

ARCTIC BIRDS

Newsletter of the International Breeding Conditions Survey

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



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compiled by Mikhail Soloviev and Pavel Tomkovich

A WORD FROM THE COMPILERS

Reproductive performance of birds in relation to their environment in the Arctic and Subarctic in summer 2005 is the focus of this issue of the newsletter of the Arctic Birds Breeding Conditions Survey (ABBCS). The flow of data on weather conditions, extreme events, abundance of rodents, principal predators and the effects of these factors on birds remained at similar levels in 2005 to the previous 3 seasons, and representation of the largest Arctic regions did not change either. While pointing to a healthy state of the international network of contributors this stability also indicates that new approaches to the survey coordination are required to fill some of the apparent gaps in geographical coverage and/or representation of the principal groups of birds.

Gap filling can be achieved through cooperation with other long-term monitoring schemes, and at this point ABBCS has successful experience of information exchange with colleagues from the Victorian and Australasian Wader Studies groups, who monitor proportions of juveniles in waders on the non-breeding grounds in Australia. Results of the assessment of breeding success of waders in the Arctic in 2005, based on catches conducted during the 2005/2006 non-breeding season in Australia, are presented in a paper by C. Minton *et al.* in the current issue.

Perspectives of ABBCS cooperation and integration with other biodiversity networks have become more favourable during the last year as the profile of monitoring among research and conservation activities in the Arctic has started to rise. In particular, the Conservation of Arctic Flora and Fauna (CAFF) Working Group of the Arctic Council identified monitoring as a key objective for the conservation of Arctic biodiversity. Accordingly, in September 2005, CAFF launched the

Circumpolar Biodiversity Monitoring Program (CBMP, <http://www.caff.is/sidur/uploads/Circumpolar%20Biodiversity.pdf>) to “build on national and international work to implement a program to monitor biodiversity at the circumpolar level that will allow for regional assessments, integration with other environmental monitoring programs, and comparison of the Arctic with other regions of the globe”. The CBMP is being developed by CAFF to serve as a coordinating entity for existing biodiversity monitoring programs in the Arctic, for data gathering and data analyses, and for coordinating the communication of results. Arctic-nesting waders (or shorebirds) comprise one of the monitoring groups chosen by CAFF to provide adequate monitoring of circumpolar biodiversity as initial components of the CBMP (see <http://www.caff.is/sidur/uploads/Shorebirds.pdf> for details), and we hope that ABBCS will benefit from cooperation with other schemes through participation in CBMP.

The approaching International Polar Year 2007-2008 (IPY) also places strong emphasis on international cooperation on the one hand and on monitoring in some of IPY's activities on the other, which will hopefully allow IPY to be an effective tool for further development of biodiversity networks.

However, the full potential of information exchange can be fully realised only if the system of information collection and dissemination developed in the framework of ABBCS since 1998 continues to function, and a primary step in this direction will be data collection during the 2006 field season. The current difficulties of securing project funding could be detrimental to the efficiency of information exchange, but we continue to explore funding opportunities and hope that full-scale implementation of ABBCS will soon be re-established.

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For the latest information about the survey visit the website

<http://www.arcticbirds.ru>

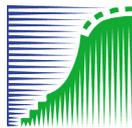
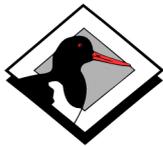
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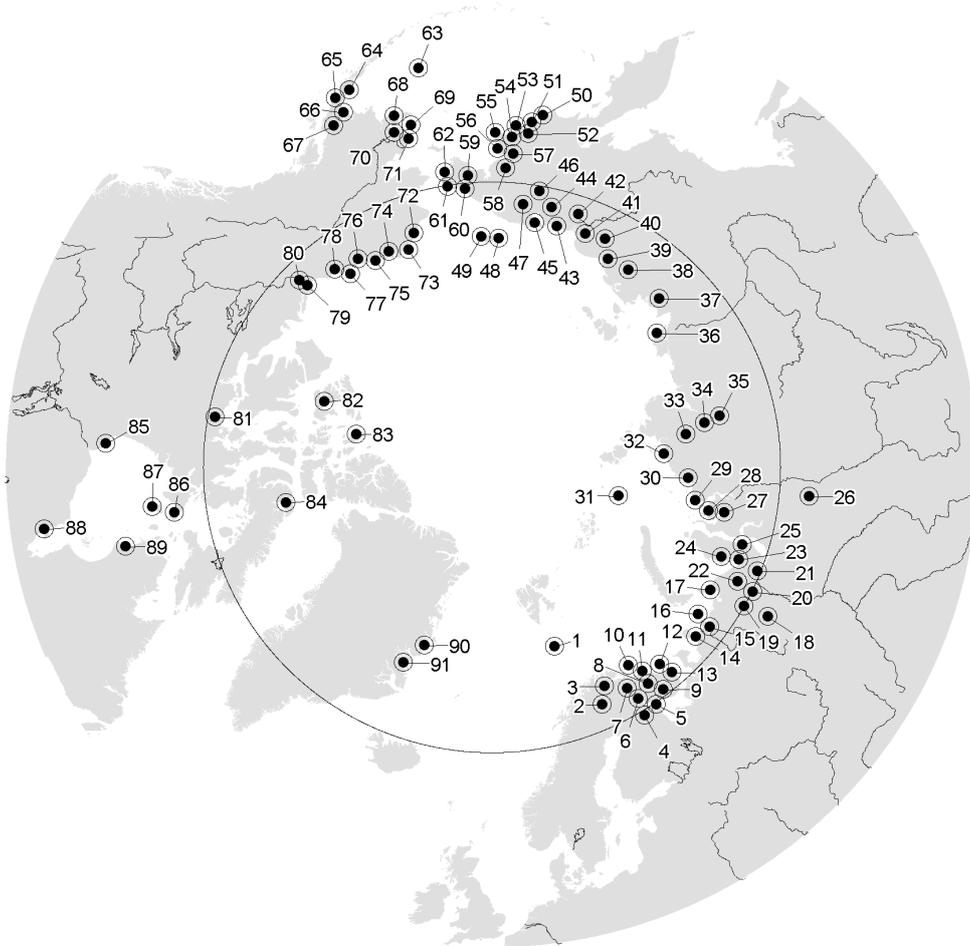


Figure. Arctic localities from which reports about bird breeding conditions were provided

LOCALITY REPORTS

1. Bjornoya, Svalbard, Norway (74°30'N, 19°01'E)

Spring was late, and approximately 20% of the ground was snow covered at our arrival on 11 June. Mean monthly air temperature was +3.4°C in June, which was probably below average, and +6.2°C in July. The highest air temperature +18.6°C was recorded on 8 July.

Lemmings are absent on the island.

Two active dens of Arctic Foxes *Alopex lagopus* were found. Arctic Foxes depend on seabird colonies in the area, and the studied colony of Little Auks *Alle alle* was exploited by 3 individually recognizable Arctic Foxes.

Reproduction of Little Auks was probably delayed compared to average dates, and hatching started on 16 July in the colony. Hatching occurred in the last days of June in 4 of 5 nests in the Pink-footed Goose *Anser fabalis brachyrhynchus* colony, close to the Little Auk colony, and the last nest hatched on 5 July. Chicks of Snow Buntings *Plectrophenax nivalis* fledged en masse on 20 July, when a pair of Meadow Pipits *Anthus pratensis* feeding chicks was also found.

S.P. Kharitonov

2. Naltijarvi, Finnish Lapland, Finland (68°37'N, 24°40'E)

Temperatures were colder than normal in May through the first week of June. Melting of ground snow cover and ice cover on lakes was at least two weeks later than normal. Snow cover reduced to 50% on 6 June and melted completely on 13 June. Deeper lakes were not ice-free until mid-June. Egg laying for Temminck's Stints *Calidris temminckii* began 7-9 days later than in 2003 and 2004. Most days mid-June through July were much warmer than in 2004. There was a cold spell of several days in late June in both 2004 and 2005. Water levels were higher in June in 2005 than in 2004 or 2003, flooding some Temminck's Stint nest sites and feeding areas. The late season resulted in about a 25% decline in nesting density for Temminck's Stint, primarily due to decline in female-incubated nests.

There were no signs of rodents. As in past years, predator activity was very low, but a few nests failed completely because of poor viability of the eggs. Hatching success was very high again (as last year). General observations suggest a decrease in breeding densities for waterfowl and shorebirds, most likely due to the late spring. Passerines nested later, but densities seemed similar to past years.

D.M. Tracy, J.T. Schamel

3. Finnish Lapland (69°54' N, 27°01' E)

Gyrfalcons *Falco rusticolus* occupied 23 territories in Finland in 2005. Effective monitoring and wardening by Pertti Koskimies and personnel of Metsähallitus (the governmental body responsible for threatened species in Lapland) has covered all nest-sites of the species during recent years. Of these pairs 13 nested successfully, raising, on average, 3.0 young per pair, or 1.7 young per occupied territory. The number of successful pairs, and the number of young, declined from the peak year 2004. Many pairs failed especially in western Lapland due to both heavy snowstorms during incubation, and population decline of the Willow Grouse *Lagopus lagopus*.

In addition, more than 10 Gyrfalcon pairs have been monitored by Finnish specialists in northernmost Sweden and northeasternmost Norway, in connection to the Swedish and Norwegian monitoring projects. The whole Gyrfalcon populations in northern Sweden, Norway and Finland are nowadays under effective and coordinated monitoring, and special research projects on conservation biology of the species are under way.

Willow Grouse populations have been exceptionally high from 2002 to 2004 in most parts of Finnish Lapland, but in 2005 they declined by 30% according to censuses by the Finnish Game and Fisheries Research Institute (project led by Dr. Pekka Helle). In August 2005 censuses, the mean density was 3.5 individuals/km². The proportion of young birds was 65%, and the mean brood size 5.3.

P. Koskimies

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

Voies (*Cricetidae*) and insectivores (*Soricidae*) were absent in snap-trap catches on a permanent line on 9-11 June, while the September value of 0.3 animals/100 trap-days was close to the recorded abundance in 2004.

Abundant precipitation resulted in flooding of catching cylinders in a birch forest, but 6 Common Shrews *Sorex araneus* and 1 Grey-sided Vole *Clethrionomys rufocanus* were captured during one day in August. Seven Common Shrews and 1 Bank Vole *Cl. glareolus* were captured during 6 days in cylinders on a coastal meadow in July, while 9 shrews were captured on the same line during 1 day in August.

Microtus sp. voles were not captured. As in previous years Norwegian Lemming *Lemmus lemmus*, Wood Lemmings *Myopus schisticolor* and Water Vole *Arvicola terrestris* have not been recorded anywhere. Wood Lemmings were not found on the Kola coast.

N.S. Boyko

5. Kandalaksha Bay, Northern Archipelago, the White Sea, Russia (67°00'N, 32°34'E)

The head of the bay became free of ice in late April. Snow remained in large amounts on islands on 19

May, and ice was abundant on the coast. However, daily rains resulted in complete melting of snow in the forest by 27 May and of ice on the coast by 30 May. Air temperatures ranged from +3-11°C in the morning and reached +17°C at day time during the second half of May. Mean air temperature was +7.2°C in the period 20-31 May compared with +3.8°C in 2004. Mean monthly temperature (based on measurements at 7 a.m. on Ryashkov Island) was +10.0°C in June, +14.0°C in July and +12.0°C in August, while in 2004 respective temperatures were +9.1°C, +14.4°C and +11.2°C. Daytime air temperatures reached +24°C in June and July. August and the first half of September were also relatively warm, and temperatures often reached +15-20°C during the day. The first night frost on 10-11 September was followed by the second one on 15-16 September, but then warming occurred, and temperatures thereafter dropped below freezing only after 19 October. Snow cover established in late November.

The crop was ranked as 3-4 in bilberries *Vaccinium myrtillus*, bog bilberries *V. uliginosum* and clusterberries *V. vitis-idaea*, while crowberries *Empetrum hermaphroditum* reached the higher rank of 4-5.

Voies were seen in July-August on 18.8% of ludas (small tree-less islands), while their occurrence rate on forested islands was considerably decreased due to the presence of Red Foxes *Vulpes vulpes* on 5 (26%) of the islands. Only Bank Voies were captured, while *Microtus* sp. voies were not recorded. As in previous years Norwegian Lemming and Water Vole have not been recorded anywhere.

No voies or shrews were captured using snap-traps (300 trap-days) on Ryashkov Island in spring, and only *Sorex* sp. shrews were captured using cylinders with a relative density of 0.6 and 1.0 animals/10 days in July and August, respectively. Voies started to appear in the second half of August, and were recorded in different localities and habitats on Ryashkov Island and other islands. Relative density of insectivores and voies on the island was 0.25 and 5.0 animals/10 days in autumn.

Bank Voies were found in 0.7% of 147 pellets of Herring Gulls *Larus argentatus* collected on 15-23 June on 5 ludas, compared with 0.4% in 2004.

Rodent specialists did not nest. Islands of the Northern Archipelago were inhabited by 5-6 Red Foxes, including litters on 2 islands, which were successfully raised. Red Foxes inhabiting Lodeyny and Doku-cheikha islands also reached nearby islands and ludas, which resulted in losses of nests of common seabirds due to the relatively low abundance of voies. Clutches on some ludas were also depredated by American Mink *Mustela vison* and Brown Bear *Ursus arctos*.

White-tailed Sea Eagles *Haliaeetus albicilla* had captured 190 Common Eider *Somateria mollissima* females by the time bird counts were made in the last third of June. White-tailed Sea Eagles also preyed upon juvenile eiders and gulls. Herring Gulls *Larus*

argentatus and Great Black-backed Gulls *Larus marinus* had a considerable effect on the breeding success of Common Eiders, Oystercatchers *Haematopus ostralegus* and Common Gulls *Larus canus*, primarily by hunting chicks. Remains of eider chicks and eggs were found in 10.2% of pellets of Herring Gulls ($n=147$). Despite predation pressure, Common Eider, Oystercatcher, Great Black-backed, Herring and Common gulls, Arctic Tern *Sterna paradisaea* and Black Guillemot *Cephus grylle* successfully raised chicks on many islands. The numbers of breeding birds were within the normal range for recent years.

N.S. Boyko

6. Apatity settlement vicinity, Kola Peninsula, Russia (67°34'N, 33°18'E)

According to observations from 27 May – 30 September the season was late, cold and dry. No snow remained on level areas by the end of May.

Apatity experimental territory of the Polar-Alpine Botanical Garden adjoins a lake approximately 20 ha in size and approximately 80% of which was occupied by a mat of floating vegetation with a mixed colony of gulls. Their numbers increased in 2001-2005 from 10 to 25 pairs of Common Gulls, from 100 to 420 pairs of Black-headed Gulls *Larus ridibundus* and from 30 to 395 pairs of Little Gulls *Larus minutus*. Other breeding birds of the area included 3 pairs of Red-necked Phalaropes *Phalaropus lobatus*, at least 5 Reeves *Philomachus pugnax*, 4 pairs of Teal *Anas crecca*, 3 pairs of Eurasian Wigeon *A. penelope*, 2 pairs of Mallards *A. platyrhynchos*, 2 pairs of Northern Shovelers *A. clypeata* and 8 pairs of Tufted Ducks *Aythya fuligula*. An observation of European Pochard *Aythya ferina* on the lake on 30 May was the second reliable record of the species for the Kola Peninsula. Two pairs of Woodcock *Scolopax rusticola* were recorded in the first half of June in different parts of the area, while a fledgling was flushed on 31 August in a birch stand on the edge of a wet spruce-pine forest. A pair and a solitary male of Common Rosefinches *Carpodacus erythrinus* were recorded in the area during the whole of June.

A small number of clutches in the gull colony were destroyed by Hooded Crows *Corvus cornix* and Ravens *C. corax*, and several adult gulls were taken by Peregrine Falcon *Falco peregrinus* and Northern Goshawk *Accipiter gentilis*. Rodents and mammalian predators were not observed.

V.D. Kokhanov

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

Spring started late, on 22 April when maximum air temperatures consistently rose above freezing, while the respective date in 2004 was 2 April and the long-term average 12 April. The last air frost occurred on 19 May. Snow disappeared from 50% of the flat open surface on 22 May and on 28 May in the forest and in mountains, respectively. Ice-break occurred on 22

May, and snow completely melted on 30 May. A 10-day delay of spring resulted in a similar delay of bird arrival. Rapid snow melt coincided with rainy weather and resulted in record high water levels.

Summer started on 9 June when daily mean air temperatures consistently rose above +10°C, while the respective date in 2004 was 18 June and long-term average 12 June. Autumn started on 6 September when daily mean air temperatures consistently dropped below +10°C, while in 2004 this occurred on 7 September with the long-term average 30 August. The first air frost occurred on 1 September. Winter started on 19 October when daily mean air temperatures consistently dropped below freezing, while in 2004 this occurred on 14 November with the long-term average 24 October. Rainy weather in September also resulted in increasing water levels in rivers and lakes.

Mean monthly air temperatures were 1.4°C above the long-term average in April, 0.8°C in May, 2.2°C in June, 1.7°C in July, 2.1°C in August, 1.6°C in September, 3.8°C in October, 5.4°C in November and 1.6°C in December. Precipitation was 100% of the monthly average in April, 151% in May, 57% in June, 87% in July, 100% in August, 191% in September, 100% in October and about 140% in November and December. Thus, air temperatures were above average in all months from April to December, and only from 1-10 May mean temperature was -1.6°C, which is 3.1°C below average. Precipitation was near or below average in the breeding period with the exception of May when it exceeded the average. The first snow covered mountains were observed on 13 September and falling snow also was recorded at lower altitudes. Snow had blanketed the ground on 20 October. Autumn and winter were warm.

Weather data were obtained from <http://rp5.ru>, while long-term averages were available from the weather station in Monchegorsk.

The abundance of *Clethrionomys* spp. voles in autumn 2005 was 1/3 of the value in the previous year (5.6 animals per 100 trap-days). We recorded a six-fold increase in numbers of shrews (*Sorex* sp.), while Wood Lemmings were not recorded and numbers of *Microtus* sp. voles were low in summer. A considerable increase in numbers of *Clethrionomys* spp. voles, by a factor of 15 from spring to autumn, was specific to 2005, and could be partly explained by the prolonged breeding period in rodents, which allowed most females to produce 3 broods by the end of September. The snow layer measured on 3 March 2005 (2004 values in brackets) in the southern part of Chunutundra uplands was 96 (87) cm thick in the foothills, 103 (102) cm in mountain forest, 118 (116) at the upper limit of coniferous forest and 124 (107) cm in elfin birch woodland. The high accumulation of snow in the mountains was generally favourable for wintering by small rodents, but also could be responsible for the delay of spring reproduction in a fraction of vole populations inhabiting mountain tundra.

The yield of bilberry, clusterberry, and bog bilberry ranked 4 on a scale of 5, crowberry 3, spruce 2, pine 3-4 and birch 5.

Among birds of prey the Osprey *Pandion haliaeetus* and Merlin *Falco columbarius* certainly or probably bred, while Rough-legged Buzzards *Buteo lagopus* and owls were rare without any sign of breeding.

The density of Tetraonid birds determined in the course of counts in August was 77.5 birds/10 km², which is the record low value found during 1998-2005. The abundance of waterfowl per unit length of lake and river shoreline increased slightly compared with the record low value in 2004. Waders bred in usual numbers in forested areas. Eurasian Golden Plover *Pluvialis apricaria* was the only species recorded in mountain tundra and bred. Whimbrels *Numenius phaeopus* were observed on valley bogs of rivers and lakes.

We observed an invasion of White-winged *Loxia leucoptera* and Red *L. curvirostra* Crossbills, Great Spotted Woodpeckers *Dendrocopos major*, Siskins *Spinus spinus* and Common Redpoll *Acanthis flammea*.

Human impact is minimal in the area.

A.S. Gilyazov, G.D. Kataev

8. Khibiny Mountains, Kola Peninsula, Russia
(67°42'N, 33°40'E)

Winter 2004-2005 was warm, with abundant precipitation. Consequently, the snow layer reached 1.5 m thick in woodland. Snow cover decreased to 50% by 29 May and completely melted on open flat surfaces by 8 June, and in the woods by mid June. Maximum air temperatures ranged from +5-6°C in late May, while minimum temperatures fluctuated around -2-+2°C. Cold weather prevailed also in the first half of June, when maximum temperatures ranged from +5-11°C and exceeded +15°C only on 10, 12 and 13 June, while minimum temperatures ranged from -1-+5°C. Warm weather with minimum temperatures exceeding +6°C and maxima exceeding +15.5°C established after 20 June. In spite of low precipitation in June, the very high accumulation of snow during the winter resulted in an increased water table in spring. Many mires and lake islands used by waterbirds for nesting in previous years were flooded, and birds had to move to neighbourhood habitats.

Rough-legged Buzzards were not recorded, probably due to low rodent numbers. Solitary Short-eared Owls *Asio flammeus* migrating northward or north-eastward were recorded from 5-15 June. Merlins and Peregrine Falcons bred successfully.

While the change in distribution due to habitat flooding had no apparent impact on breeding success, it resulted in considerable delay to reproduction. Reproduction of waders was delayed by 6-8 days compared with normal dates, gulls at 10 days and ducks at 10-15 days. Nesting of most passerines started at the usual

time, with an exception of delayed breeding by flycatchers. Nesting continued until late August in European Greenfinch *Chloris chloris* and until 10 September in Bullfinch *Pyrrhula pyrrhula*.

Four records of displaying Woodcocks were made from 15-22 June in the Polar-Alpine Botanical Garden.

