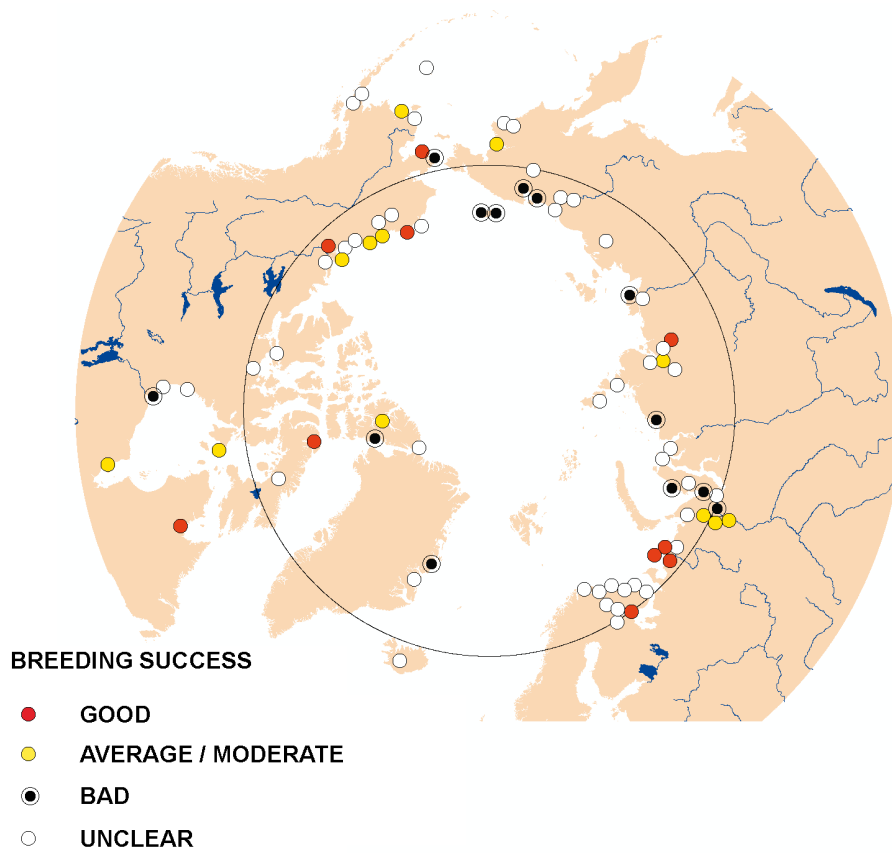


Figure 4. Bird breeding success in the Arctic in 2008