Numbers of waterbirds did not change considerably, but breeding success decreased as clutches were destroyed by Red Fox and to a lesser extent by domestic dogs.

Trends in abundance of passerines differed between species. Numbers of Fieldfare *Turdus pilaris*, Redwing *Turdus iliacus*, Brambling *Fringilla montifringilla*, European Greenfinch, and Bullfinch, were at record lows for the last 5 years, while abundance of Meadow Pipit, Sedge Warbler *Acrocephalus schoenobanus*, Willow Warbler *Phylloscopus trochilus* and Willow Tit *Parus montanus* increased compared with 2004. Numbers of Redpolls increased and breeding was prolonged in this species. In June Redpolls were feeding chicks with abundant aphids, while in late August – early September they used birch seeds as food. Abundance of White Wagtail *Motacilla alba*, Common Dipper *Cinclus cinclus*, Little Bunting *Emberiza pusilla*, Sedge Bunting *Emberiza schoeniclus* and corvids did not change. Reproduction of Hooded Crows and Magpies *Pica pica* was not successful, as nests built in April were found abandoned in late May. Numerous Red and White-winged crossbills did not nest in March-April in spite of high abundance of spruce cones, because seed content in the cones was only about 30%.

Numbers of Fieldfares and Redwings were at record lows on migration in September due to the absence of ashberries, for the first time in 5 years. Redpolls were the most numerous migrant passerines.

A postbreeding aggregation of up to 180 Mallards, 170 Teals, 70 Eurasian Wigeons and 325 Tufted Ducks was observed in late August – September on the Bolshoi Vudjyavr Lake.

Broods of Willow Grouse, common in spring, were not found which could have been due to predation by Red Foxes.

V.D. Kokhanov

9. Lovozersky District, Kola Peninsula, Russia
(67°30'N, 35°30'E)

Surveys were undertaken from 15 June – 9 July. According to reports of local hunting managers the season was average in timing and slightly drier than average.

We recorded neither lemmings, nor Arctic Foxes, but voles were present. White-tailed Sea Eagle, Rough-legged Buzzard, Merlin, Snowy *Nyctea scandiaca* and Short-eared owls were observed, but skuas were not seen. Of these avian predators breeding was recorded

only for Merlin. Of Willow Grouse and Rock Ptarmigan *Lagopus mutus* only the latter was breeding.

Bird reproduction in the vicinity of the Lovozero settlement is adversely affected by high numbers of Hooded Crows and Ravens, which occur in an approximate proportion 2:1. These birds are attracted by the presence of a Reindeer *Rangifer tarandus* slaughterhouse in winter, landfills and a farm.

Reproductive success of landbirds in the vast wet floodplain in the middle reaches of the Ponoï River is typically affected by flooding in spring, although it probably did not occur in 2005.

R.M. Anoshin

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

Snow melted on flat surfaces before our arrival. Extreme weather events were not observed. Weather data are available from the weather station, which is situated on the island.

Signs of winter activities of Norway Lemmings were numerous, but observations of animals were rare in summer.

American Minks were recorded on Kharlov Island for the first time in 2005, and their litter contained at least two cubs. Birds of prey included non-breeding Northern Goshawk, White-tailed Sea Eagle and Gyrfalcon, and two territorial pairs of Peregrine Falcons on one of the islands. Breeding skuas included Great Skua *Stercorarius skua* and Arctic Skua *S. parasiticus*, and numbers of both species increased slightly. Mean size of complete clutch was 1.84 ± 0.04 (range 1-2, $n=96$) and hatching success 63.1% in the Arctic Skua. A dead Short-eared Owl was found on Bolshoi Litsky Island. Herring Gulls decreased their numbers on the archipelago, Common Gulls occurred in similar numbers to the previous season, while numbers of Great Black-backed Gulls and Kittiwakes *Rissa trydactyla* increased considerably. Arctic Terns did not make breeding attempts. Mean clutch size was 2.50 ± 0.22 (range 1-3, $n=10$) and hatching success 56.5% in Common Gulls, while complete clutches of Kittiwakes contained on average 1.84 ± 0.04 (range 1-3, $n=89$) eggs, their brood size was 1.51 ± 0.01 (range 1-3, $n=1663$) chicks before fledging, and breeding success was 29.8% (in a sample of 84 nests on survey plots).

A nest of Red-throated Diver *Gavia stellata* was found on Kharlov Island, as well as 4 pairs of Rock Ptarmigans, including 2 with broods of 6 and 10 juveniles.

Numbers of Thick-billed *Uria lomvia* and Common *U. aalge* murrens increased slightly on Kharlov Island, while numbers of Common Puffins *Fratercula arctica* decreased dramatically. Numbers of Northern Gannets *Sula bassana* increased from 30 nesting pairs in 2004 to 145 pairs. Numbers of Great Cormorants *Phalacrocorax carbo* decreased on Veshnyak Island, but colony was established on Maly Litsky Island. Mean clutch size was 2.61 ± 0.12 (range 1-3, $n=23$) before hatching, mean brood size was 2.17 ± 0.12 (range 1-4,

$n=40$). Common Shags *Ph. aristotelis* increased in numbers on Veshnyak Island, but decreased on Maly Litsky Island, probably due to invasion of Great Cormorants to their colony site. Mean brood size was 2.49 ± 0.06 (range 2-3, $n=63$) in Shag.

We were not able to get data on dynamics of numbers of Common Eiders. Mean clutch size was 3.74 ± 0.05 (range 1-6, $n=454$) and 6% of counted nests were depredated (but 75% on Kharlov Island). Nesting of Barnacle Goose *Branta leucopsis* was recorded for the first time in the region, and a brood of 4 downy chicks was observed on Maly Zelenets Island. Numbers of Bean Geese *Anser fabalis* did not change compared with the previous year, while a single nest of Pintail *Anas acuta* was found and no breeding of Long-tailed Ducks *Clangula hyemalis* was observed. Whooper Swan *Cygnus cygnus*, Teal and Common Merganser *Mergus merganser* were also recorded as non-breeders.

Breeding waders included Turnstone *Arenaria interpres* and Oystercatcher, while Red-necked Phalarope did not nest. Displaying Temminck's Stint was observed on Bolshoi Litsky Island. Eurasian Golden Plover, Ringed Plover *Charadrius hiaticula*, Redshank *Tringa totanus*, Spotted Redshank *T. erythropus*, Ruff, Dunlin *Calidris alpina*, Purple Sandpiper *C. maritima* and Bar-tailed Godwit *Limosa lapponica* were observed on migration.

Breeding passerines of the archipelago included Meadow Pipit, Red-throated Pipit *Anthus cervinus*, Rock Pipit *A. petrosus*, Pied Wagtail, Hooded Crow, Raven, Willow Warbler, Wheatear *Oenanthe oenanthe*, Bluethroat *Luscinia svecica*, Redwing, Common Redpoll and Snow Bunting. Nesting of Song Thrush *Turdus philomelos* was recorded for the first time in the region. We recorded a male House Sparrow *Passer domesticus* and migrating Waxwings *Bombicilla garrulus*.

M.V. Melnikov, A.V. Osadchiy

11. Mountain tundra between Dvorovaya and Varzina bays, eastern Murman Coast, Russia (68°22'N, 38°17'E)

Rodents were not recorded. Observations were carried out on 26 June at a transect of 13.2 km across mountain tundra in the coastal belt of the Barents Sea. We found one nest of Rough-legged Buzzard, and nests of Rock Ptarmigan, Redwing, Common Redstart *Phoenicurus phoenicurus*, while Meadow Pipit, Willow Warbler, Wheatear, Bluethroat, Brambling and Redpoll were probable breeders judging by their behaviour.

Other birds recorded included Bean Goose, Whooper Swan, Common Merganser, White-tailed Sea Eagle, Red-necked Phalarope, Herring Gull, Common Cuckoo *Cuculus canorus* and Pied Flycatcher *Ficedula hypoleuca*. Density of Rock Ptarmigans was 0.6 birds per 1 km of a route.

A.V. Ezhov

12. Barents Sea coast between Dvorovaya and Ivanovka bays, Kola Peninsula, Russia (68°20'N, 38°32'E)

Small snow banks were still present in ravines and depressions near northern slopes at the start of surveys on 20 June. Snow accumulation was low in winter, and most creeks dried out. However, the water table was not low in the Ivanovka and Chernaya rivers. Early and mid June were warm and dry, but the weather turned cold in late June. Low clouds, drizzle and air temperatures around +10°C prevailed for two weeks. Strong wind, snowfalls or freezing temperatures did not occur during the study period from 20 June – 5 August. The weather was mostly warm and sunny in July and early August, with infrequent rains. Thus weather was favourable for reproduction in birds.

During my surveys I did not see rodents, but their numbers were probably average, based on the density of breeding Rough-legged Buzzards. Other avian predators were rare and human impact was small. Arctic Foxes were absent, but Red Foxes were seen twice, and their inhabited den was found in the study area. A Mink was seen regularly in the vicinity of the first camp. White-tailed Sea Eagle, Merlin, and Rough-legged Buzzard were breeding, the latter species being common (6 nests were found). Gyrfalcon and Peregrine Falcons were recorded without signs of breeding. Owls were absent. The Arctic Skua was the only skua present and breeding, and was common. Numerous Willow Grouse and Rock Ptarmigan bred. Two seabird colonies are present in the area: a small colony of Great Cormorants in the Invanovskaya Bay (15 nests) and a large colony of several species of auks and gulls at the Dvorovy Cape. A flock of 50 moulting Whooper Swans stayed in the survey area.

E.M. Zainagutdinova

13. Ivanovka Bay area, Eastern Murman, Barents Sea, Russia (68°18'N, 38°36'E)

Rodents were not observed in the tundra.

The whole bay was surveyed from the sea and coast in mid-June. The following species were found breeding: Great Cormorant, Common Eider, White-tailed Sea Eagle, Rock Ptarmigan, Eurasian Golden Plover, Ringed Plover, Oystercatcher, Arctic Skua, Herring, Great Black-backed and Common gulls, Black Guillemot, Meadow Pipit, Wheatear, Bluethroat, Fieldfare, Snow Bunting and Hooded Crow. A group of Whooper Swans exceeding 40 birds, small flocks of Common Goldeneyes *Bucephala clangula*, Common Eiders and Common Mergansers were seen in the bay, where they probably moulted.

A.V. Ezhov

14. Kolokolkova Guba coast, Tobseda settlement, Russia (68°35'N, 52°20'E)

Spring was unusually early. Snow melted completely in the Naryan-Mar area on 24 May, and ice remained

only on large lakes. Snow cover reduced to 10% in the study area on 27 May and completely melted on 29 May. The sea ice has started to recede on 28 May, and Kolokolkova Bay was ice-free by 5 June. Mean daily air temperature consistently rose above freezing on 5 June. No heavy snowfalls occurred in June, but temperatures fell from 14-21 June and from 28 June – 7 July. Warm weather established from 12 July, although rains were frequent and occasionally turned into heavy showers, with thunderstorms, once with hail. The highest air temperature of +26°C was recorded on 27 July.

Rodent numbers were low in tundra areas adjacent to dunes, with the exception of Tobseda settlement where rodents were more abundant.

Arctic Foxes and avian rodent-specialists were not recorded in tundra adjacent to the dunes. Kestrel *Falco tinnunculus* and Hawk Owl *Surnia ulula* were observed near the settlement for several days in mid August. Non-breeding Rough-legged Buzzard was also recorded.

The first Barnacle Geese appeared in the area on 18 May according to local reports. Daily observations of migration started on 27 May, and approximately 20,000 Brent Geese *Branta bernicla* and 1500 Barnacle Geese were recorded on this day. The second wave of migration occurred on 1 June in Brent Geese and on 6 June in Barnacle Geese. Migration of these two species terminated by 8 June.

The first nests of Barnacle Geese were found in the colony in dunes on 27 May, and the mean date of clutch initiation was 7 June. Breeding conditions were generally unfavourable. Unlike the previous years, an Arctic Fox arrived at the colony area on sea ice, and we observed it destroying goose nests on 3 June. The remains of two Barnacle Geese killed by fox were found on 8 June. The Arctic Fox was moved away from the colony on 23 June with the aid of a dog. Spring tide coincided with strong northwestern wind on 26-27 June, and hundreds of nests of Barnacle Geese, Herring and Glaucous *Larus hyperboreus* gulls at low coastal marshes were flooded; 1000s of eggs were washed ashore by waves.

Predation pressure of gulls, Arctic Skuas and White-tailed Sea Eagles on Barnacle Geese can be evaluated as low to average. Nest success (proportion of nests with at least one chick hatched) was about 43%. The mean clutch size was 3.97 ± 0.05 ($n=552$) eggs, and the mean brood size just after hatching was 2.46 ± 0.06 ($n=442$) goslings. The total number of nests of Barnacle Geese was about 1000 on the mainland of the study area (exact count was impossible after flooding) and 1175 on the islands in the northern part of the Kolokolkova Bay. Favourable conditions prevailed during the brood-rearing period. Non-breeders and failed-breeders regained their ability to fly after moult in early August, and broods fledged from mid August.

As in other years nesting density of White-fronted Geese *Anser albifrons* was very high and reached

28 nests/km² locally. The mean clutch size was 4.0±0.3 (*n*=43) eggs, and 72% (*n*=36) of nests were successful.

Although there was no targeted search for nests of waders and ducks, breeding success was considered low in waders and very low in ducks, judging by rather few records of broods. This could be due to prolonged period of cold weather in June and impact of Arctic Fox predation at the dune area.

As in previous years reproduction of waterfowl in the area was adversely affected by hunting in the beginning of the breeding period.

K.E. Litvin, Y. Anisimov, R. Drent, G. Eichhorn,
E.N. Gurtovaya, H. van der Jeugd, J. Karagicheva,
O. Pokrovskaya

15. Nenetsky Reserve, Russky Zavorot Peninsula,
Malozemelskaya Tundra, Russia (68°40'N, 53°40'E)

Spring was late and prolonged according to reports of the reserve staff members. The period of our surveys on 8-20 July was cold and wet with frequent rains and several storms.

Numbers of Siberian Lemming *Lemmus sibiricus* were apparently low, and we recorded them only in nests of birds of prey. There were no records of voles. Arctic Foxes were rare and their breeding was not recorded.

In total 61 species of birds were recorded, of which 43 species bred. A single breeding pair represented Rough-legged Buzzards in the area. Breeding was also recorded for White-tailed Sea Eagle and Peregrine Falcon; Gyrfalcon was also seen. Long-tailed *Stercorarius longicaudus* and Pomarine *St. pomarinus* skuas were common everywhere, but nests were not found and presumably these birds did not nest. Snowy Owls have never been recorded in the area according to observations by the reserve staff.

Bewick's Swans *Cygnus bewickii* occurred at a high density, but breeding numbers were not high. Other numerous breeding species included Willow Ptarmigan, Red-throated Pipit and Lapland Bunting *Calcarius lapponicus*. Grey Plover *Pluvialis squatarola*, Ringed Plover, Wood Sandpiper, Common Snipe *Gallinago gallinago*, Little *Calidris minuta* and Temminck's Stints, Dunlin, Pintail, Black-throated *Gavia arctica* and Red-throated Divers, Arctic and Long-tailed skuas, Lesser Black-backed Gull, Arctic Tern, Wheatear, Willow Warbler, Little Bunting and Hoary Redpoll *Acanthis hornemanni* were relatively common. Some species were only common in the south of the area (*e.g.*, Sedge Warbler, in high willow stands, and Wood Sandpiper *Tringa glareola*) and almost absent in the north. In contrast, Barnacle Geese were common in the north and absent elsewhere.

P.M. Glazov, K.E. Mikhailov

16. Kuznetskaya Guba, Malozemelskaya Tundra,
Russia (68°50'N, 53°45'E)

During our survey from 10 June – 28 July the water table in the bay increased to a very high level on 26 June due to strong wind and, probably, also to spring tide. Lowlands in the river vicinity were flooded, which resulted in perishing of many nests of Bewick's Swan, White-fronted Goose, King Eider *Somateria spectabilis*, Willow Ptarmigan, Dunlin, Temminck's Stint.

Tundra Voles *Microtus oeconomus* were common only near buildings.

Arctic Foxes were common and dens were occupied. White-tailed Sea Eagles and Rough-legged Buzzards were rare, and their breeding was not recorded. Breeding Arctic Skuas and Willow Grouse were rather common, Herring Gulls numerous. An observation of large numbers (2500-3500 birds) of moulting Been Geese deserves mention.

Y.N. Mineev, O.Y. Mineev

17. Vaigach Island, south, Russia (69°42'N, 60°18'E)

In a former watch tower a pair of Rough-legged Buzzards had a nest on 21 August. I heard chicks calling but was not able to see how many chicks were there. There was a Peregrine Falcon's nest on sea cliffs to the south of the Nenets village. Also a Merlin was seen. Red-throated Pipit was very common, and I found several Redwings flying between the buildings. Also a pair of White Wagtails with a few already fledged chicks was breeding in a collapsed building. A pair of Red-throated Divers had two chicks about 3-4 weeks old on a pond. A Eurasian Golden Plover alarmed and most likely had chicks nearby.

M. Forsberg

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

The main snow cover occurred during the second half of winter. Snow was loose with no ice film on its surface. Snow-free patches were absent in early May, but rapid warming from 11 May, with daytime air temperatures reaching +20°C in shadow, resulted in intensive snow melt. Snow cover reduced to 50% on 18 May and had melted completely on 21 May. The ice broke on the Voikar river on 18 May, and plants started to grow. Birch leaves unfolded completely by 23 May, which was a very early date similar to 1995. Such a rapid spring development after average start time was observed for the first time in 16 years. However, flood waters were not high on either the Voikar, or the Ob' rivers.

Lemmings are absent in the area. Numbers of both *Microtus* and *Clethrionomys* voles increased compared with 2004 to average levels and their abundance did not change through the season.

Numbers of Red Foxes, Ermines *Mustela erminea*, Wolverines *Gulo gulo* and Minks did not differ from average. Sables *Mustela zibellina* very rarely appear in the region, but in 2005 a pair inhabited our study area and, probably, bred. Brown Bears were numerous which is normal for the area.

The abundance of rodents enabled nesting by Short-eared Owls in considerable numbers. Northern Harriers *Circus cyaneus* were common in the area.

High numbers of breeding Willow and Black *Tetrao tetrix* grouse were notable. The latter species was rarely recorded after 2003 when Black Grouse were also relatively abundant. Dabbling ducks were numerous among waterfowl, while diving duck species occurred in average numbers. The population of Bean Geese belonging to the *Anser fabalis fabalis* subspecies continued to decrease, as well as Whooper Swan numbers. However the latter species has become more abundant in the Ob' floodplain during the recent 2-3 years.

Numbers of Wood Sandpipers, Common and Pintail *Gallinago stenura* Snipes, Greenshanks *Tringa nebularia* and Common Sandpipers *Actitis hypoleucos* increased compared with 2004, reaching record high values for the observation period in the latter two species. Nesting records of Green Sandpiper *Tringa ochropus* and Curlew *Numenius arquata* were made. In contrast, numbers of Black-tailed Godwit *Limosa limosa* and particularly Whimbrel decreased.

Yellow Wagtail *Motacilla flava*, Bluethroat, Little Bunting and Brambling remained relatively uncommon among passerines. Numbers of Meadow Pipits, Olive-backed Pipits *Anthus hodgsoni*, Fieldfares, Redwings and Black-throated Thrushes *Turdus atrogularis*, Siberian Tits *Parus cinctus*, Chiffchaffs *Phylloscopus collybitus* increased considerably.

M.G. Golovatin

19. East of Bolshezemelskaya tundra and the Polar Ural, Russia (67°15'N, 64°35'E)

According to reports of local people only a small amount of snow accumulated during the winter. Day-time air temperatures rose above freezing on 9 May and reached +19°C on 19 May after rapid warming on 16 May. Subsequently, the weather became cool, and heavy rains were frequent. Low snow cover and warm wet weather in May resulted in rapid snowmelt, while flooding on 20-25 May was high but not prolonged. The tundra surface was 95% free from snow by early June. Pronounced cooling on 1-3 June was followed by abundant snowfalls and negative temperatures even during day-time. The snow layer was 8-10 cm thick, which along with low temperatures and strong northerly winds resulted in perishing of passerine birds, including Bluethroats and Little Buntings. Very warm sunny weather established from 4-13 June, when air temperatures were above freezing at night and reached +13-17°C during daytime. However another cooling occurred from 14-19 June, when air temperatures did

not rise above freezing during the day and dropped to -8°C at night. Strong north-western winds and snow-fall or rain with snow occurred during the whole period; the snowfalls being particularly heavy on 14-16 June, when a snow layer up to 8 cm thick remained also during day-time. The snow line descended to 300 m asl in the mountains, and started to melt only on 22 June.

Summer weather was close to average, although pronounced cooling on 6-8 July was associated with drops in temperatures to -2°C at night and +3-4°C during daytime due to the daily long-lasting cold rains that turned into snowfall at night. A snow layer up to 5-7 cm thick established during night and melted only in the second half of the day.

Numbers of lemmings and voles were considerable at the end of winter and early spring, based on the numbers of undersnow nests, but rodent abundance decreased dramatically by early June and remained low during the summer. Collared Lemmings *Dicrostonyx torquatus* were seen twice in the Polar Ural Mountains, while Siberian Lemmings were not recorded during 2.5 months of field work. Voles, primarily Narrow-skulled Vole *Microtus gregalis*, were very rare, although their abundance increased slightly by the end of summer.

Arctic Foxes, Red Foxes and Ermines were not recorded, and numbers of other mammalian predators were very low.

Snowy Owls were not recorded, while a wandering Short-eared Owl was seen once. Rough-legged Buzzards nested at low density, particularly in the mountains, and a portion of birds maintained territories during June and cessation of breeding activity was considerable. Clutch size normally did not exceed 3 eggs, and a single nest contained 4 eggs. Most breeding pairs of buzzards managed to raise 2 chicks, and productivity in the mountains was slightly higher than on plain tundra. Nesting density of the Northern Harrier was low, clutch size did not exceed 4 eggs and broods mostly contained 3 chicks, whose diet was primarily birds. Long-tailed Skuas nested at low density, and depredation of their clutches by gulls and corvids was observed.

Most species of waders occurred in the beginning of the breeding season in typical numbers for the southern tundra, with the exception of Temminck's Stint and Jacksnipe *Lymnocyptes minimus* which were less abundant than in previous years. Most waders arrived earlier due to the early spring. Early arriving species (Wood Sandpiper, Ruff, Common Snipe, Whimbrel) had started nesting earlier than normal, but the periods of cold weather on 1-3 and 14-19 June coincided with egg-laying in these species. We found deserted clutches of Ruffs and Wood Sandpipers between the two periods of cold weather. Common Snipes became considerably less common after the second cooling in mid June, and presumably most of these birds also deserted clutches. Eurasian Golden Plovers and Whimbrels apparently did not suffer from adverse

weather, while its consequences for birds in the mountains were catastrophic. Presumably all clutches of Rock Ptarmigans and Dotterels *Eudromius morinellus* perished, as we did not find nests or broods of these species, while Ptarmigans occurred in mixed flocks of males and females during the whole summer.

The last cooling on 6-8 July turned reproductive efforts of many wader species into failure, coinciding with hatching of chicks. While dead chicks were not found, numbers of alarming birds decreased considerably after 8 July, and many waders (Wood Sandpiper, phalaropes, plovers) had started to gather in flocks. Not a single brood or juvenile was seen of Ruff or Common Snipe. Broods of ducks and Willow Ptarmigans were also fairly rare.

Predation pressure by mammalian predators on clutches and chicks of waders was very low, while avian predators had a considerable effect on the reproductive performance of birds. Avian predators not only destroyed clutches of small birds, but also of other predators. Thus, wandering Rough-legged Buzzards and Hooded Crows destroyed nests of Long-tailed Skuas and one of the nests of Northern Harriers on the survey plot. Herring Gulls destroyed nests of skuas and Common Gulls, while wandering Long-tailed Skuas destroyed nests of Common Gulls, and vice versa. However, the combined impact of predation by uncommon avian predators on reproduction was much lower compared with the impact of adverse weather conditions. Reproductive success was low or very low in most species of waders, while breeding of the Ruff and Common Snipe failed completely.

V.V. Morozov

20. Polarny Ural railway station area, Russia
(67°03'N, 65°22'E)

Ice broke early on rivers, but ice was still floating downstream when we arrived on 17 June. Snow cover reduced to 50% before 10 June and completely melted after our departure (24 June). The water table was low during the spring flood. Three snowfalls occurred in the period of survey from 17-24 June, when snow blanketed nearby hills and even the railroad area, but melted during the day.

Mean daily air temperatures just started to rise above freezing during the period of survey, and activity of invertebrates was relatively low. Birds had just started to settle, and displays of most species were not active in cold weather. Recorded wader species included Eurasian Golden Plover, Pintail Snipe, Jacksnipe, Wood and Terek *Xenus cinereus* sandpipers, Temminck's Stint and Ruff.

Lemmings, Arctic Foxes and owls were not seen, while a vole was recorded.

T.R. Andreeva

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

Spring was early, but prolonged and cold. Ice broke in late May on rivers. Snow melted completely by mid June, but the weather remained cold and air temperatures did not exceed +8°C. Warming occurred after 20 June, but the weather was very unstable during the whole summer: temperature and wind conditions were changing abruptly every 2-3 days, and rains occurred every 1-3 days. Extreme weather events were not recorded, but strong wind with rain occurred 3 times.

During my surveys on 18 June – 13 August lemmings were not recorded. Narrow-skulled Voles were common locally in floodplains, where running animals were seen occasionally. Small colonies of presumably Middendorff's Voles *Microtus middendorffi* were rarely encountered in shrub tundra. Northern Red-backed Voles *Clethrionomys rutilus* were not seen, and a Tundra Vole was seen once. Arctic Hares *Lepus timidus* and Muskrats *Ondatra zibethicus* were abundant which is typical for the area. Only Narrow-skulled Voles were found in the prey of Rough-legged Buzzards.

Arctic Foxes were not seen, and their inhabited dens were not found. Inhabited dens of Red Foxes were numerous in forested floodplains, and we recorded abundant remains of ducks, hares, and less commonly grouse in the vicinity of these dens. Brown Bears were numerous, and we recorded at least 2 females with cubs along with solitary animals. Wolves *Canis lupus* were relatively abundant.

Breeding phenology was average in most birds. Willow Grouse occurred in average numbers, apparently higher than in 2000, but lower than in 1990s.

Tundra breeding species of waders were very rare. Eurasian Golden Plovers were less common than usual, but flying juveniles were observed in late July. Whimbrels were rare, and displaying Bar-tailed Godwits were observed on 2 occasions only (!), while in 1980-1990s both species were common. Other species of waders occurred in usual numbers: Wood and Terek sandpipers were numerous, Red-necked Phalaropes, Temminck's Stints, Ringed Plovers, Common and Pintail snipes were common, while Ruffs were rare. Broods were recorded in most species of waders. Common Sandpipers were very numerous, and it seems that this species has been increasing constantly during the recent 10-15 years. Remains of Woodcock were found in the prey of a Peregrine Falcon at 67°39'N, which is a relatively long-distant record from the normal species' range.

Numbers of Lesser White-fronted Goose *Anser erythropus* were average, but we found 2 clutches deserted due to unknown reasons. Broods of Bean Goose were relatively abundant compared with 1980-1990s. Bewick's Swans, including 2 broods, were unusually numerous. Tufted Duck and Wigeon were the most abundant among ducks, with tens of broods seen in the former species. Pintail and Long-tailed Duck

were less common than usual with not a single brood recorded.

Lapland Bunting and Yellow Wagtail occurred in relatively low numbers compared to the previous observations, although broods were still recorded in the former species. Great Grey Shrikes *Lanius excubitor* with broods were fairly abundant. As always Hooded Crow occurred in high numbers and bred successfully.

Most species of birds of prey bred in average to high numbers. Rough-legged Buzzards bred almost exclusively in floodplains with colonies of Narrow-skulled Voles. Nesting density was 0.1 pairs/10 km² in the whole surveyed area, but reached 2.8 pairs/10 km² in the most densely populated patch. Only 2 nests (with a single chick in each) were found away from the floodplain in open tundra and both at a distance of less than 500 m from the river. Nests of most pairs contained 3-4 eggs or downy chicks in the beginning of the breeding season, while chick numbers were reduced to 1-2 by fledging. Non-breeding Buzzards occurred in average numbers primarily in river floodplains and sparse larch forest. Breeding White-tailed Sea Eagles and Golden Eagles *Aquila chrysaetos* were unusually abundant, and 4 of 6 nests of the latter species contained 2 feathered chicks. Northern Harriers bred in small numbers: 2 broods were found. Nesting of Sparrow Hawk *Accipiter nisus* was the first on record on the Yamal Peninsula. In spite of the generally low rodent numbers one breeding pair of Eurasian Kestrel was found. Merlins were numerous as usual, Peregrine Falcon was relatively common, while Gyrfalcon numbers were slightly below average. Feathered chicks of Gyrfalcon were predated by Brown Bear in one nest.

Short-eared Owls were not numerous, but bred (a fledgling was taken by a Gyrfalcon). Snowy Owls were not seen. Long-tailed Skuas were relatively abundant, and we saw alarming pairs, but their chicks were not found. Arctic Skuas were rare, and numbers of Herring Gulls were also below usual.

Generally, breeding was successful in most species of birds, based on numbers of broods recorded. Breeding ducks suffered the most from predation by numerous Hooded Crows and Red Foxes.

S.A. Mechnikova

22. Enzoryakha River lower reaches, Yamal Peninsula, Russia (68°10' N, 68°33' E)

Snow melt and ice-break occurred very early. The weather was mostly cold and very dry during the period from 26 June – 13 August, and even intensive thunderstorms in late July-early August were followed by only low precipitation. A rare combination of cool and dry conditions had no apparent impact on birds, although many species departed from the Enzoryakha River valley after 4-6 August.

Siberian Lemmings and Middendorff's Voles were common and increased in numbers by August due to dispersion. Narrow-skulled Voles became very numer-

ous by August, while numbers of abundant Muskrats were stable during the season.

Breeding conditions in the Payuta railway station area were generally favourable for birds in spite of low air temperatures. The tundra became available for breeding early, prolonged rains did not occur, and plant development was normal, which resulted in sufficient amounts of green biomass, seeds and berries (with the exception of cloud-berry). A heavy and long lasting crop of mushrooms was recorded. The low water table allowed shallow waters of lakes to warm up which led to the emergence of large numbers of water invertebrates (e.g., tadpole shrimps Notostraca). Arctic Foxes were not recorded. Rough-legged Buzzards and Long-tailed Skuas were common and bred successfully, while Short-eared Owls were rare non-breeders. Northern Harrier was not numerous but was widespread. Predators had sufficient food, and they were not numerous enough to deplete rodent populations, which consequently spread widely in the tundra by the end of summer.

T.R. Andreeva

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

Ice break-up and snow melt were the earliest on record for the last 4 years of observations. Ice broke on rivers on 20-21 May. Snow cover reduced to approximately 50% on 26-28 May, to 25% at our arrival on 3 June and melted completely from level areas on 20-22 June. Warm, dry, clear and windless weather prevailed in the first half of June. Air temperatures reached +15-17°C by 10 June and birds displayed during the whole day at this time. Three snowfalls were recorded in the first half of June and 2 in the second half of the month. The weather turned cold in the second half of June. Rains and snowfalls with northerly winds occurred at short intervals from 14 to 17 June. Heavy snowfall in the evening of 17 June was followed by a decrease in temperature to approximately -2°C. Snow melted by the next morning, but cool, rainy and windy conditions were observed until 23 June. Water level in the river was unstable during this period of time.

Collared Lemmings and Middendorff's Voles were common, while Siberian Lemmings and Narrow-skulled Voles were rare. Both lemming species bred. Owls were not recorded, Rough-legged Buzzards and Arctic Foxes were common.

Early spring phenology resulted in early breeding in most species of birds. The first nests of Red-throated Pipits with complete clutches were found on 8 June, while a nest of Wood Sandpiper with a clutch of 4 eggs and a nest of Pintail with a clutch of 9 eggs were found on 5 June. White-fronted Geese were more common breeders than in previous years. Willow Grouse were numerous. Only birds of prey were markedly affected by the unfavourable weather in the second half of June, as loss of clutches and hatching chicks were recorded in Rough-legged Buzzards during the adverse weather prevailing from 17-20 June.

Predation pressure on birds was not pronounced, although hunting Arctic Foxes were regularly observed. No data are available on breeding by Arctic Foxes.

V.A. Sokolov, A.A. Sokolov

24. Yarayakha River lower reaches, Yamal Peninsula, Russia (69°17'N, 68°13'E)

Local reports indicate that the weather was cold and rainy from mid June to late July, but extreme events were not reported. The weather was predominantly warm and dry with moderate winds during the period of our observations from 2 to 13 August, with the exception of a storm on 8-9 August associated with rain and a strong westerly wind. The adverse weather had no apparent impact on birds.

Siberian Lemmings were common and Collared Lemmings were rare. Middendorff's Voles were numerous and many voles, including juveniles, were captured by a dog.

Arctic Foxes were common and bred. Rough-legged Buzzards bred in average numbers. A nest of Peregrine Falcons with a fledgling was found on 12 August, and Merlin was regularly recorded in the area. A juvenile Arctic Skua was seen on 10 August. Willow Grouse were relatively rare near the coast and their broods contained only 1-2 chicks, while farther inland grouse were abundant in scrub and their broods increased to 5-7 chicks.

Broods of Black-throated and Red-throated divers approximately 1 week old were recorded in early August. Aggregations of moulting geese with broods of approximately 200 birds in total were observed on the coast of the Baidaratskaya Bay and on one lake 10 km from the shore. Several goose nests with egg-shells were found, indicating hatching. Among ducks, broods of Long-tailed Duck predominated, but we also recorded broods of White-winged *Melanitta fusca* and Common *M. nigra* scoters.

Eurasian Golden Plovers were common. Three pairs of Pacific Golden Plovers *Pluvialis fulva*, including one alarming pair and one bird displaying, were observed in a 2 km² patch of polygonal bog 10 km from the coast. Little Stint was the most abundant wader, in which we recorded solitary birds and flocks of up to several 100s of birds on the coast and along rivers. Temminck's Stints were notably less abundant, and we captured fledglings on 7 and 10 August in a shift team camp. Flocks of Ruffs and Dunlins were observed on the coast, and we recorded one flock of Curlew Sandpipers *Calidris ferruginea* and Sanderlings *C. alba*. Two Bar-tailed Godwits were observed. A migrating flock of 25 Dotterels was recorded on 10 August.

Broods and fledglings of passerines were common everywhere in the tundra. Conditions were favourable for reproduction by birds and breeding success was probably about average in all species judging by the abundance of broods.

V.A. Sokolov

25. Yuribei, Khyeyakha, Erkuta river basins, Yamal Peninsula, Russia (68°23'N, 70°05'E)

The weather was cool and wet in 2005 compared with 2004, occasionally with strong winds. Sunny days in the beginning of our surveys started on 26 June but were followed by a predominantly cool period with especially adverse weather during 4-6 July with strong northerly winds, drizzle and temperatures not exceeding +2-4°C at night and +4°-8°C at daytime. Precipitation ceased and the wind slackened during the evening of 6 July. Clear weather with daytime temperatures +15-20°C prevailed on 10-14 July. A strong westerly wind on 15 July was followed by calm and moderately warm weather until the end of surveys on 17 July.

Rodent numbers were below average, likewise a proportion of inhabited fox dens. Rough-legged Buzzards bred at average density, but the behaviour of the birds indicated lack of food, as they surveyed very large areas. Solitary records of Northern Harriers, Pallid Harriers *Circus macrourus* and Short-eared Owls were made. White-tailed Sea Eagles were less common than in 2004.

Numbers of geese, ducks and Willow Grouse were low. The proportion of non-breeding Red-breasted Geese *Branta ruficollis* in flocks increased considerably. Bewick's Swans were numerous, but most birds also occurred in flocks.

Waders occurred in average numbers, and the most abundant species included Red-necked Phalarope, Wood Sandpiper, Temminck's Stint, as well as Common Snipe and Ruff on the floodplain.

Breeding conditions in 2005 were less favourable than in 2004 due to inferior weather and higher levels of predation. Human impact by Reindeer herders and fisherman was also greater in the upper reaches of the Yuribei River. Vegetation in the surveyed area was damaged considerably and locally destroyed after the passage of domestic Reindeers in 2005.

M.G. Golovatin, S.P. Paskhalny

26. Bolshaya Shirta River basin, West Siberia, Russia (64°10'N, 84°33'E)

Spring was cool and we had only 5 very hot days for the period of our surveys from 1-22 June. Ice broke by 22-23 May on the Taz River near Tolka settlement, which is an average date given the range of variation (27 April to 5 June) reported by local people. Ice was still present on large lakes at our arrival on 1 June, but we estimated that snow cover had reduced to 50% on 5-10 May and completely melted by 20 May. Air temperatures did not drop below freezing even at night in early June, but temperatures reached 20-25°C. The water table dropped 70 cm compared to its maximum level on 3 June, and decreased another 6 m on the Bolshaya Shirta River by 17 June. According to reports by local people the range of water level variation can be 8 to 11 m in different years.

Vegetation growth had just started by our departure on 22 June, but bird migration was already over. Pair formation and territory establishment was completed in passerines, but were still intensive in waterfowl. Extreme weather events were not recorded.

Rodent abundance was low. Total catching effort in the survey period was 755 snap-trap/days and 66 cylinder-days, and yielded an average total density of 0.4 Northern Red-backed Vole per 100 trap/days. All 3 voles were captured in the Siberian Pine *Pinus sibirica* floodplain, in the most distant area from the territory flooded in spring, where also winter tracks of voles were found. Average density for the whole season 2005 was 1.1 animals per 100 trap/days. The only other rodent captured was the Northern Birch Mouse *Sicista betulina* (0.4 animals per 10 cylinder-days).

Numerous tracks of Reindeers and Brown Bears were recorded.

Black-throated Divers *Gavia arctica* were rare breeders, while Bean Geese were common, and probably bred. Among ducks Teal, Eurasian Wigeon and Common Goldeneye were common. Birds of prey were rare, and presumed breeders included Hobby *Falco subbuteo* and White-tailed Sea Eagle. Tetraonids were common with the exception of Black and Willow grouse, which were rare. Among waders Common Sandpiper was common, locally numerous, and Wood Sandpiper was common. Gulls were rare, except for the Common Gull which was common. Skuas were not recorded. Both Common and Oriental *Cuculus saturatus* cuckoos were common, as well as Great Spotted Woodpecker, while Three-toed Woodpecker *Picoides tridactylus* was rare. Among passerines 10 species were numerous, 13 common and 23 rare.

Lizards *Lacerta vivipara* and frogs *Rana terrestris* were recorded several times in the second half of June.

Strong pressure by hunters and poachers resulted in decreases in the numbers of large mammals and *Salmo taimen* fish.

A.E. Dmitriev

27. Periptaveto Lake area, Gydansky Peninsula, Russia (71°25'N, 78°52'E)

Periptaveto Lake was completely clear of ice by my arrival on 1 July, and snow was only present in the valleys of creeks and near steep slopes around the lake. Cold windy weather with temperatures not exceeding +14.5°C and dropping below freezing at night, and strong northeasterly or northwesterly winds prevailed during the first 3 days. The following warming resulted in increase in the day-time temperature to +20°C and intensive snow melt. Fog was common in the morning, while pelting rain and thunderstorms occurred at night.

Small mammal surveys were not conducted. Rodent abundance was average, as lemmings were rarely seen, but were often captured by a dog. Siberian Lemming prevailed both in catches by dog and in the prey of Rough-legged Buzzards, while Collared Lemming

was captured by a dog only once. Arctic Foxes were rare and their breeding was not confirmed.

Rough-legged Buzzards bred successfully: 2 chicks were observed on 7 July in a nest found with a clutch of 5 eggs on 2 July, a nest with 4 eggs was found on 3 July, and another one with 4 chicks on 5 July. Other birds of prey were not observed. Long-tailed Skuas were numerous across the study area and attacked the observer, but nests were not found. Single birds and pairs of Pomarine Skuas were recorded, but territorial behaviour was not observed in this species. There was a record of breeding Herring Gull.

White-fronted Goose, Red-breasted Goose and Long-tailed Duck bred in the area. Among waders Eurasian Golden Plover, Red-necked Phalarope, Ruff, Dunlin, Little and Temminck's Stints were confirmed breeders. Passerines were numerous, including breeding Shorelark *Eremophila alpestris*, Red-throated Pipit, Yellow-headed Wagtail *Motacilla citreola*, Willow Warbler, Chiffchaff, Common Redpoll, Little Bunting, Bluethroat, Redwing and Lapland Bunting.

N.N. Emelchenko

28. Mongocheyakha River lower reaches, Gydan Peninsula, Russia (72°22'N, 79°00'E)

Snow was still present on the coast when I arrived on 9 July, while the sea in the vicinity of Sosnovaya settlement was filled with ice. Farther east the extent of ice was decreasing and ice-free sea could be seen from a high bank in the area of the Omulyevaya River mouth. The ice was very thin and occupied only a small fraction of the sea surface on 14 July, in the vicinity of Leskin Cape. Low coastal areas were almost completely snow-free upon return to Sosnovka on 16 July, but the sea was still filled with ice thick enough to carry a person and a dog. Ice had melted completely by late July, and single ice fragments appeared in the Mongocheyakha River delta during strong northerly winds. Pack ice up to 3-4 m thick did not melt until departure on 25 July.

Low temperatures, strong northerly winds and night frosts occurred during my first 3 days in the area, but the next 2 days were hot, windless and mosquitoes appeared. The second half of July was characterized by frequent fogs and rains, high temperatures by day and lows at night, and the absence of mosquitoes. Northern and eastern winds prevailed.

Siberian and Collared lemmings were recorded daily and captured by a dog. Arctic Foxes were rare and their breeding was not confirmed.

In spite of the high abundance of lemmings, Snowy Owls did not nest, although single non-breeding birds were recorded in the area. This could be due to the low availability of lemmings early in the season, when only upper parts of hills were exposed from under snow that provided rodents with good protection against predators by providing a complex microrelief compared with wet lowland habitats. I recorded nesting by 2 pairs of Rough-legged Buzzards, one pair of

Peregrine Falcons and one pair of Pomarine Skuas in the surveyed area. Arctic Foxes were rare and their breeding was not recorded.

White-fronted Geese were numerous in the area, nesting at a density of 0.9 nest/km on lower hill slopes in typical tundra, while nesting in polygonal bogs was less common. All nests found during the first days of study were already at the hatching stage, and the last nest with chicks still present was found on 15 July. Mean brood size was 3.6 chicks (range 1-6, $n=17$). Aggregations of broods were mostly observed along small rivers and less often near large lakes. For example, 0.86 broods per 1 km of shoreline were found in the lower reaches of the Omulyevaya River. Groups of geese with broods were recorded in the delta of the Mongocheyakha River in late July. Red-breasted Goose, Long-tailed Duck and King Eider bred in the area. Rock Ptarmigan bred in small numbers.

Grey Plover and Little Stint were numerous among breeding waders, Ruff common, Ringed Plover, Grey Phalarope *Phalaropus fulicarius*, Curlew Sandpiper and Dunlin rare.

Breeding passerines included Shorelark, Red-throated Pipit, Wheatear, Bluethroat, Fieldfare, Lapland Bunting and Snow Bunting.

N.N. Emelchenko

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

The seasonal phenology was very early. Snow cover was reduced to 20% by arrival on 9 June and to 10% by 14 June. Ice broke up on 5-6 June on the Medusa River, which is two weeks earlier than average. The highest day-time air temperature in the second half of June was +15°C, and the highest temperature for the season, +19.4°C, was recorded on 6 July. Precipitation was heaviest in the second half of June, and July was colder than usual. The first cracks in the ice of Shirokaya-Severnaya Bay appeared on 29 June, and the bay surface became ice-free on 13 July similarly to the previous year.

Lemming populations reached their "super-peak" value in 2005, corresponding to very high abundance (rank 5). Given that the previous "super-peak" was in 1994, this has been an 11-year cycle. Populations of both lemming species reached their maximum value during winter and spring, while in summer a rapid decline was obvious. The decline was probably due to both strong pressure by abundant predators attracted by numerous lemmings in spring and epizooty (we found dead lemmings in the tundra, sometimes in groups). Declining numbers resulted in densities obtained by live-trapping similar to those observed in the previous year. The average density of Siberian Lemmings in 2005 was 17-18 animals/ha, and Collared Lemmings 3-4 animals/ha.

Arctic Foxes were unusually abundant, and in an area of 175 km², where formerly a maximum of 5 dens had been found even in peak lemming years, there were 20

breeding pairs in 2005, which inhabited both permanent dens and temporary shelters near rocks. The population of Arctic Hares remained at a low level similar to 2004, while numbers of Ermines and Wolves started to increase. The first migrant Reindeers were recorded on 17 July, and their numbers were lower than in 2004. Cold weather in July was the probable reason for low numbers of mosquitoes in the southern Taimyr, and Reindeers therefore were reluctant to migrate far to the north.

Rough-legged Buzzards and Snowy Owls bred at a high density, with 41 and 22 nests in the 175 km² area, respectively. The timing of Snowy Owls nests was average, and they had a mean clutch size 6.9 eggs. Pomarine Skuas were numerous, with 42 nests in a 19.4 km² area. Breeding of Short-eared Owls was recorded.

In spite of the high abundance of Snowy Owls reproductive success was low in Brent Geese due to very high numbers of Arctic Foxes. Only 39 nests were found on the mainland, all in sites with locally low numbers of Arctic Foxes. Brent Geese numbers decreased also on sea islands in the Shirokaya-Severnaya Bay where only 2 nests were found compared with on average 30 in other years. Reasons for declines on the islands are not clear, but it could be that Arctic Foxes crossed the bay on ice when searching for food and reached the islands.

Waders nested very early, and first nests of the latest breeder, Little Stint, were initiated on approximately 6-8 June. The first chicks were found on 30 June in this species. Other waders and Pomarine Skuas started nesting approximately 10 days earlier than average. Nesting of waders was highly successful: 83.3% in Curlew Sandpiper ($n=6$ nests), 80% in Little Stint ($n=82$), 80% in Pacific Golden Plover ($n=15$), 66% in Temminck's Stint ($n=3$), 57.6% in Dunlin ($n=13$), 50% in Ringed Plover ($n=2$), and 0% in Turnstone ($n=2$). Apart from these, there were 3 breeding females of Pectoral Sandpiper *Calidris melanotos* on the study plot, one of which was recorded later with young. Also, two Grey Phalarope nests with eggs were found.

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30. Cape Wostochny, Piasina Delta, Taimyr, Russia (74°08'N, 86°45'E)

Ice between the mainland (Cape Wostochny) and offshore islands disappeared on 2 July. During peak hatching of the Little Stint there were strong winds and periods with heavy rainfall. This might have had some influence on their breeding success.

Siberian Lemmings were extremely abundant, with the highest densities ever recorded. 2005 should be considered as an extreme lemming peak year. Reproduction was still going on in the middle of August, when we left the area. Collared Lemmings seemed to be almost absent. Only one Collared Lemming was

trapped and only five individuals were found near a fox den and at Snowy Owl nests. Lemming abundance was investigated using standardized snaptrap lines and by live traps on plots with different vegetation types.

Arctic Foxes were common in the area. Reproduction was observed in more places than ever before. The original litter size was probably high, but the number of cubs seen at dens was relatively low and some cubs and adults were found dead later in the season. This high mortality might be explained by severe competition for food between different predators.

The Least Weasel *Mustela nivalis* was seen frequently on the rocky outcrops in the tundra, among driftwood along the coast, and in the camp itself. This species has not been observed in the area in earlier years. Some Least Weasels were trapped and this revealed that both males and females were present, and that females were reproducing. Fresh tracks of Wolves were found, but animals were not seen. One Muskox *Ovibos moschatus* was observed near the field camp, which is the first record in this area. A specialist, judging the animal from photographs, estimated its age at 10-11 years. Reindeers were seen later in the season in small numbers.

Pomarine Skuas were extremely abundant with 6.2 nests/km². This is more than in 1994, also a lemming peak year, when an abundance of 3.4 nests/km² was recorded. Nearly all nests contained two eggs and all except one hatched successfully. Some predation on chicks by unknown predators, presumably Snowy Owl and Rough-legged Buzzard, was observed but most young birds fledged successfully. Skuas were extremely aggressive to other predators such as Snowy Owl, Rough-legged Buzzard, White-tailed Sea Eagle, Arctic Fox, Long-tailed and other Pomarine skuas.

Long-tailed Skuas bred in very low numbers. Only one nest was found outside the standard 5 km² monitoring plot compared with two nests in 2004. One nest of Rough-legged Buzzard containing 5 eggs was found. Just before hatching the nest was deserted.

Within a 13.5 km² monitoring plot, 5 nests of Snowy Owls were found. All nests contained 7 or 8 eggs and they all hatched successfully. Some fledged young birds were found dead. This seems to be a result of food shortage.

Brent Geese were breeding in the close vicinity of the owl nests. Fourteen nests were found in three colonies. The White-fronted Goose and Steller's Eider *Polysticta stelleri* bred in higher numbers than recorded in previous years.

Nests of Brent Geese and Herring Gulls were counted on offshore islands. The islands were fox-free except for one larger island. Each island was visited at least once, except for one island that was studied in more detail. We recorded fewer nests of Brent Geese than in 2004. Herring Gulls were breeding in slightly higher numbers than in 2004. There was not much predation on nests of Brent Geese and gulls.

We monitored the abundance of breeding waders in a plot of 5 km². Because of their extremely high abundance, Little Stints were surveyed in a subset of the plot of about 1 km². Little Stints seemed to be more abundant than in other years with an average density of 50 nests/km². By comparison, a density of 39 nests/km² was recorded in 2004. However, this difference might also be caused by a more intensive nest search in 2005. Curlew Sandpipers were more abundant than in other years with an average density of 3.2 nests/km² (1 nest/km² in 2004). Pacific Golden Plover and Grey Plover bred in the similar numbers to other years. Pectoral Sandpiper and Grey Phalarope seemed to be slightly more abundant.

Mayfield daily nest survival rate over the whole period was 0.988 for Little Stints and Curlew Sandpipers. This equals an estimated nest success of about 78% for an incubation period of 21 days. This is higher than in 2004, a year with very low lemming numbers, but not as high as in other years with high lemming densities (1991 and 1994). This might be a result of the wide variety and high numbers of predators present (Pomarine Skua, Snowy Owl, Least Weasel, and Arctic Fox).

We ringed 555 waders, both chicks and adults. Adults were caught on their nests with "luchocks" and during autumn migration using a large clapnet. Chicks were caught in the nests or on tundra. Juveniles were caught during autumn migration using a large clapnet. Most of the ringed waders were Little Stints (442 birds). In total 368 geese were caught and ringed, both adults and goslings. Incubating birds were caught on nests and moulting birds were caught in groups. In addition, we ringed 4 adult Steller's Eiders, 36 Pomarine Skuas (2 adults), 126 Herring Gulls (2 adults), 43 Snowy Owls (all chicks) and 23 passerines.

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31. Birula Bay, Taimyr Peninsula, Russia (76°05' N, 94°20' E)

The area was rich with signs of lemmings on 18 August, and other people even saw live animals. I did not encounter any lemmings and do not know which species they saw.

Pomarine and Long-tailed Skuas commonly overflowed the tundra, as single birds or in loose groups of 5-10 birds. A Snowy Owl was seen.

At least one pair of Grey Plovers bred and had chicks, judging by their excited behaviour. In the wetland I found many other waders: 25 Pectoral Sandpipers, 5 Sharp-tailed Sandpipers *Calidris acuminata*, 10 Little Stints, 5 Curlew Sandpipers, 10 Ringed Plovers. All birds were adults, with an exception of 7 Knots *Calidris canutus*. Hundreds, probably 1000s of phalaropes in total (Red-necked and Grey Phalaropes in the ratio ca. 100:1) were swimming and feeding in the sea along the beach.

M. Forsberg

32. Vise Island, the Kara Sea, Russia (79°33'N, 76°51'E)

On 14 August approximately 150-200 adult Ivory Gulls *Pagophila eburnea* (probably at least 100 pairs) had a main breeding colony about 700 meters west of the weather station. The colony was located in between a heavy pile of metal scrap, which was strange to see, as all other colonies I have encountered at Svalbard have been in high cliffs. There were a lot of fresh Polar Bear tracks. Kittiwakes and Snow Buntings were the only other birds recorded. No lemmings are known on the island.

M. Forsberg

33. Verkhnyaya Taimyra River delta, central Taimyr Peninsula, Russia (74°08'N, 99°34'E)

Spring was early in 2005, and we estimated 9 June as the date of snow melt on 50% of the flat tundra surface. The tundra cleared completely and ice on rivers broke up before our arrival on 19 June. Air temperatures were average in July, while the amount of precipitation was higher than usual in the second half of the month. Extreme weather events were not recorded, but the weather turned cold after 20 July when air temperatures dropped to +1.5°C on some days and rains were common.

Numbers of lemmings were high, and 4 observers recorded 725 lemmings in total during the study period from 19 June to 4 August. The numbers of lemming records per observer-day was the record high in 2005, and exceeded by approximately a factor of 1.5 the second highest value since 1994 recorded in 2000. The number of rodent observations was rapidly increasing from 20-24 June, than dropped to average values and formed the second smaller peak in early July. Lemmings were still common during the rest of July, but they were not recorded daily, and the abundance increased again in the last days of July-early August.

Siberian Lemmings predominated among those animals for which the species was identified, while Collared Lemmings contributed only 1.37% of all encounters. On completion of snowmelt, on 21 June, lemming undersnow nests were counted on a transect, located on the slopes of the first river terrace and watershed slopes. A density of 3.25 nest/km was much lower than could have been expected based on the numbers of rodents recorded in summer, given that the nest density was 7.1 per km in 2000 with a lower rate of summer visual records.

The number of inhabited dens of Arctic Foxes increased from 2 in 2004 to 7 in 2005 in the study area of approximately 86 km², and they bred successfully. Several observations of the Least Weasel were made in late June – early July in the camp vicinity. Two wolves passed southwestward through the study area on 25 July, following migrating Reindeers.

Snowy Owls and Pomarine Skuas did not nest in 2004, while 3 nests of the former species were found within the study area of 86 km² in 2005. Clutches

contained 4 and 7 eggs in two nests found before and during hatching, and chicks hatched successfully in all nests. Pomarine Skuas nested at a density of 0.77 nest/km², and occurred in similar numbers across different landscapes. Only one of 15 monitored nests was depredated before hatching. Numbers of breeding Long-tailed Skuas and their nest success increased in 2005 compared with the preceding year, while Arctic Skuas bred at a very low numbers and only in alluvial areas in both seasons.

A single nest of Peregrine Falcons in the area contained a clutch of 3 eggs, and chicks were successfully hatched. Numbers of Rough-legged Buzzards in the area of 86 km² increased from 6 pairs in 2004 to 8 pairs in 2005, and their clutch size increased significantly from 3.00±0.63 (range 2-4, *n*=6) in 2004 to 4.86±0.69 (range 4-6, *n*=7) in 2005. All nests found during incubation in 2005 survived to hatching.

Abundance of Arctic Hares remained very high in 2005. In spite of much earlier spring phenology in 2005 compared with 2004 mass migration of Reindeers started on 22 July 2005, thus 4 days later than in the preceding year. The migration was less intensive in 2005, as we observed herds of 100s moving south-westward during several days which was approximately an order of magnitude lower than in 2004. Trampling of eggs was not recorded in 2005 in contrast to 2004 when approximately 30% of nests with eggs remaining by the time of the mass migration had been trampled by Reindeers.

Thus, high numbers of lemmings resulted in successful nesting of rodent-specialists (Snowy Owls and Pomarine Skuas), while Arctic Foxes, Long-tailed Skuas and Rough-legged Buzzards responded by increased reproductive effort and nest success.

Birds started breeding early in 2005 with the following first egg dates back-calculated from hatching dates: 11 June in Dunlin, 12 June in Curlew Sandpiper and Little Stint, 13 June in Pacific Golden Plover and Lapland Bunting, 15 June in Grey Plover and Grey Phalarope, 16 June in Long-tailed Skua and 17 June in Pomarine Skua. The start of nesting in Pectoral Sandpiper and Ruff was considerably delayed compared to other species of waders, with clutch initiation on 21 and 28 June respectively.

Total density of waders increased in 2005 compared with 2004 from 53.5 to 100.1 nest/km² in the terrace plot and decreased from 149.3 to 90.4 nest/km² in the floodplain plot. The distribution of breeding birds between main landscapes became more even in the area compared with the previous late season, presumably due to early snowmelt in 2005 and associated availability of bogs for nesting. Little Stint and Grey Phalarope were the most abundant species of waders in 2004 and 2005.

Breeding records of White-billed Diver *Gavia adamsii*, Spotted Redshank and Long-billed Dowitcher *Limnodromus scolopaceus* in the area expanded ranges of these species northwards. An observation of

a Barnacle Goose in a flock of 11 White-fronted Geese on 30 June was the first record of this species on the Taimyr Peninsula, approximately 1350 km to the north-east of the breeding grounds on the Yugorsky Peninsula.

Apparent nest success was 51.5% ($n=136$) and 59.7% ($n=144$) in waders, and 64.0% ($n=25$) and 85.5% ($n=62$) in other non-passerine birds in 2004 and 2005, respectively. In 2005 nest success was average in Pacific Golden Plover (58.3%, $n=12$) and Grey Plover (64.3%, $n=14$), which represented a considerable improvement compared with nest survival rate below 20% in 2004. Nesting was very successful in Dunlin (100.0%, $n=10$), Little Stint (67.6%, $n=37$) and Grey Phalarope (80.0%, $n=20$), while success of Pectoral Sandpiper and Ruff decreased dramatically from 77.8% ($n=9$) to 23.5% ($n=17$), and from 66.7% ($n=12$) to 12.5% ($n=8$), respectively. Late breeding of two latter species could have resulted in their inferior breeding performance, because pressure of abundant avian predators probably increased in accordance with the decrease of lemming abundance in July.

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E.N. Rakhimberdiev

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

Spring was early. The first surface water over the ice on the Khatanga River appeared on 22 May in the vicinity of the Khatanga settlement, ice broke on 5 June, and the river cleared on 6 June. A cyclone with squalls of snow and strong westerly winds occurred on 20-23 May. Water from the Katanga River entered Novaya River (in the Ary-Mas area) on 28 May. Ice started to break on 3 June and started to move down the river on 8 June. Snow melted on 50% of the tundra surface by 3 June. The season was generally warm, and mean June air temperature was +4.8°C. Drizzle occurred frequently in the second half of July and August. Most plants have started flowering by 26 June, and leaves of birch and willow unfurled by 30 June.

A single lemming was seen from 26 June to 19 August.

Arctic Foxes were not observed, but their tracks were seen on sandy spits. Rough-legged Buzzards were rare as in 2004, and 2 pairs bred in an area of approximately 50 km². One of these nests contained 3 chicks approximately 5-days old and 1 egg on 6 July. Long-tailed Skuas were more common than in 2004. Herring Gulls are rare in the area, and appear only during migration of Reindeers (on 10 August). Willow Grouses, Dusky Thrushes *Turdus eunomus*, Fieldfares and Common Redpolls were considerably more abundant than in previous years. At least Red-necked Phalaropes, Common Snipes and Ruffs nested successfully.

A.A. Gavrilov

35. Kotuy River middle reaches, Medvezhiya River mouth, Anabar Plateau, central Siberia, Russia (71°09'N, 102°40'E)

Spring was very early and ice broke on the Kotuy River in the very early June. Snow had already melted when our team arrived on 15 June, with small snow patches remaining only in the upper belt of the forest in the low mountains, where it also melted on 16 June. The maximum water level was already past by 15 June and low stream flows established by 1 July. The second half of June and the beginning of July were very warm, with air temperature reaching +38.3°C on 3 July, and relatively dry although brief rains occurred almost daily. The second half of July and August were characterized by typical air temperatures (mean daily values within +10-15°C) and abundant precipitation. During this period there were only 2 days without rains, and precipitation reached 20 mm on some days. The water table increased by 5 m in the Kotuy River on 15 August after 2 rainy days, and even the middle floodplain was covered by water.

Autumn was early as the first indications of autumn colours in planes was recorded on 10 August, while 70% of willow shrubs and 70% of larch trees became yellow by the end of surveys on 26 August. The first frost on soil and in air (-1.9°C) was recorded on 22 August, and the first snowfall occurred at night on 26-27 August.

Strong winds, exceeding 10 m/s, were generally rare, but occurred slightly more often in the first half of the summer. Winds could not have notable impact on breeding birds due to complex topography of the area and woodland vegetation.

Siberian and Collared lemmings were not recorded, although they could be expected in mountain tundra. The total trapping effort for small terrestrial mammals was 1740 trap-days, which resulted in catching 60 Middendorff's Voles, 16 Northern Red-backed Voles, 1 Grey-sided Vole, 7 Wood Lemmings and 4 Arctic Shrews *Sorex tundrensis*. Thus, catches averaged 5.06 animals per 100 trap-days. Northern Pikas *Ochotona hyperborea* inhabited boulder areas at a high density.

Vegetation of the area generally belongs to northern taiga with larch forest (often sparse) reaching 300-350 m asl. In spite of the southerly position flora and vegetation of mountain tundra closely resembles typical tundra of the central Taimyr. Mires and lakes occupied a small area mostly in the Kotuy River floodplain and terraces.

Arctic Fox probably does not reside in the area in summer time, and a single animal was recorded in mountain tundra. Ermine and Least Weasel were observed. Gulls and skuas occurred in relatively small numbers. Reindeers were not recorded in spring, but appeared *en masse* on 21 August on migration. Rough-legged Buzzards bred on rocks along the Kotuy River, where 12 nests were found per 27 km of riverbank. Food supply was probably not sufficient for Rough-legged Buzzards, as survival in 3 monitored

nests was 1 of 4, 2 of 4 and 1 of 3 chicks. Breeding was probably more successful in Merlins, as family groups consisting of 2 adult birds and 3-5 juveniles were common by the end of surveys.

Most birds had already started nesting by 15 June, and migration of waterfowl (the Bean Goose, Long-tailed Duck, White-winged Scoter, Wigeon, Pintail) had finished by 25 June. Breeding was very early: fledglings were recorded on 27 June in Raven, 5 July in Willow Warbler, Little and Pallas's *Emberiza pallasii* buntings, 13 July in Dusky Thrush, and on 20 July thrush fledglings appeared in high numbers. Chicks were found on 30 June in White Wagtail, on 10 July in Ringed Plover and Spotted Redshank. Nesting was later in mountain tundra, where small chicks of Pacific Golden Plover were found on 15 July and fledglings of Snow Bunting on 2 July. Chicks of Rough-legged Buzzards hatched on 5 July and fledged on 13 August. First chicks of Wigeon, Greater Scaup *Aythya marila*, Pintail, Teal were recorded on 2 July and mass hatching occurred on 5 July. Fledging was recorded on 18 August, in Pintail. First broods of Black-throated Diver were observed on 2 August. Juvenile Arctic Terns appeared in high numbers on 15 August, while a juvenile Herring Gull was seen on 22 August. Second clutches were probably laid in some species, as we recorded fledglings of Redpolls until 20 August.

Waders in general were relatively uncommon with the exception of Temminck's Stints in floodplain bushes, Pacific Golden Plover in mountain tundra, Ringed Plover on gravel flats of the Kotuy River and in mountain limestone tundra, Wood Sandpiper and Common Snipe bred on marshes in the valley. The latter species was the most abundant wader in the area, occurring in preferred habitats in the Medvezhiya River valley at a density of up to 2 birds per 1 km of a route during the whole season.

A nest of Red-breasted Geese was found on 14 July under a high rocky bluff of the Kotuy River (70.998°N, 102.693°E). The nest contained 2 eggs, and 1 egg damaged by an avian predator was found 20 cm from the nest. This observation represents the first nesting record of this species in northern taiga. We observed 3 pairs of Lesser White-fronted Geese showing breeding behaviour near rocky cliffs of the Kotuy River.

Based on the frequency of brood records, reproductive success can be evaluated as high in passerines, average in waders, relatively low in Rough-legged Buzzard, high in Merlin, and high in ducks.

I.N. Pospelov

36. Lena Delta, southern and eastern parts, Yakutia, Russia (72°48'N, 129°19'E)

Spring was earlier and warmer than average. Mean monthly air temperatures were 1.6°C above the long-term average in May and 1.2°C in June according to data from the weather station "Stolb" in the southern part of the delta (72°24'N, 126°48'E). Snow melted on 80% of flat surfaces by 1 June, and daily air tempera-

tures rose above freezing point on 2 June. Mean daily air temperatures were relatively constant in June, although they dropped to -0.5°C during short-term cooling on 6-7 June. Mean daily temperatures rose above +5°C in mid June and exceeded +10°C during the last 3 days of the month. Ice started to break up at the usual time and rivers cleared of ice quickly, at an average increase of water level. Bykovskaya Channel, in the extreme south-east of the delta, cleared of ice in 3 days, from 7-9 June. Extreme weather events were not recorded.

An outbreak of lemming numbers continued for the second year in a row, and they were even more numerous than in 2004 according to visual evaluation. The outbreak spread across the whole area of the delta in 2005.

In spite of the higher abundance of lemmings Snowy Owls nested in far smaller numbers compared with 2004. In contrast Pomarine Skuas were more abundant and occurred at a density of 1.3 pair/km² in the study plot. Arctic and Long-tailed skuas also bred. Numbers of breeding Rough-legged Buzzards in the south-western part of the delta were slightly higher than in 2004, while Arctic Foxes were not recorded, although they definitely bred in the Lena delta in 2005. Ermines bred successfully.

Arrival of birds was unusually early, although mean daily air temperatures only rose above freezing on a single day during 18 May. Most species of waterbirds arrived in the delta by late May, and migration had finished by 10 June. A pair of vagrant Barn Swallows *Hirundo rustica* was observed in the north-east of the delta on 1 July, and 4 swallows were recorded on 2 July. All species of waterbirds typical to the Lena delta nested in higher numbers than in 2004. Depredation of clutches by Arctic Foxes was not recorded, and nest success of birds was very high. Chicks hatched in all nests of Ross's *Rhodostethia rosea* and Sabine's *Xema sabini* Gulls under observation; nest success was 91.5% in Brent Geese and 82.1% in Steller's Eiders. Nest failure in the two latter species was due to predation by large gulls and skuas. Apparent nest success in waders was 90.3% ($n=31$), and 3 failed nests included 1 depredated nest of Grey Plovers (of 4 found), 1 Grey Phalarope nest abandoned for unknown reasons (of 7) and a single nest of Pacific Golden Plovers which was abandoned due to disturbance by fishermen. All found nests of Turnstone ($n=6$), Little Stint ($n=7$), Temminck's Stint ($n=2$), Curlew Sandpiper ($n=3$) and Ruff ($n=1$) survived to hatching.

Generally reproductive success was unusually high in birds in the Lena River Delta due to favourable weather conditions and low predation pressure in 2005.

V.I. Pozdnyakov, Y.N. Sofronov

37. Yana River lower reaches and southern delta,
Yakutia, Russia (70°43'N, 135°26'E)

Phenological observations in the period of surveys from 26 July to 7 September indicated that spring had been warm and early and the season warmer than 2004. Cloudberry ripened by the beginning of August, which is one month earlier than in 2004, and the crop of berries and mushrooms was heavy. Autumn was warm and temperatures dropped below freezing only on 21 August, 2 and 7 September. Frequent rains from late July to late August resulted in a very high water table in the Yana River and flooding of all gravel flats and low shores. Accordingly, migrating waders lost stop-over sites, while local waders were restricted to atypical habitats near the edges of steep banks.

Rodent numbers were low. Northern Red-backed Voles were not recorded, but relatively large *Microtus* sp. voles were observed on several occasions.

Mammalian predators were represented by solitary adult and juvenile Ermines, while tracks of Brown Bears, Wolves, Arctic and Red foxes were not recorded due to flooding of low shores. Arctic Hares were common on islands with willow stands. The abundance of Rough-legged Buzzards was less than in 2004, and we recorded the death, apparently from starvation, of a juvenile buzzard on 25 August, after 2 days of unsuccessful attempts to catch migrating juvenile Common Gulls and Redpolls. A solitary Merlin was recorded on 25 August. Migration of Crows, Herring and Glaucous gulls was underway by 18 August, and Short-eared Owls from 31 August. Large Gulls bred successfully judging by the abundance of juveniles. Crows were regularly recorded in groups of 1-4 birds, and we observed Great Northern Shrike on 1 September.

In total 33 species of birds were recorded, of which 28 were known as breeders for the area. Ringed Plover was the only species of wader in which breeding was confirmed, as we observed an adult bird with a brood on 28 July and solitary juvenile birds on several occasions before 21 August. A group of up to 5 Whimbrels was recorded feeding on berries in a larch mire on 1 August, and a migrating flock of 6 Ruffs was observed on 2 August. Unidentified species of Snipe and juvenile Temminck's Stints were occasionally recorded until 12 August.

A brood of Common Gulls containing 3 chicks was regularly observed feeding on food waste in the vicinity of the base camp until 31 August when the juveniles departed, which is the first breeding record of the species for the area. Solitary Arctic Terns were recorded on 3, 6 and 31 August. Migration of Pintail, Eurasian Wigeon and Teal ended on 21 August, and departures of Black-throated Divers started on 2 September. Willow Grouse were common and bred successfully.

Among passerines migration of Redpolls was already underway at the start of observations on 26 July, while southward migration started on 31 July in White Wag-

tail, 3 August in Little Bunting, 12 August in Willow Warbler, 14 August in pipits, 19 August in Wheatear, 28 August in Siberian Accentor *Prunella montanella* and 30 August in Redwing, Dusky Thrush and Lapland Bunting.

V.I. Pozdnyakov

38. Djukagirskoe Lake. "Kytalyk" Nature Reserve,
Indigirka River basin, Yakutia, Russia (70°30'N,
145°30'E)

Temperatures started to increase at the usual time, and snow started to melt in mid May. The weather worsened on 22 May when rain was followed by a snowstorm, which continued until 25 May. Snowfall lasted for the whole day on 26 May, although the weather was windless and temperatures ranged from -4°C at night to +5°C at daytime. Clear sunny weather established from 29 May, and air temperatures reached +10°C during day time. Snow cover reduced to 50% on flat ground on about 31 May and melted completely in early June. Generally the season was early and warm, weather was favourable, and cold weather did not return.

During our survey on 30 April – 25 July signs of lemming activities and dead animals were recorded. Voles were seen in fishermen's cabins.

Arctic Foxes were common, but no breeding data were obtained. Breeding Rough-legged Buzzards, Peregrine Falcons and skuas were also common. Short-eared Owls, but not Snowy Owls were recorded.

Birds started breeding two weeks earlier than in 2004, and all pairs of Siberian *Grus leucogeranus* and Sandhill *G. canadensis* cranes were already incubating in late May. Snow had mostly melted by the time of waterfowl migration, which was not intensive in the area. We recorded 25 flocks of 10-100 Black Brants passing from 0:53-11:55 a.m. on 31 May at an altitude of 100-150 m. Numbers of Baikal Teal *Anas formosa* increased dramatically compared with previous years, and they were seen everywhere. A nest of Baikal Teals was found on 12 June with a clutch of 10 eggs. The season was generally favourable for birds.

S.M. Sleptsov

39. Bolshoi Khomus-Yuryakh River upper reaches,
Yakutia, Russia (69°59'N, 153°36'E)

Snow melted completely on flat surfaces by 1 June, and ice break-up occurred on 10 June. July and August were warm, but rains occurred frequently in late August. Permafrost retreated to its maximum depth during this season.

According to observations in September and early October lemmings were common, voles numerous and Arctic Foxes rare.

Geese were abundant on floodplain lakes, while cranes were abundant in river valleys and watershed thermokarst lakes. Solitary records of swans, birds of prey and waders were made. Ducks and grouse were

rare, although broods of the latter were not small and survived to fledging successfully. Owls were common and bred.

S.V. Gubin

40. Alaseya River middle reaches, Yakutia, Russia
(69°19'N, 154°59'E)

According to observations from 8-18 September in this southern tundra area close to the northern tree-line, autumn was moderately warm and rainy, with cloudy and windy weather predominating. Temperatures dropped below freezing on clear nights. The main freeze-up did not start before our departure on 18 September. One snowfall occurred but the snow melted during one day.

Lemmings were abundant and bred, while voles were common. Arctic Foxes were not recorded. Numbers of waterbirds, Willow Grouse and passerines were about average with young birds present indicating successful breeding. Owls and Rough-legged Buzzards were also common, but information on their breeding status was not available.

D.G. Fedorov-Davydov

41. Alkygytkyn Lake and Segodnya Pingo, Kolyma Lowland, Yakutia, Russia (69°05'N, 158°28'E)

A hot and dry summer was followed by adverse weather in early September, when we briefly visited the area, with strong northerly winds, drizzle and temperatures ranging from +5°-7°C.

Of mammals only lemmings were recorded, which were common. Of birds cranes were abundant, waterfowl (apart from the absence of geese), gulls and passerines common, owls rare, while raptors and grouse were not recorded.

D.G. Fedorov-Davydov

42. Akhmelo lake vicinity, Kolyma lowland, Yakutia, Russia (68°50'N, 161°01'E)

The summer was hot and dry, while the end of summer and autumn were predominantly warm. Snow reduced to 50% on flat surfaces by 5 May and had melted completely by 11 May. Ice break-up occurred in early June. Snowfalls were not recorded during the summer months, and snow cover did not establish until at least 2 October. Temperatures dropped below freezing at night in the second half of September, but lakes did not freeze over before 2 October with only some shore-ice present before then.

During our two brief visits to the area in autumn we recorded lemmings, voles and most birds as common with young present in waterfowl, grouse, gulls and passerines. Arctic Foxes, Rough-legged Buzzards, and owls were not seen.

D.G. Fedorov-Davydov

43. East-Siberian Sea coast east from the Kolyma River Delta, Russia (69°41'N, 163°20'E)

Summer temperatures were close to average according to local reports. August was slightly warmer than usual.

Just solitary lemmings were recorded in late August – early September, while they were reported as being abundant in 2004 by local fishermen and Reindeer herders. Arctic Ground Squirrels *Spermophilus parryi* were numerous both in 2004 and 2005.

Several pairs of birds of prey, presumably Rough-legged Buzzards, were recorded, as well as numerous Sandhill Cranes, geese and Arctic Hares. Solitary tracks of wolves and Polar Bears were recorded. Grouse were relatively rare.

F.A. Romanenko

44. Karalveem River, western Chukotka, Russia (68°10'N, 166°25'E)

A brief survey of the area to the north of Bilibino settlement was conducted on 1-5 July. Northern Red-backed Voles, Arctic Ground Squirrels and Northern Pikas were common in the area.

Rough-legged Buzzards were common breeding birds, and we found 3 nests on power transmission poles. Long-tailed Skuas bred successfully at a density 1-2 pairs/km². Tracks of Red Foxes, Arctic Hares and Brown Bears were seen regularly. Breeding of a pair of Common Kestrels was an unusual record. Owls were not recorded. Signs of presence of wolf, Ermine, Moose *Alces alces* and Reindeer were recorded. Wolverine was also present according to local reports.

I.V. Dorogoi

45. Kyttyk Peninsula, western Chukotka, Russia (69°15'N, 168°00'E)

The summer was very warm and dry and adverse weather did not occur during the period of surveys from 20 July – 23 August. Weather data of the Chau station are available at the website <http://www.infospace.ru>.

Numbers of rodents decreased substantially compared with 2004.

Arctic Foxes and Rough-legged Buzzards bred in small numbers. Owls and Pomarine Skuas were not recorded.

White-fronted Geese on rivers were found at an average density 0.12 broods/km and 1 bird/km. Their mean brood size was 2.25 chicks (range 1-6, *n*=4). Density of Bean Geese on rivers was 0.56 broods/km and 6.7 birds/km, with mean brood size 3.17±0.55 chicks. Estimates of proportions of breeding birds were 20.8% and 43.1% in White-fronted and Bean Geese, respectively, while juveniles represented 21.3% and 22.8% in these two species.

Breeding success was low in White-fronted Goose, average in swans and high in Bean Geese.

D.V. Solovieva, S.L. Vartanyan

See also:

Solovieva, D., Vartanyan, S.L., Lyatieva, O.A., Dondua, A.G. 2006. Bird fauna of new territories of the reserve. In: Archives of nature of the reserve "Wrangel Island", 2005. In Russian.

46. Kupol gold mining area, Sredny Kayemvaam Stream, upper reaches of the Anadyr River, Chukotka, Russia (66°46'N, 169°34'E)

During a brief visit to the study area on 5-13 July one shrew was captured with the total effort of 200 snap trap-days. Burrows of Arctic Ground Squirrels occurred at a density of 10-15 per 1 ha. Neither lemmings, nor voles were seen or captured.

Red Foxes were recorded several times, and wolf was seen once. Signs of presence were recorded only for Arctic Hare, Northern Pika, Brown Bear, Reindeer. Rough-legged Buzzard was seen once, which contrasts with frequent observations of breeding buzzards in 2003. A nest of Peregrine Falcons with 4 chicks was found on 10 July. Owls, skuas and Willow Grouse were not recorded. Waterfowl were rare. However, the density of Pacific Golden Plover increased on dry gravel tundra up to at least 2 pairs/km².

I.V. Dorogoi

47. Chaun-Palyavaam River delta, Chukotka, Russia (68°50'N, 170°30'E)

Spring was average in timing, and the season was generally very warm and dry. Snow melted completely after rain on 28-29 May, and the air temperatures rose consistently above freezing in the first days of June. Ice-break occurred on 6 June. Warm southerly winds prevailed in the second half of June. Adverse weather events were not recorded. Mosquitoes emerged *en masse* on 18 June.

Weather data from the Chaun Weather Station are available at the website <http://www.infospace.ru>.

An increase in vole numbers observed in 2004 represented, probably, a subdued peak, because voles were very rare in 2005, while lemmings were not recorded at all.

Based on observations on 12 June – 19 July both Arctic Foxes and Rough-legged Buzzards were uncommon and did not breed. Owls and Pomarine Skuas were not recorded.

Nesting density of Bewick's Swan increased compared with 2004 and reached 1.96 nest/km². Breeding ducks included Pintail, Greater Scaup, Long-tailed Duck, King and *Somateria fischeri* Spectacled eiders. Density of nesting Spectacled Eiders was 2.21 nest/km² (1.89 nest/km² in 2004), and their breeding success of 16.5% was still relatively high, although low

compared with 28.7% in the previous year. Other species of ducks also bred successfully.

Ross's Gulls and Grey Phalaropes did not nest in 2004-2005, but bred in 2003. Breeding waders included Grey Plover, Turnstone, Curlew Sandpiper, Dunlin, Red-necked Phalarope, Long-billed Dowitcher and Pectoral Sandpiper (the latter species at a very low density in 2005).

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

See also:

Solovieva, D., Lyatieva, O. 2006. Spectacled Eider (*Somateria fischeri*) Research in the Chaun-Delta, West Chukotka, Russia, 2005. Annual Report Prepared for Fairbanks Fish and Wildlife Field Office U.S. Fish and Wildlife Service.

Solovieva, D., Vartanyan, S.L., Lyatieva, O.A., Dondua, A.G. 2006. Bird fauna of new territories of the reserve. In: Archives of nature of the reserve "Wrangel Island", 2005. In Russian.

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

Prolonged warming with heavy rains in the second half of October 2004 resulted in the formation of thick ice on the tundra surface. Snow accumulation was low during the winter. The spring of 2005 was characterized by early snow melt with warm conditions in late May and June, cool July, warm August and September. In general the weather was dry during breeding season 2005 on Wrangel I.

Numbers of lemmings were very low all over Wrangel I. in 2005, which was also due to their low survival following thaws and icing in October 2004.

Numbers of Snowy Owls were low and they did not breed. Survival of Reindeers was low during winter 2004-2005, most mortality occurring in the second half of the winter. Thousands of Reindeer carcasses were found on Wrangel I. in 2005, and approximately 1500-2000 individuals of about 7500 survived to spring.

Numbers of Arctic Foxes on the island were low, as many of them died during the winter. The sea around Wrangel I. did not freeze until mid November and Arctic Foxes had to stay on the island. Low lemming abundance after October's rains resulted in a shortage of food in the first half of the winter and many foxes perished prior to the appearance *en masse* of Reindeer bodies. Breeding activity of Arctic Foxes was very low, and we found only 4 litters on the whole of Wrangel I. and a single one at the Tundra River Colony of Snow Geese *Anser caerulescens*.

Breeding phenology of Snow Geese was 4-5 days earlier than average in 2005. The first nests were initiated on May 26 at the Tundra River colony, and the peak of nest initiation occurred on 29-31 May. Mean clutch size was 4.16±0.12 ($n=123$) at the Tundrovaya River colony in 2005. Fewer than 500 eggs were abandoned in the colony (approximately one egg per 100 nests).

Geese at the Tundrovaya River colony produced about 200,000 eggs in 2005, of which about 145,000 (72.5%) survived to hatching. Hatching started on 24 June in geese, which was earlier than the average June 27 for the period from 1970. The peak hatching occurred on 26-28 June. The first broods started to leave the colony on 25 June, as in 2004, moving to the northern plain, which bears name the Tundra of Academy. The majority of broods followed the Tundra River, because the tundra was dry elsewhere due to low precipitation in summer. Mixing-up of broods occurred at this time, and approximately 5% of pairs with broods adopted goslings from other broods. A record number of goslings in a brood at this time was 17, while the mean brood size just after leaving the colony was 3.78 ± 0.08 ($n=480$). 5.5% of all families consisted of 7 or more goslings, and these enlarged broods included 23.6% of all goslings. Mixing-up of broods can represent a mechanism of gene exchange between the two populations of Snow Geese on Wrangel I.

The area occupied by the Tundrovaya River colony did not change much in 2005 compared with the previous 15 years. However, the high density of 48,000 nests in 900 ha was revealed using ground transect counts. Nesting success (proportion of nests with at least one egg hatched) was high (82.3%) in 2005, but predator activity was also high. There were about 8500 unsuccessful nests. Numbers of Arctic Foxes were below average, except for the colony area. Glaucous Gulls occurred in high numbers, up to 100 birds at a time. Similarly to the situation in 2004 three adult male muskoxen visited the colony and were flushing incubating geese from their nests, which resulted in predation of eggs by Glaucous Gulls. Apart from traditional predation by Arctic Foxes and Glaucous Gulls, geese nests were also destroyed by Wolverines in 2005. The number of Wolverines has increased on Wrangel I. in recent years, and they became regular visitors to the goose colony.

We observed a family of geese departing from the colony on June 29 in which the male belonged to the dark blue phase whilst female was white. This pair led 4 goslings: two dark and two light.

Breeding numbers of Snow Geese outside the Tundrovaya River colony did not exceed 200 pairs on the island. They nested in association with territorial Snowy Owls, but we did not find any nests of the latter species.

Goose families occupied the whole Tundra of Academy and even the north-eastern part of the island by mid July, about two weeks after the peak of hatching in the Tundrovaya River colony. Goslings had to move distances exceeding 120 km after hatching. Snow Goose families were widespread in this part of the island. Numbers of predators were low (about one Arctic Fox per 100 km of survey) in the Tundra of Academy which favoured survival of goslings even in large families. Mean brood size was 3.25 ± 0.14 ($n=307$) just before the geese departed from

Wrangel I. in August, while the largest family consisted of 31 (!) goslings. Enlarged families (7 or more goslings) were still abundant (4.9%), and included 16.8% of all goslings. This indicated a very low impact by predators on the survival of goslings before departure.

V.V. Baranyuk

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

Snow melt started at the very end of May according to the weather station data, and June was relatively warm. Mass appearance of broods of waders and passerines in early July indicated favourable weather conditions early in the birds' breeding season. The weather was dry and warm in July, with the exception of the period from 9-14 July when snowfalls occurred daily and air temperatures dropped below freezing at night, which could have adversely affected the survival of wader chicks. August was cool and rainy, September was relatively warm with temperatures above freezing on most days.

According to observations made from 26 June – 19 September lemming numbers were very low in 2005 across all landscape regions of Wrangel Island. Counts of undersnow nests yielded an average density of 1.01 nest/km (range 0-4.0) indicating very low intensity of undersnow reproduction.

Numbers of Snowy Owls were low, but they occurred in small numbers in all landscape regions at an average summer density of 0.21 bird/km (range 0-1, total transect length=1197.4 km). Density of owls in the study plot (45 km²) halved compared to all the previous years and was decreasing from 0.27 bird/km in late June to 0.16 bird/km in late August. The highest density of owls was observed in June – August in the study plot at the centre of the island, and in September at the southern plain in the Somnitelnaya Bay area.

Solitary pairs of Snowy Owls attempted reproduction, but failed due to the low abundance of lemmings. Only 7 of 122 surveyed nest scrapes across 81 breeding territories in different parts of the island gave some signs of unsuccessful reproduction by owls. It means that lemming numbers were so low even during snow melt that owl males failed to supply females with the minimum amount of required food. Not a single chick was recorded during the whole survey period until 20 September, which indicated complete breeding failure in Snowy Owls on the island.

In the study plot Snowy Owls were distributed by breeding territories, and two territorial conflicts were recorded. Owls hunted lemmings despite low numbers of the latter. Active use of alternative food by owls was aided by high numbers of tundra birds, for example numerous broods of waders crowding into the floodplains of creeks in early June. We did not observe intensive hunting by owls on moulting geese, but Snow Buntings were taken by male owls, and Long-tailed Skuas also suffered from strong predation pressure by owls. We observed Snowy Owls feeding

on the carcase of a Reindeer taken by wolves, but owls were never recorded on partly mummified carcasses of Reindeers that died during the winter. Owls were observed hunting lemmings on the southern coast in September, although ducks and phalaropes were abundant in the bay.

Numbers of Arctic Foxes were very low everywhere on the island, and reached the lowest value on record since the start of observations in 1990 on the study plot, 0.13 fox/km². Mean density of foxes on excursions was 0.11 fox/km (range 0-0.26). A decreasing trend in Arctic Fox numbers during the last 3 years followed a similar trend in lemming abundance, as the availability of alternative food had no considerable effect on the dynamics of the island population of Arctic Foxes.

In spite of the low lemming numbers Arctic Foxes bred, and some pairs were successful. Low lemming numbers should have had a stronger impact on the reproductive effort by territory faithful Arctic Foxes than on nomadic Snowy Owls, but this was not the case. Reproduction of Arctic Foxes in 2005 was probably made possible by the high level of mortality in Reindeers in February-March, but in spite of the availability of frozen Reindeer carcasses the proportion of Arctic Foxes attempting to breed did not exceed one third of the population surviving the winter. The density of breeding pairs was low everywhere and had a mean value of 0.024 pair/km (range 0-0.08, $n=196$ km of counts). The density of dens was 0.02 den/km² on the study plot, and the nearest neighbour distances between dens with broods ranged from 35 to 60 km ($n=6$). In general 10.5% ($n=57$) of dens on the island were occupied, which represents a three-fold decrease compared with a previous minimum record in 1990. Foxes in a few pairs raised solitary cubs, and we expect low numbers of Arctic Foxes in 2006 on the island.

We found 5 Arctic Fox dens dug out by wolves. Wolves and wolverines destroyed 10% ($n=50$) of Arctic Fox dens during the last 5 years, which indicated a considerable pressure on the fox population by increasingly abundant predators.

Solitary Pomarine Skuas were recorded occasionally on migration along the island coast, and they were not observed inland during the breeding period. Long-tailed Skuas nested everywhere on the island, but the proportion of breeders in the population accessed on the study plot was 74% ($n=38$). Nesting density was 0.31 pair/km² in late June. Breeding success was very low in Long-tailed Skuas, and we found only 4 broods with fledged chicks in different parts of the island. Given favourable weather conditions low reproductive performance should have been related to low lemming abundance, although normally Long-tailed Skuas breed successfully using alternative food like insects and wader chicks, and the latter were abundant in 2005. Mass migration of Long-tailed Skuas started earlier than average, and most of them left inland ar-

reas by mid August. We observed solitary pairs on the Yuzhnaya Plain in September.

Birds of prey were recorded in different parts of the island from 20 August, and 6 of 7 records were eagles or sea eagles which was probably explained by the abundance of Reindeer carcasses. Birds identified with certainty included Gyrfalcon, juvenile Golden Eagle and Bald Eagle *Haliaeetus leucocephalus*.

Brent Geese and most Common Eiders did not breed, presumably due to the absence of breeding Snowy Owls. Common Eiders were common in the inland areas of the island, but we found only isolated nests in different parts of the island, while eider colonies in the surveyed territories of owls ($n=81$) were absent. Among 13 eider nests found 54% were within owl territories, and the rest of them in the vicinity of rivers or creeks. Predators, presumably Arctic Foxes, destroyed 11 nests and captured female eiders on 2 nests.

Snow Goose colonies were not found within 81 surveyed territories of Snowy Owls, and geese broods were not recorded on the study plot in the period of mass movement of broods. However, approximately 60 pairs of moulting geese with broods were recorded in the Mamontovaya River valley, 1 brood in the Gusinaya River valley and approximately 10 broods in the vicinity of Blossom Cape. Mean brood size was 3.4 goslings (range 2-5, $n=10$) in the Mamontovaya River valley. While geese broods in this latter locality could have originated from the main colony in the Tundrovaya River valley (such movements were recorded in 1985), broods at the Gusinaya River and Blossom Lagoon could not be related to the main colony. Thus, a small number of geese was probably breeding within owl territories and survived to hatching due to the low numbers of Arctic Foxes. A major part of the Snow Goose population bred successfully at the main colony in the Tundrovaya River valley.

Counts of geese with broods were carried out in the fledging period from 4-7 August in the Tundra of Academy, Tundrovaya River valley. Along a transect of 37 km we recorded 3000-4000 geese, and mean brood size at fledging was 3.1 juveniles (range 1-10, $n=58$). Remains of four geese were found including 1 adult bird and 3 chicks. Chicks with damaged legs and restricted ability to move were recorded in 3 flocks; in other years such young did not survive to fledging. There were no signs of predatory activities by wolves and wolverines; Arctic Foxes were very rare and Snowy Owls rare. Thus predation pressure on geese in the brood-rearing period was low.

We observed an adult female Polar Bear *Ursus maritimus* pursuing a flock of geese with young in the Neizvestnaya River valley, but the outcome of this hunt was not determined due to the influence of the observers' presence.

I.E. Menyushina

50. Mallen Lagoon, Koryak Highlands, Chukotka,
Russia (61°56'N, 174°51'E)

The weather was warm during the period of observations from 20-27 July, with alternating strong winds and calm weather, rains, fogs from sea and periods of clear sky. The tundra was dry, and some ephemeral water bodies and bogs dried out.

Rodent numbers were low, as we recorded a single vole (in the colony of Slaty-backed Gulls and Common Eiders on Ptichy Island of the lagoon). Under-snow nests of rodents were solitary, Arctic Ground Squirrels, Hares and Northern Pikas (in the mountains) were rare.

Red Foxes and Brown Bears were the only mammalian predators, but occurred in high numbers. A fox litter was found near the camp, but adult animals and another litter were also observed far from the camp. Brown Bears were observed almost daily at an average rate of 2.1 per day, with a maximum of 5 animals. Owls and Rough-legged Buzzards were not seen, while Peregrine Falcon and White-tailed Sea Eagle were seen once each. Long-tailed Skuas were solitary, while Arctic Skuas and Ravens were recorded regularly in small numbers, some pairs with broods. Slaty-backed Gulls *Larus schistisagus* predominated among common large gulls, and up to 200 birds of this species were observed scattered on the mud flats and coastal meadows at low tide.

Aggregations of moulting waterfowl on the lagoon and surrounding lowland included approximately 1000 Greater Scaups, 100s of European Wigeons, Harlequin Ducks, Common Eiders and Bean Geese. About 900 feeding Dunlins and Red-necked Stints *Calidris ruficollis* were counted on the tidal flats on 26 July, and over 15,000 Kittiwakes were roosting there at low tide.

The abundance of breeding birds was very low, and common birds with broods were represented only by Buff-bellied Pipits *Anthus rubescens* in low mountains and bush-birds in willow stands along several streams. Willow Grouse were also seen in riparian willow thickets, including two broods of 5 and 8 chicks. Chicks or adults birds alarming near broods were recorded in Red-throated, Black-throated and Pacific Gavia *Gavia pacifica* Divers, Red-necked Grebe *Podiceps grisegena*, Emperor *Anser canagicus* and White-fronted geese, Teal, Long-tailed Duck, Sandhill Crane, Pacific Golden Plover, Ringed Plover, Wood Sandpiper, Red-necked Phalarope, Red-necked and Temminck's stints, Dunlin and Spoon-billed Sandpiper *Eurynorhynchus pygmeus* (2-3 broods of the latter species). The almost complete absence of duck broods was surprising.

While breeding success was difficult to judge, it was likely to have varied between different groups of birds. Among seabirds at the colony on the Rubicon Cape Pelagic Cormorants *Phalacrocorax pelagicus* had broods, while most nests of murres and Kittiwakes were empty. Several active nests of Slaty-backed

Gulls and Common Eiders on Ptichy Island contained eggs on 21 July, which clearly indicated loss of all first clutches, presumably due to depredation by bears. Nests of Herring Gull pairs scattered across lowland lakes were also empty. However, observations of alarming Common Gulls, broods of waterbirds, land-birds and bush-birds indicated their successful reproduction. Low overall numbers of breeding birds were probably characteristic of the area.

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R. Schuckard, V.O. Yakovlev

51. Khatyrka River delta, Koryak Highlands,
Chukotka, Russia (62°07'N, 175°25'E)

In the survey period on 7-20 July and 28-29 July cloudy weather prevailed, with 4 sunny days and 2 days with alternating weather. We recorded fogs on 8, rains on 7 and strong to storm winds on 5 days of 15.

Winter tracks of microtine rodents were common on the coastal plain, but undersnow nests were rarely seen, and a single live unidentified small rodent was recorded. We presume that rodents were unevenly distributed and their numbers decreased by summer time. Arctic Ground Squirrels were locally common, but generally rare, particularly in the mountains and on the coastal plain. Hares and Northern Pikas were not recorded.

We surveyed coastal parts of the joint delta of the Khatyrka and Kuem rivers and surrounding moraines and low mountains. Arctic Foxes, Red Foxes and Ermines were not seen. We recorded tracks of Wolf, but a single common mammalian predator was Brown Bear. In the south-east of the delta we recorded on average 3.9 bears per day during the 10-day period, with a record of 14 bears in one day. We made 2 observations of Rough-legged Buzzard, 2 of Peregrine Falcon and 1 of Gyrfalcon. Feathers of dead Short-eared Owl were found. Large gulls were numerous, but they occurred predominantly on sea coasts and around lagoons. Aggregations of Long-tailed Skuas of up to 130 birds were observed on 11-14 July in tundra near the eastern part of the lowlands. Arctic Skuas were regularly seen in small numbers, but some pairs bred judging by their behaviour. A brood of Ravens was recorded near Khatyrka settlement.

Along with gulls, European Wigeons and Pintails were numerous in flocks in the area. Long-tailed Ducks, Greater Scaups and Common Eiders were common, while other waterbirds as well as landbirds were rare. The diversity and numbers of breeding birds were low. Confirmed or probable breeders included Red-throated and Pacific divers, White-fronted Goose, American Scoter *Melanitta americana*, Greater Scaup, Common Eider, Sandhill Crane, Pacific Golden Plover, Ringed and Mongolian *Charadrius mongolus* plovers, Common Sandpiper, Red-necked Phalarope, Red-necked and Temminck's stints, Dunlin, Spoon-billed Sandpiper (3 broods), and several species of passerine birds, primarily in bushes.

We found eggs of divers and eiders destroyed by predators, and a cached goose egg. Given the low numbers of observed broods this indicates considerable pressure of predators on bird clutches. However, low numbers of breeding birds was apparently characteristic of the area, also contributing to low numbers of broods.

P.S. Tomkovich, V. Nilsson, T.E. Noah,
R. Schuckard, V.O. Yakovlev

52. Vaamochka River delta, Koryak Highlands, Russia
(62°39' N, 176°38' E)

Mass emergence of mosquitoes occurred on 26 June. Rodent abundance increased compared with 2003-2004, and was moderate. Arctic Ground Squirrels were common in dry moraine habitats. Red Foxes were rarely seen, although several inhabited dens were recorded in the area. On average one or two Brown Bears were recorded daily. Tracks of Elks were rarely seen, and a single Reindeer was recorded in 3 years. We observed tracks of wolves occasionally, and a single Arctic Hare was known to inhabit the study area.

Birds of prey were rare, but Rough-legged Buzzards and Golden Eagles bred, while Peregrine Falcon, Gyrfalcon and White-tailed Eagle were non-breeders. Short-eared Owl was very rare and did not breed. Arctic Skua was a rare breeder.

White-billed Diver was very rare, but bred successfully in 2005, as we observed a brood with a chick approximately one third the size of an adult bird on 29 July. We recorded 12-15 broods of Red-necked Grebes and approximately 10 broods of Sandhill Cranes in the study area in 2005. White-fronted Goose was a common breeder with mean clutch size of 3.25 eggs. Apparent nest success was 0.47 ($n=34$) and 0.33 ($n=6$) in White-fronted and Emperor geese, respectively.

Redpolls, Little Buntings and Yellow Wagtails were numerous among breeding passerines, while Red-throated Pipits, Dusky *Phylloscopus fuscatius* and Arctic *Ph. borealis* warblers and Lapland Buntings were common.

F.V. Kazansky

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

According to local reports snow accumulation was low in winter, and spring was average in timing. At our arrival on 8 June flat surfaces were 80% free of snow, but in depressions and on northern slopes snow remained until early July. Ice disappeared on 11 June from channels and on 12-15 June from Nyzhnee Vaamychgyn and Pekulneiskoe lakes. Air temperatures did not exceed +10°C during daytime for most of June, and occasionally dropped below freezing at night. A prolonged cyclone established from 17-26 June, which resulted in continuous rains. In late June and early July the weather was warm, dry and sunny, while the last 5 days of July were again cool and rainy. Sea fog occurred frequently. Only 3 days of the

survey period from 8 June to 31 July were windless, while moderate to strong wind prevailed on other days. The water level was average in rivers and lakes, and was decreasing rapidly until mid July. Rapid drying of small waterbodies resulted in perishing of small fish.

One live Collared Lemming was recorded during the whole study period, and another found dead. Grey-sided Voles were seen daily at a constant rate during the study period. Voles were particularly numerous in willow stands along the riverbanks, and newly-born animals were found in moraine hills on 14 July. Voles were active by day, and tame. Arctic Ground Squirrels were extremely numerous both on coastal spits and in moraine hills, and were captured *en masse* by Brown Bears, Red Foxes and Herring Gulls.

Red Foxes were seen twice on coastal spits, while their inhabited den was found 10 km to the north of the settlement in moraine hills. Brown Bears frequented all coastal spits, including in the vicinity of the settlement. Local reports indicated that up to 17 bears could be seen on a coastal spit after salmon spawning commenced. So high density of bears, particularly in marginal parts of spits (most distant from the settlement), resulted in depredation of many nests of large birds, including nests of White-fronted Geese, Emperor Geese, White-winged Scoters and Rough-legged Buzzards. A nest of Rough-legged Buzzards containing 3 eggs at an early stage of incubation was found on 11 June 9 km to the west of the settlement. The adult birds stayed for 2 weeks in the nesting territory after depredation of the nest. The southern edge of the moraine area was regularly visited by a pair of Golden Eagles as well as by wandering immature and adult White-tailed Sea Eagles. Gyrfalcon was recorded 4 times in marginal parts of spits, Peregrine Falcon, Merlin and Short-eared Owl one time each.

One nest of Arctic Skuas was found in moraine hills, and these birds were uncommon on the spits until early July. However, numbers of Arctic Skuas increased dramatically after chicks hatched in the majority of Ringed and Mongolian plovers, when flocks of up to 30 skuas appeared. Long-tailed Skuas did not nest, and were an order of magnitude less abundant than Arctic Skuas. Large white-headed gulls were numerous everywhere and nested on the islands of Vaamychgyn and Pekulneyskoe lakes and on marginal parts of spits. The proportion of different species was as follows: Herring Gull - 10, Glaucous Gull - 2 and Slaty-backed Gull - 1. These species suffered from eggings by humans, while nests in marginal areas were destroyed by bears. Ravens nested successfully in the settlement and in moraine hills, where aggregations of up to 15 juvenile birds accompanied by adults were recorded.

Sandhill Cranes were rare, but chicks hatched in all 3 pairs recorded. A single nest of 3 survived to hatching in White-fronted Geese. Breeding was confirmed in Pintail, Teal, Greater Scaup, White-winged Scoter and Common Eider, but broods were found in none of

these species. Clutches of Common Eiders especially suffered from predation by skuas and large gulls on spits and by humans and dogs near the settlement and on islands.

Fledglings were recorded in Skylark *Alauda arvensis*, Red-throated and Buff-bellied pipits, White Wagtail, Wheatear, Snow and Lapland buntings, while breeding output in Common Redpoll and Dusky Thrush was not determined.

Breeding waders on spits included numerous Ringed Plovers and Red-necked Phalaropes, common Spoon-billed Sandpipers, Mongolian Plovers and Pacific Golden Plovers, rare Dunlins, Wood Sandpipers and Temminck's Stints. Dunlin, Red-necked Phalarope and Pacific Golden Plover were common in moraine hills, while Red-necked Stint was rare there. Successful fledging was recorded in Spoon-billed Sandpiper, Ringed Plover, Dunlin, Red-necked Stint and Red-necked Phalarope.

Breeding success was low in waterfowl, birds of prey and gulls due to high predation pressure and eggging by humans. Breeding performance of waders and passerines was more likely high due to favourable weather conditions and low pressure by predators (primarily Arctic Skuas and Ravens). In Spoon-billed Sandpiper the mean clutch size of 3.65 was lower than in 2003, when the average was 3.81. With only 10 out of 15 nests successfully hatched, the nesting success was also lower than in 2003. The overall estimate of the total breeding success in 2005 is likely to be around 0.66 chicks per pair, giving an estimated 26 young Spoon-billed Sandpiper produced in Meinopilgyno in 2005.

N.N. Yakushev, M.P. Suldin, C. Zöckler

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

The weather was as usual in July. Precipitation in June and July was within the normal range for the area. The first intensive rains resulting in flooding of rivers occurred on 8-14 August. Autumn was warm and prolonged.

The abundance of microtine rodents was above average, while numbers of juvenile Arctic Ground Squirrels was the highest on record since the start of observations in 1997.

Arctic Foxes and Ermines were not recorded, while observations of adult and juvenile Red Foxes were more common than usual. Numbers of Brown Bears were similarly high as previously, and they regularly destroyed nests in all the known colonies of gulls and Common Eiders. Short-eared Owls were recorded twice, while generally rare Snowy Owls were not seen.

Spawning of Far-eastern Capelin *Mallotus villosus* overlaps in time with nesting in many birds. We assume that Herring Gulls and Slaty-backed Gulls prefer to feed on Capelin in years of its high abundance, which results in reduced predation pressure on nesting

birds and higher nesting success of the latter. The abundance of spawning Capelin was not high in 2005, which led to higher than normal predation on birds by large gulls. White-fronted Geese were unusually rare, including unmated birds, moulting birds with broods and broods already able to fly. Nesting success was very low in this species, and their departure from the area of Pekulneiskoe Lake was 5 days later than usual. Sandhill Cranes started migrating 2-3 days later, and their departure period lasted longer, than usual.

E.V. Golub, A.P. Golub

55. Beringovsky Settlement, Chukotka, Russia
(63°04'N, 179°22'E)

The weather was warm and dry with fog on some days in the survey periods from 6-8 July and from 31 July – 4 August. Dried out ephemeral waterbodies and some bogs indicated a dry summer. Mushrooms became common in late July, when also the first ripe Crowberries appeared, while Bog bilberry and Cloudberry ripened in early August. This indicated slightly delayed phenology of the season.

Fresh tracks, latrines of rodents and clipped grass were found locally in valley bottoms of streams and on slopes of low mountains. Three voles were seen once on an excursion. Arctic Ground Squirrels were rare in the mountains and common, even locally numerous on the plain. Northern Pikas were heard in many places in the mountains.

Common Brown Bears were the only mammalian predators recorded. A pair of Short-eared Owls bred. Alarming pairs and sometimes nests with chicks of Rough-legged Buzzards were recorded in 5 places within an area of 30 km² in the mountains to the north of the Beringovsky settlement, and this relatively high density indicated availability of sufficient food. Peregrine Falcon and Gyrfalcon were seen once each, Arctic Skuas were recorded rarely and Long-tailed Skuas were slightly more common. At least 4 pairs of the latter species were observed protecting just fledged juveniles on 31 July.

Seabirds were mostly seen on the water near Barykov Cape in early July, which pointed to the absence of clutches at this time. In contrast broods or alarming adults were found in most tundra birds which indicated their successful reproduction (White-fronted Goose, Teal, Greater Scaup, Long-tailed Duck, Common Eider, Red-breasted Merganser *Mergus serrator*, Willow Grouse, Sandhill Crane, Pacific Golden Plover, Ringed Plover, Wood Sandpiper, Wandering Tattler *Heteroscelus incanus*, Red-necked Phalarope, Spoon-billed Sandpiper, Red-necked, Long-toed *Calidris subminuta* and Temminck's stints, Dunlin, Herring Gull, Common Tern *Sterna hirundo*, Common Cuckoo and passerines).

Complete absence of Mongolian Plovers was surprising, as they were found breeding in the area in the 1970s.

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56. Kainupilgen Lagoon area, Chukotka, Russia
(63°26'N, 178°52'E)

Minimum (night) temperatures ranged from 0-+15°C (usually ranging from +7-10°C) in the period of surveys from 7-27 July. Rains occurred almost daily and varied from drizzle to pelting showers, with a thunderstorm on 8 July. Strong easterly winds were common, and a rainstorm lasted for two days on 20-21 July. The highest day-time temperature was +25°C on 7 and 18 July, and it dropped to freezing on 12 July when a strong east to north-east wind occurred.

Pathways of microtine rodents were seen in various sites, usually on hill slopes. Voles were seen only in the vicinity of human settlements, either inhabited or deserted. Arctic Ground Squirrels were unevenly distributed and generally rare. Arctic Hares were recorded twice in the Kenitkay River valley.

Arctic and Red foxes were not observed, but Brown Bears were common near the Kenitkay River and on islands with colonies of gulls and eiders. Rough-legged Buzzard and Gyrfalcon were recorded once each, and Short-eared Owl was seen twice on 6 and 14 July in the Kenitkay River valley.

Large gulls, primarily Herring Gulls, were numerous in particular on the sea coast, in shallow waters and on islands in the lakes. The largest aggregation of gulls, 700 birds, was observed near Dlinny Island, while chicks were found on Ptichy and Lakhtak islands. Long-tailed Skuas were observed in loose flocks of 30-50 birds on Molchalivy Island, and 5 territorial pairs of Arctic Skuas were recorded. Ravens nested on a tower on Molchalivy Island, and a Carrion Crow was seen once on a coastal spit.

Among waterfowl Greater Scaups, Common Eiders and Long-tailed Ducks were numerous, European Wigeons, American and Velvet *Melanitta deglandi* Scoters were common. Breeding was confirmed for Red-throated, Pacific and White-billed divers, White-fronted and Emperor geese, Pintail, Common Eider, Long-tailed Duck, American Scoter, Willow Grouse, Sandhill Crane, Grey and Ringed plovers, Red-necked Phalarope, Spoon-billed Sandpiper, Temminck's Stint, Dunlin, Arctic Tern. Red-necked Grebe, Teal, Wood, Common and Terek sandpipers were probable breeders. Breeding also may have occurred in the Common Snipe, Common Gull and Common Tern. Among passerines breeders or probable breeders included Sand *Riparia riparia* and House *Delicon urbica* martins, Barn Swallow, Red-throated and Pechora *Anthus gustavi* Pipits, Yellow and White Wagtails, Willow and Dusky Warblers, Wheatear, Bluethroat,

Rubythroat *Luscinia calliope*, Redpoll, Little and Lapland buntings.

Up to 75-80% of clutches of gulls and eiders on islands were destroyed by predators. We found the remains of eggs of White-billed Diver, Emperor and White-fronted geese. Chicks of White Wagtail were eaten by Ermine. A clutch of Grey Plovers on a spit perished during a period of adverse weather. Broods of White-fronted Geese were not numerous and occurred mainly on the Kenotkay River and in northern part of the Kainupilgen Lagoon. Broods of eiders became common by 25 July, although records of late clutches, likely replacements, at this time confirmed substantial predation pressure by Brown Bears. Brood size in eiders varied from small (2-5 chicks) with a single female to creches with one female (11-18 chicks) or two females (7-10 chicks).

Predation pressure was strongest in the vicinity of gull and eider colonies. Clutches were also destroyed by dogs and suffered from eggging by local people. Breeding success varied between species, but was probably average overall.

A.A. Kuzmich

57. Anadyr Lowland south, Chukotka, Russia
(63°55'N, 176°45'E)

The weather was predominantly warm, cloudy and dry in the survey period from 9-26 June. The weather was clear on 3 days, changeable on 5; rain or drizzle was recorded on 6 of the 18 days (although on one day the rain was prolonged and intensive). Snow remained only in the valleys of streams and in depressions at the start of survey. The phenology was probably average in the area. Sedges in bogs and buds of dwarf birch started to green from 10 June in the north of the surveyed region, while flowering of *Rhododendron aureum* started from 12 June. Flowering of Cloud-berry and greening of birch leaves were recorded on 15 June in the south of the region, while the main blooming of alpine and tundra plants and currant began on 20 June. Mosquitoes appeared in considerable numbers on 22 June, and became really annoying from 25 June. Large amounts of last-year's Clusterberry and Cranberry were notable in the northern part of the region in the first half of June.

Tracks of rodent activities were seen in different places, but 8 observers recorded only 4 live voles and found 1 dead Tundra Vole during 18 days which indicated overall low numbers of rodents. American Ground Squirrels were rare with the exception of the moraine landscape in the south, where also hares were common on the gravel flats of the Nygchekveem River.

The surveyed area stretched from the lowland to the south of Anadyr city to northern foothills of Koryak Highlands, with habitats ranging from southern tundra to thickets of Siberian Dwarf-Pine *Pinus pumila*. Two records of Arctic Fox and 1 record of Ermine were made in the north, while Red Fox was seen 3 times in the south. Tracks of Wolves were seen in different

parts of the area, but Brown Bears were the most abundant: up to 3 observations per day, at an average rate of 0.7 bears/day, excluding cubs.

Birds of prey were rare. Rough-legged Buzzards were absent on the plain, but 3 nests were found in the Chirinay mountain massif at the south-western edge of the region. Several solitary White-tailed Sea Eagles were seen in the north and centre of the region, and a nest with a clutch was found in the south in the valley of the Nygchekveem River. Peregrine Falcons and Gyrfalcons were rare. Solitary Short-eared Owls were recorded almost daily, and they could have bred in one or two sites. Lapland Owl *Strix nebulosa* was observed in the foothills of Koryak Highlands. Common Long-tailed Skuas were considerably more abundant than Arctic Skuas, and both species bred. Skuas were more abundant in the northern tundra part of the region, compared with the southern part with Siberian Dwarf-Pine thickets. Herring Gulls, as well as Common Gulls in the south, occurred mostly in the vicinity of large water bodies and could not have a large impact on tundra birds. Ravens were recorded everywhere in small numbers, but nesting was likely only in Koryak Mountains in the south-west, where they were common.

The diversity of breeding birds was high, primarily waders, waterfowl and bush passerines. Solitary pairs of Rock Ptarmigans were observed in the north, while the relatively uncommon Willow Grouse was widespread and bred. Hatching started in passerine nests (Pechora Pipit, Dusky Thrush, Little Bunting, Pallas's Bunting) on 21-23 June, while Dunlins and Spotted Redshanks with chicks were observed on 26 June.

Few of the nests that we could check within 1-2 days after finding them were not destroyed by predators. We often found clutches with eggs in the late stages of incubation and with chicks at the end of the survey period, while failed-breeders were not frequently observed, which pointed to nesting success not being below average.

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58. Anadyr city area, Chukotka, Russia (64°43'N,
177°29'E)

Short-term observations were carried out during the period from 30 May to 8 August. According to local reports spring started later than normal, but there was little accumulated snow and warm weather in late May resulted in close to normal phenology. The last intensive snowfall occurred on 27 May, and snow cover had reduced to 10% of ground cover by 30 May in the city and around the airport, but still occupied 90% of the Zolotoy Ridge and distant settlements. The tundra became drier during June, and several small bogs dried out, but the tundra surface became wet again in early August indicating abundant precipitation in July.

Bumblebees, overwintering mosquitoes and the first flowers (e.g., cottongrass) were recorded on 1 June. The water level on the Kazachka River peaked on 2 June. Passerines started egg-laying on 31 May, while nests of Herring and Glaucous gulls on Alyumka Islet contained 1 egg on 1 June. On this date we observed females ready for egg-laying in Wood Sandpiper, Long-toed Stint, Dunlin, Whimbrel, and the first complete wader clutches were found on 5 June. Mosquitoes appeared *en masse* on 30 June. Many waders were seen with broods in late June, and the first duck brood was found in Common Eider on 30 June.

Rodents and signs of their activities were not recorded. Arctic Ground Squirrels were rare, and Arctic Hare was seen once near the airport.

Ermine was the only mammalian predator observed. Avian predators were rare. One nesting pair of Rough-legged Buzzards was found on the rocks of Dionis Mountain. There were solitary records of White-tailed Sea Eagle and Gyrfalcon; owls were not seen. Long-tailed Skuas bred in their usual numbers, and the nest of a single pair of Arctic Skuas was found. Large gulls concentrated on the lowlands which were sometimes inundated with brackish water. Away from traditional localities isolated pairs of Herring Gulls nested in the Kazachka River floodplain, where they had not been found previously. This probably reflects a further increase in numbers of these species.

Most birds bred in their usual numbers. Common Sandpipers were found nesting, although they were considered occasional visitors previously. Observations were made of territorial Terek Sandpipers. Numbers of breeding Arctic Terns decreased compared with 2000.

In spite of recorded losses of clutches and chicks, broods of waders, gulls, passerines and even ducks were common, which indicated favourable conditions for reproduction this summer. The breeding success of tundra birds was probably average.

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59. Kolyuchinskaya Bay western coast, Chukotsky
Peninsula, Russia (66°49' N, 174°48' W)

The weather was warm, calm and sunny in the period of the visit to the area on 24-25 July. The summer was cold according to local reports, and we observed a snow bank still present near coastal bluffs on the Kamakay Bay which is a rare event. Water levels were low in lakes, lagoons and channels which indicated predominantly dry weather during the summer.

Numerous burrows and undersnow nests, as well as bodies of Collared Lemmings were found in a hilly sedge-cotton-grass tundra near Ryrkalen Cape, which indicated high lemming abundance in 2004. High rodent numbers and successful reproduction of Arctic Foxes in 2004 were also reported by local people.

Arctic Ground Squirrels were common in the Kamakay Bay vicinity.

Arctic Foxes were not observed but their tracks were common on the mudflats of lakes and streams. Brown Bears were numerous and we counted 5 animals on 25 July per 40 km of coastline. Birds of prey and skuas were not recorded. Breeding success of waders was probably high, as we observed chicks or alarming adults in Ringed Plover, Turnstone, Western Sandpiper, Dunlin and Red-necked Stint. Concentrations of juvenile Western Sandpipers, Red-necked Stints, Dunlins, Pectoral Sandpipers and Ringed Plovers were feeding on mudflats and shallows in the coastal area on Ven'yakatryn Spit and in the Kamakay Bay. Broods were recorded in Lapland and Snow Buntings, and in House Martins.

I.A. Taldenkov

60. Belyaka Spit, Chukotka, Russia (67°04' N,
174°37' W)

Spring was prolonged, and the first highest ridges were clear of snow when we arrived on 19 May, while a layer of snow at least 15-20 cm thick covered level ground. Air temperatures did not exceed +5°C in late May, while mean daily temperatures remained negative. However, invertebrates were active, greening of sedges and the first flowers of dwarf willows were recorded on 27 May at well-warmed patches. Snow cover dropped to 50% on 27 May in the coastal tundra, on 5 June in the inland areas of the spit and on 12 June on Yuzhny Island. The snow melted completely on flat ground by 15 June in the coastal area. Snow melt occurred 7-10 days earlier at the northern part of the Belyaka Spit than on Yuzhny Island, but was 4-6 days later compared with the southern part of the spit. The summer was cold and dry. Air temperatures regularly dropped below freezing at night until 20 June, and decreased to -8.5°C on 11 June. The cold weather was associated with small snowfalls and hoarfrost formation. The first notable warming occurred after 10 June when air temperatures reached +18°C and the mean daily temperature rose above freezing. Lakes became completely ice-free by 18-20 June and craneflies, chironomid midges and mosquitoes emerged at the same time. Ice on the channel between Belyaka Spit and Yuzhny Island broke during the night of 27 June, which was 12 days later than in 2002 but earlier than in 1986-88 (1-9 July). July was cool. However, in August temperatures did not drop below +5°C. The weather was considerably affected by cold northerly or warm southerly winds. Rains were rare and had no apparent impact on birds.

Tundra Voles were common in the coastal dry tundra on sandy banks with grasses and driftwood, and particularly near the camp. Lemmings were not recorded, but their undersnow nests and pathways were found in moss tussocks, usually along the shoreline of tundra lakes. Numerous burrows and undersnow nests, as well as bodies of Collared Lemmings were found in a hilly tundra at the western coast of the Kolyuchiskaya Bay. These observations along with high numbers of

Arctic Foxes in 2005 indicated high lemming abundance in 2004. Unlike 2002 Arctic Ground Squirrels were common and bred successfully in 2005 in the coastal tundra, particularly near the camp. Their numbers increased in the second half of July when juveniles were leaving their burrows.

Territorial pairs of Sandhill Cranes, singing Snow and Lapland buntings and Wheatears were observed from the start of studies on 20 May. Most species of local waders arrived from 23-31 May, while waterfowl and phalaropes became common after 25 May when open water appeared on coastal lakes and pools in depressions. Copulation of phalaropes was observed on 30 May, while a complete clutch of Sandhill Cranes was found on 31 May. The first nest of Dunlin containing one, probably the first, egg was found on 4 June, and a clutch of Emperor Geese with 7 eggs was found on 15 June. Hatching was recorded on 14 June in Lapland Buntings.

Arctic Foxes were abundant and we recorded 1-3 animals daily in the coastal tundra. They actively hunted Tundra Voles in spring and early summer, and 5 vole bodies were found in the stomach of one Arctic Fox female on 29 May. Although 2 Arctic Fox females were eliminated from the area of the camp on 29 May and 2 July, we discovered in mid July 2 dens with litters, one of which contained 5-6 approximately one month old cubs. Two more dens inhabited in 2005 were found along a stretch of coastal tundra 8-10 km long in the south-western part of the spit. Two adult Arctic Foxes were observed on Yuzhny Island on 19 May and 13 June, while a juvenile animal was recorded there on 28 July. Arctic Foxes destroyed clutches of Emperor Goose, Temminck's Stint and Grey Phalarope; they also took chicks of Spoon-billed Sandpiper, killed a Temminck's Stint female at a nest, but failed to destroy a clutch of White-billed Diver. A considerable increase of clutch and chick loss in waders in the study area in the first half of July was probably due to increased food demand by the growing cubs of Arctic Foxes.

Brown Bears were recorded on several occasions on the spit, and dogs following a tractor of Reindeer herders destroyed one clutch of Sandhill Cranes. We recorded Peregrine Falcon, White-tailed Sea Eagle, solitary birds and pairs of Rough-legged Buzzards, but none of these species bred. A hunting Snowy Owl female was observed in late May, and Short-eared Owls were recorded on several occasions. Skuas did not breed, among them Long-tailed and Arctic were common and Pomarine rare. One of the clutches of Grey Phalaropes under study was presumably destroyed by an avian predator.

Herring Gulls and Glaucous Gulls were numerous in the area and raised chicks successfully, primarily in small colonies along the shores and on islands of the spit lakes. Kittiwakes occurred in 100s on the sea and occasionally visited coastal lakes. Ravens were seen daily but their breeding was not confirmed. Sandhill

Cranes were common, and at least one of their nests survived to hatching.

Breeding success of waterfowl was not high. We found nests of Red-throated, Pacific and White-billed divers, Emperor Goose, Common Eider and Long-tailed Duck, but only clutches of Pacific and White-billed divers and Common Eider survived to hatching. Nests of Common Eiders were particularly successful in the area near the camp. Waterfowl nest success was probably higher on Yuzhny Island, as broods of Common Eiders were common there, and we also recorded a brood of Pintail on the island.

Nest success of waders was high compared with the previous years, as approximately only one third of clutches found in June was destroyed. Hatching was recorded in Dunlins, Temminck's Stints, Rock *Calidris ptilocnemis*, Western *C. mauri*, Red-necked, Spoon-billed and Pectoral sandpipers, Red-necked and Grey phalaropes, Ringed Plovers and Turnstones. However, predation pressure increased considerably in early and mid July in the study area, which led to low survival of late clutches and increased mortality of wader chicks. While the latter could not be precisely evaluated, we estimated that less than half of hatched chicks survived to fledging. Overall reproductive success of most wader species can be evaluated as average, also based on observations on Yuzhny Island in late July. Passerines bred successfully, due to early fledging, and juvenile Snow and Lapland buntings were numerous in the second half of summer.

I.A. Taldenkov

61. Chegitun River mouth, Chukotsky Peninsula, Russia (66°35' N, 171°09' W)

Spring was cold and prolonged according to local reports. The sea was covered with pack ice when we arrived on 30 July, and eider broods were absent on the lagoon, where normally they have appeared by mid July. August was warm, and rain was rare.

Lemmings were not recorded, and voles were considerably less abundant than in 2004. Arctic Ground Squirrels were not recorded at a colony where they had been abundant in the previous 3 years.

A pair of wolves was observed when we arrived in the area. Brown Bears were less abundant than previously. Arctic Fox, Ermine and Wolverine were not recorded.

Two eider broods of 8 chicks in total appeared on the lagoon in late August. Contrary to the previous years all three local pairs of Sandhill Cranes failed to produce offspring. Herring Gulls were unusually abundant, and we counted approximately 200 birds feeding on the lagoon or in the sea nearby. A pair of Ravens nested on a borderline tower and raised two young, however, more birds, up to 17 at a time, occasionally gathered there. A late nest of Rough-legged Buzzards containing two small chicks was found in early August on a rocky slope. Later, in mid-August strong wind destroyed the nest, and the chicks perished.

L.P. Maltseva

62. Lavrentia settlement, Chukotski Peninsula, Russia (65°35'N, 171°00'W)

According to observations from 21 June – 26 August the weather was hot and very dry in late June, after which rains occurred for two weeks. In other respects the weather was typical for the area.

Lemmings were rare, Arctic Foxes were not recorded, but Red Foxes were observed. Ravens are characteristic of the area. At least some skuas nested successfully. Owls were not seen.

Crops of mushrooms and berries were high, and there was an unusually high abundance of fish.

A.I. Ivaschenko

63. Saint George Island, Pribilof Islands, USA (56°35'N, 169°40'W)

The weather was drier than usual and all ponds, including relatively large ones, dried out.

We observed numerous signs of lemming winter activities, but only 4 animals were seen from 19 May – 11 August.

Arctic Foxes were common and bred as usual. Reproductive success was very low in murres and kittiwakes. Egg-laying occurred at the usual time in murres, but clutches were abandoned *en masse* apparently due to insufficient food. Birds were very lean, and we could see the keels of birds resting on the rocks. Red-legged Kittiwakes *Rissa brevirostris* abandoned almost all clutches in early June, while the reproductive success of Black-legged Kittiwakes was slightly higher but still very low. The timing of reproduction was close to average in Least Auklets *Aethia pusilla*, and food supply for chicks was sufficient in this species judging by visual observations of adult birds. Breeding of Red-faced Cormorants *Phalacrocorax urile* appeared normal as well. Two nests of Rock Sandpipers with complete clutches were found in June.

N.B. Konyukhov

64. Alaska Peninsula, Alaska, USA (57°24'N, 158°04'W)

We have intermittent snow through the winter, so date of snowmelt is not a definitive indicator in this area. Naknek River at King Salmon broke on 23 February, refroze on 3 April and final break-up was on 7 April.

Point counts on 16 plots 5km x 5km dispersed across lowland areas were undertaken on 8 May – 2 June. The weather was warm and rainy during the survey period.

Numbers of voles were low. Arctic Foxes were not recorded, while Red Foxes occurred in low numbers. Few non-breeding Rough-legged Buzzards and owls were recorded.

At least nine shorebird species showed evidence of breeding. Nests of several predators were also found.

We did not remain at any one plot long enough to evaluate the breeding success of nests found incidentally. We have not visited these plots previously so no between-year changes could be noted. More predator detections per point surveyed were observed in 2005 than in 2004. However, the quantitative analysis of density, yet to be calculated, will give us a better measure of actual predator levels.

S. Savage

65. Area between Port Heiden and Ugashik Bay,
Alaska Peninsula, Alaska, USA (57°23'N,
157°44'W)

During 6-10 May we surveyed a region centered 175 km SSW of King Salmon to assess the breeding status of Marbled Godwits *Limosa fedoa*. The phenology was average in timing, and the weather was warm, dry, and with no extreme weather events occurring during our presence.

There was no human activity in the area other than our presence. The assessment focused on the avifauna associated with the wet graminoid/alder/willow community away from the coast but before the slope to the Alaska Range. Two, 2-person crews conducted line transect surveys with distance estimation over two areas suspected of supporting nesting godwits. These were followed by 840 km of aerial line transects (with distance estimation) from a helicopter over a much larger portion of the area. During ground surveys we recorded all birds and mammals observed.

We failed to note much sign of small rodents. Red Foxes and Wolves occurred in low numbers. Four Short-eared Owls were recorded on two plots, and we were told about a nest found by a Fish and Wildlife crew. No breeding of skuas was recorded. A single Arctic Skua was seen flying on 1 of the 2 plots. Northern Harriers were the most abundant potential predator with 6 males and 2 females recorded on the 2 plots.

Because the surveys did not begin until almost complete snowmelt and they were only conducted over a 5-day period, we could not adequately assess the breeding conditions in the survey area (*i.e.*, the area had not been surveyed previously and no effort was made to determine nesting success). Preliminary analyses of the aerial data indicate a total nesting population in the surveyed area of 1,352 Marbled Godwits (859-2,204 95% CI). This compares very favourably with estimates derived from previous counts of birds on nearby intertidal areas during both pre- and post-breeding periods. In 2006, we will visit two additional ground census plots and conduct aerial line transects of what is suspected to be the entire breeding range for the *L. fedoa beringiae* population.

R.E. Gill, Jr., M.N. Dementyev

66. Naknek River, Alaska Peninsula, Alaska, USA
(58°42'N, 156°46'W)

We have intermittent snow through the winter, so date of snowmelt is not a definitive indicator in this area. Naknek River at King Salmon broke on 23 February, refroze on 3 April and final break-up was on 7 April. Climate summaries by National Weather Service are available at <http://www.wrcc.dri.edu/cgi-bin/cli-MAIN.pl?akking>.

Voies were present, but it was not possible to estimate their numbers.

Rough-legged Buzzards, skuas, owls, ptarmigans and Sandhill Cranes were recorded in small numbers. Waders were common and waterfowl abundant.

This study did not focus on bird breeding success. However, first arrival dates, date of peak abundance and peak abundance levels of waterfowl were reported and compared against 14 year averages for the same study. In general, peak counts were high (especially for dabblers, geese and swans) and many arrival and peak count dates were early for many species. Peak numbers may have been triggered as weather conditions further north held birds at this staging location. Disturbance data is also recorded. This year bald eagle disturbance events decreased while some human disturbances increased.

S. Savage

67. Katmai National Park and Preserve, Alaska, USA
(59°07'N, 155°23'W)

As part of a three-year project to produce an inventory of the montane-nesting birds of National Parks of southwest Alaska, we visited 23 sites in Katmai National Park and Preserve from 11–25 May. Weather conditions varied considerably over the course of our visit. Observers experienced rain, wind, and sleet, as well as clear, calm and sunny conditions. Based on discussions with researchers familiar with the region, it is our belief that the spring conditions were typical and the wide range of weather conditions we experienced was likewise typical. Low elevation sites were mostly snow-free and nearly all lakes and ponds in the region were free of ice upon our arrival. In contrast, high elevation sites, especially those along the Shelikof Strait coastline, were still completely covered in snow with very little avian activity noted during our period of study. Western sections of the Katmai region were mostly snow-free during our survey period, in contrast to eastern sections of the Park with delayed spring phenology typified by near complete snow cover and below-normal temperatures. We experienced no extreme weather events during our two-week stay.

No evidence of lemmings or voles was noted during our survey period, but Brown Bears, Wolverine, Lynx, Caribou, Moose, and Arctic Ground Squirrel were observed throughout the region. The most widespread raptors were Northern Harrier, Bald Eagle, Merlin, and Golden Eagle, observed on 17, 11, 8, and 4

10x10 km study plots, respectively. Rough-legged Buzzard, Short-eared Owl, and Arctic Skua were all encountered on only two plots each.

Noteworthy bird observations included sightings of breeding Baird's Sandpipers *Calidris bairdii*, Surfbirds *Aphriza virgata*, and Wandering Tattlers at locations at or beyond the southern limit of their known breeding range, and unexpectedly high numbers of Whimbrel and American Golden-Plovers *Pluvialis dominica* in the area surrounding Kukaklek Lake. Pacific Golden-Plovers, while known to be common in low-lying areas of the Alaska Peninsula, were detected at sites further inland than expected. In contrast to these intriguing shorebird observations, observers were struck by the relative dearth of high-montane passerines (e.g., Northern Wheatear, Say's Phoebe *Sayornis saya*, Gray-crowned Rosy-Finch *Leucosticte tephrocotis*), species which were detected in low numbers at Lake Clark National Park and Preserve in 2004. We will conclude the inventory of this region in the spring of 2006 by visiting coastal sites in both Katmai and Lake Clark National Parks.

D.R. Ruthrauff, T.L. Tibbitts, R.E. Gill, C. Handel

68. Naskonat Peninsula, Yukon-Kuskokwim Delta, Alaska, USA (60°58'N, 165°00'W)

Seasonal timing was near average and delayed in comparison to the very early timing of snow melt and habitat availability in 2003 and 2004. An early spring snowmelt led to emperor goose nesting phenology in 2005 about 6 days earlier than average. Flowering dates for *Carex* spp., *Petasites frigidus*, *Cornus canadensis*, *Rubus chamaemorus*, *Ranunculus Pallasii* and green-up of *Salix ovalifolia* and *Hippuris vulgaris* were 10 days later than 2003 and 2004 but the first large mosquito emergence was only 5 days late. Glaucous Gull clutches began hatching from 8-11 June. First hatching of Emperor Geese and Cackling Canada Geese *Branta hutchinsi* was on 8 June and 10 June, respectively.

No microtines were observed and there was little over-winter sign indicating their presence. A large storm surge in winter 2003 inundated much of the area and microtine populations appear slow to repopulate.

The spring 2005 emperor survey estimate was 54,000 geese, 14% higher than in 2004. These estimates have declined an average of 1% per year during 1996-2005. Spring indices of breeding pairs from the delta coastal survey were unchanged, and the total bird index declined 7% from 2004 levels. An early spring snowmelt led to emperor goose nesting phenology in 2005 about 6 days earlier than average. Yukon-Kuskokwim Delta nesting surveys indicated increased nesting effort, average clutch size, and nest success in 2005, and resulted in the second highest egg production level since 1985. Conditions were favourable during hatching and good bird productivity is expected. One Arctic Fox was heard, few tracks were seen and their predation on nesting birds, primarily Greater White-fronted Geese, Cackling Canada Geese, Emperor Geese and

Brant, appeared low in the area. Avian predation, primarily by Glaucous Gulls and Arctic Skuas, appeared average.

Very few Red Phalarope and Ruddy Turnstones were observed providing further documentation that abundance of these species is below historic levels.

C.P. Dau, D.M. Troy

See also: U.S. Fish and Wildlife Service. 2005. Waterfowl population status, 2005. U.S. Department of the Interior, Washington, D.C. 60 pp.

69. Yukon-Kuskokwim outer Delta south-west, Alaska, USA (61°15'N, 165°38'W)

Flooding occurred at the Kokechik Bay Brant colony during nest initiation (mid-May) as evidenced by displaced down and eggs among active nests during our visit on 12 June. Nests within 300 m of the bay shore were affected.

The total number of Brant nests was up from 2004, probably as a result of reduced human activity at 2 colonies (Kokechik Bay and Baird Island) and fox trapping for Spectacled Eider protection at one colony (Kigigak Island). However, fox predation was heavy during nest initiation and early in incubation. The trend in the annual mean of estimates continues to be negative despite the improved success this year.

Numbers at Kokechik Bay are still below the average of 6893±902 nests from 1995-2000, which argues for further reduction in disturbance by humans at this colony. Also, contributing to lower numbers of nests at Kokechik Bay was the occurrence of flooding of nests within 300 m of the shoreline. Undisturbed nests were found among flooded ones indicating that flooding probably occurred early in nest initiation. The estimated number of nests at Baird Island also was higher than last year, despite evidence of continued human activity in the colony.

R.M. Anthony

70. Kanaryarmiut Field Station, Yukon Delta National Wildlife Refuge, Alaska, USA (61°22'N, 165°08'W)

When the field crew first arrived at Kanaryarmiut Field Station (KFS) on 25 April, the tundra was >95% covered with snow and all local rivers and lakes were completely frozen over. Snow cover reduced to 50% on 29 April and completely melted on flat surfaces on 11 May. Less than 2 cm of snow accumulated on 5 and 17 May, which then melted within 24 hours. By the end of April, rivers were slushy with numerous holes and breaks in the ice.

In terms of environmental conditions, 2005 was a much later year than the record early year of 2004. In 2004, the upland tundra was >95% snow-free when we arrived on 21 April; in 2005, that condition did not occur until 10 May (>19 days later). In 2005, the Kuyungsik River broke on 24 May, 18 days later than in 2004, and our float plane lake was ice-free on 26 May, 15 days later than in 2004.

Voles were observed on 2 days during a three-month period.

Despite environmental conditions being over 2 weeks later than in 2004, shorebird migration was the earliest in a quarter century of record-keeping. Fourteen species regularly occur here during spring migration, 9 common local breeders, 2 species that are primarily migrants (with low numbers of local breeders), and 3 that are exclusively migrants. Among those 14 species in 2005, 6 set or tied the previous early arrival record, and 4 others arrived on the second-earliest dates yet recorded in this region. Prior to 2005, 2004 was the earliest year for shorebird arrival. 2005 arrival dates for 5 species were earlier than in 2004, and 6 other species arrived on the same date in both years. Among the 11 locally-breeding species, arrival dates preceded the long-term mean by 4-12 days, and averaged a week earlier than the species-specific long-term means. At the time all 9 commonly-breeding species had arrived (2 May), upland areas still had 30-40% snow-cover, and lowland meadows were >80% snow-covered.

Shorebird clutch initiations at KFS were not well correlated with the remarkably early arrival dates. In 2004, the earliest Rock Sandpiper nest was initiated on 4 May (11 days after arrival), and five of nine nests on the study plot were initiated on or before 11 May. In contrast, in 2005, the earliest Rock Sandpiper clutch was not initiated until 14 May (17 days after arrival). In 2004 and 2005, both Western Sandpipers and Dunlin arrived on 30 April. In 2004, the first Western Sandpiper nest was initiated on 11 May, and >10 nests had been initiated prior to 15 May. In 2005, the earliest nest was not initiated until 15 May, which is only about 1 day earlier than the mean initiation date over the preceding 7 years. Similarly, the first Dunlin nest was initiated on 12 May in 2004, but not until 15 May in 2005. In both 2004 and 2005, the first Red-necked Phalarope clutches were initiated late in the third week of May. The earliest nest in 2005 was found with 5 eggs on 27 May, and hatched on 8-9 June. We do not know if all 5 eggs were produced by a single female.

In 2005, the combined frequency of all mammalian predator observations (*i.e.*, Arctic Fox, Red Fox, and Mink) was the highest during the study. In fact, mink observations alone exceeded the highest previous total for the three major mammalian predators. During 3 months of study at KFS, Arctic Fox, Red Fox, and Mink were observed on 17, 6, and 61 days, respectively. As in past years, however, there was no correlation between the frequency of predator observations and wader nest success. Despite high numbers of predator observations in 2005, Western Sandpiper nest success was near the long-term average, and the point estimates of nest success for both Western Sandpipers and Dunlin were higher than in 2004.

Western Sandpiper Study. Basic methodologies (1998-2005) included two observers surveying a 36 ha study plot daily from early May through late July for banded birds, nests, and broods. Adults and chicks

were banded with unique colour combinations at the nest, and the location and behaviour of banded birds was recorded daily. The locations of discovered nests were mapped and nests were monitored through hatch, predation, or abandonment. After hatch, Western Sandpiper parent(s) and broods were resighted (brood location mapped, parent and chick behaviours recorded) once (1998-2002) or twice (2003-2005) daily through fledging, predation, or abandonment.

In 2005, we located and monitored a total of 94 nests, 81 of which were on the 36 ha plot. Seventy-one nests were initial nesting attempts, and for four nests we were unable to determine whether this represented an initial nesting attempt because neither attending adult was banded. Nineteen males and 13 females attempted reproduction after losing their first clutch (*i.e.*, re-nested) in 2005, and one pair attempted reproduction a third time after losing their second clutch of the season. Following initial clutch loss, 32% of re-nesting males paired with a new mate, whereas all re-nesting females retained their mate during secondary nesting attempts. Based on initial nesting attempts, the apparent density of Western Sandpipers on the study plot in 2005 was 1.8 pairs/ha.

We regularly monitored 85 nests to estimate reproductive success in the area. Apparent nest success (*i.e.*, percent of known nests successfully hatching >1 chick) among first nests in 2005 was 28% (Mayfield nest success = 0.29 [95% CI=0.25-0.35, $n=67$]), and pairs at 52% of successful nests fledged at least one chick. Mayfield nest success for all nests, including re-nesting attempts, was 0.31 (95% CI=0.27-0.36, $n=85$), which was similar to the preceding seven years (1998-2004, mean \pm SE Mayfield nest success for all nesting attempts = 30.6 \pm 3.3%). Readers should note that these figures are not directly comparable to past results for this site reported in previous issues of "Arctic Birds", which summarized nest success data only for a core 16-ha plot.

Rock Sandpiper study. During 2005, we resighted 11 of 17 Rock Sandpipers that were previously banded at our study site (1999-2000, $n=4$; 2003-2004, $n=13$). We banded three additional pairs of Rock Sandpipers in 2005. A female that we banded at her nest in 2003 was resighted in Prince William Sound on 13 April 2005. We subsequently detected this bird on our study plot on 12 May 2005. We discovered her partially consumed body on the plot the next day. In past years, this bird attempted reproduction four times with the same mate. She successfully fledged young from her second nesting attempt in 2003, but failed to hatch any offspring during two attempts in 2004.

During 2005, we located and monitored 11 nests and one additional brood from 10 pairs in a 48 ha area in and around KFS (0.21 pair/ha). Two pairs re-nested after initial clutch loss. One of the 11 nests successfully hatched young (second nesting attempt), and another nest was of unknown fate. We observed a mink predated one of the 9 nests known to have failed.

Dunlin study. This was the second field season of a Ph.D. project examining parental investment in Pacific Dunlin *Calidris alpina pacifica*. Every 1-2 days we surveyed 58 hectares of wet meadow habitat for breeding Dunlin. Nests were found by territory mapping and behavioural observations. Once a nest was found we identified the parents and if not banded, they were trapped and individually colour-banded. Twenty-seven territorial males were banded in 2004, and 21 were detected back in the study area in 2005. Nests were visited, at a minimum, every 3 days to determine whether they were still active. Once hatched, broods were banded and located daily to determine parental roles and desertion dates.

We found 57 Dunlin nests on 38 territories – 33 of these nests were first attempts, 21 were first renests, and 3 were second re-nest attempts. Nest completion dates ranged from 18 May to 1 July. The overall May-field estimate for nesting success was 46.7% and for fledging success was 41.1% (proportion of hatched nests that fledged at least one chick). We suspected, but could not confirm, that mink were the primary nest predator, while the primary chick predators were apparently Sandhill Cranes. Eight birds produced a second clutch after hatching their first clutch. One pair and a divorced, re-mated male initiated second clutches after failing to fledge their first brood, and five other birds produced and/or tended clutches after leaving their first brood in the care of the other parent.

M. Johnson, S.E. Jamieson, B.J. McCaffery

71. Old Chevak, Yukon Delta National Wildlife Refuge, Alaska, USA (61°26'N, 165°27'W)

Although spring melt at Old Chevak in 2005 was much later than in either 2003 or 2004, it was still earlier than the 20-year mean. Snow reduced to 50% on flat areas approximately on 1 May. The tundra was > 90% snow-free in the vicinity of the field station by 3 May, and by 15 May, the lowlands were completely free of snow, ice, and melt-water. The Kashunuk River was ice-free by 29 May, 18 days later than in 2004, but not late relative to the long-term mean. Snow flurries occurred on 3 days in the first week of May. Snow fell on 6 days in May, the last being 22 May. A few cm accumulated on the nights of 4-5 May, and 5-6 May; in both cases, fresh snow melted by the next afternoon. Additional precipitation (rain and/or drizzle) fell on 7 of 19 days from 13-31 May, and on 10 of 23 days from 8-30 June. No rain fell 1-5 July. Weather during incubation and brood-rearing was generally mild; often warm with light winds. Most days with precipitation involved only occasional showers.

The first mosquito was detected on 28 May, mosquitoes were conspicuous on 30 May, the first major emergence of flying insects (chironomids) was on 2 June (2 weeks later than in 2004), and the first day of major mosquito activity was 8 June (1 week later than in 2004).

The last peak in small rodent populations on the Yukon-Kuskokwim Delta occurred in 2000. Since 1984, rodent numbers had peaked every 4 years, so a population high was predicted for 2004, but it did not occur. In 2005, rodents were also rarely seen, except in the immediate vicinity of the field station. After we arrived at camp on 26 April the 1st vole was seen on 2 May; then seen on 14 dates in May (2-31 May); on 14 dates in June (2-22 June); only once subsequently (3 July) through to our last day in the field (5 July). No capture data were obtained.

As in 2004, small numbers of Long-tailed Skuas, including pairs, were seen on the study area on a daily basis. Only two pairs nested, and only one definitely completed its clutch (2 eggs); the other nest was depredated one day after being discovered with a single egg on 3 June. During the first three weeks of shorebird laying and early incubation, Arctic Foxes and Mink were seen on 17 and 8 field days, respectively. Up to two Arctic Foxes and up to three Mink were observed simultaneously on the 4 km² study area. River Otter *Lutra canadensis* was rare in the area.

In 2005, we conducted the second year of a study focusing on the breeding ecology of Bar-tailed Godwits on the outer Yukon-Kuskokwim Delta. From 26 April to 5 July, 2-7 people conducted field work on and adjacent to a 4-km² study area surrounding the Old Chevak field station. The study area is along the Kashunuk River, and is characterized by a diversity of wetlands either embedded in, or surrounding, extensive patches of uplands. Wetlands include tidal sloughs (which make up > 80% of the plot's borders), tidal meadows, freshwater meadows, freshwater marshes, and steep-sided lake basins. The upland tundra was dominated by dwarf shrubs, *Carex* sedges, lichens, and *Sphagnum* moss. Nest-searching efforts included focal observations of breeding godwits as well as walking zigzags in sites or habitats suspected of supporting godwit nests.

As in 2004, 12 godwit nests were located on the study area, and an additional 5 nests were located on adjacent tundra. Eight were found during laying, 4 after clutch completion, 2 after depredation events, and the timing of 3 relative to clutch completion was unknown. Final clutch size was determined at 9 nests, with eight 4-egg clutches and one 5-egg clutch. The latter is the third 5-egg clutch on record for this species from the Yukon-Kuskokwim Delta. One egg was markedly different in pattern than the other four, suggesting that it was produced by a second female. Nest initiations ranged from 19 May to 14 June ($n=8$), with an average date of 25 May (2 days later than in 2004). At least one egg was collected from 7 nests for contaminants analysis. Following egg collection, adults resumed incubation at > 4 of those nests.

None of the 17 godwit nests hatched. Daily survival rates (DSR) were very low for all classes of nests. DSR during laying and incubation was 0.722 and 0.841, respectively. Overall DSR was 0.797. Based on

a comparison of DSR between nests at which we did and did not capture birds ($n=7$ and 10 , respectively), there was no evidence that capturing, flagging, and outfitting nesting godwits with transmitters affected nest survival rates. This pattern held even when only considering nest histories of impacted birds after the day of capture. In fact, the point estimates for DSR were higher at those nests where we captured adults. Given the absence of a capture effect on DSR, we combined data from our two years to generate an overall DSR for 2004-2005 ($n=22$) of 0.815 . With an estimated exposure period for successful nests of 27 days, the point estimate for nest success based on this DSR is 0.4% . Comparable data from Black-bellied Plovers at Old Chevak in 2004-2005 (with a DSR of 0.943 , estimated exposure period of 29.5 days, and $n=15$) yields a nest success estimate of 17.7% . Thus, relative to another large shorebird species with open (*i.e.*, uncovered) nests and aggressive predator-mobbing behaviour, Bar-tailed Godwit nest success at Old Chevak is strikingly low.

Two broods were discovered on or near the main study plot. On 27 June, a pair with 3 chicks (approximately 2 weeks old) was detected in the marsh north of the northwest edge of the plot. This family was not seen subsequently. On 28 June, a pair with a single chick (about 10 days old) was found near the plot's eastern edge. On 29 June, this chick swam across the tidal slough that forms the eastern border of the plot. A reciprocal trip from outside the study area could have preceded our initial detection of this family; thus, we had no conclusive evidence that any nests hatched successfully on our main study plot.

B.J. McCaffery, J. Conklin

72. Peard Bay, Alaska, USA (70°48'N, 158°20'W)

Sunny, warm to hot weather predominated. One 3-day storm from the southeast caused flooding and very high water levels. High winds and very heavy rain were associated with the storm.

Our study site was very much out on the gravel and sand beaches of the Peard Bay area. We spent very little time inland off the beach so had almost no opportunity to observe lemmings.

This was an autumn staging study; breeding birds were not studied. The absence of records of Arctic Foxes is worth mentioning, while Red Foxes were present and bred. No Pomarine Skuas were observed, however, non-breeding Snowy Owls were recorded. Gyrfalcon was the only raptor seen.

D. Nigro

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

The spring and summer was warmer than 2003 but colder than 2004. However, snow melt was later than in 2003 or 2004. Snow cover reduced to 50% on flat areas on 12 June and completely melted on 22 June. In general the season can be characterized as cold and rainy. No severe winter storm took place during the

field season. Weather data are available from NOAA weather station located near Barrow.

Lemming numbers were up in 2005 from 2003 and 2004, but were not superabundant. No capture data were obtained. Brown Lemming *Lemmus trimucronatus* were common, and seen at least once on 56 days of the 90-day field season. Greenland Collared Lemmings were observed on 6 days and Tundra Vole was observed on 1 day of the 90-day field season. Other mammals seen included: Caribou, Arctic Fox, Ringed Seal *Phoca hispida*, Ermine, Beluga *Delphinapterus leucas*, Grey Whale *Eschrichtius gibbosus*, Bearded Seal *Erignathus barbatus*, Brown Bear, Arctic Ground Squirrel. Denver Holt, who was studying Snowy Owls in the area, laid out traps to capture small mammals. He indicated this was a low to medium year in 13 years of trapping. Snowy Owls were common and bred, while Short-eared Owls were rare without signs of breeding. Pomarine Skuas were rare and not breeding. Two other species of skuas were common, but breeding was recorded only in Arctic Skua.

This report represents the conclusion of three years of intensive breeding ecology work on shorebirds at Barrow. Hatching success of shorebird nests was extremely high in 2005, compared to the dismal levels observed in 2004. This is most likely because Arctic Foxes were removed (killed) from the study area as part of a Steller's Eider Recovery Management Action. We had one new species nesting on our plots in 2005: the Baird's Sandpiper. We did not detect Buff-breasted Sandpipers *Tryngites subruficollis*, White-rumped Sandpipers *Calidris fuscicollis* or Western Sandpipers nesting in or near our study plots in 2005 (in contrast to finding 1-2 nests/species in 2004). Renesting by shorebirds was minimal to non-existent in 2005.

The nest density of all shorebird species on our plots (controlling for number of plots) was $52.1/\text{km}^2$ in 2003, 66.6 in 2004, and 63.0 in 2005 (overall average density across years was 60.6). Although we thought the unusually high density of nests in 2004 (especially when compared to 2003) was due to high predation and thus a high rate of renesting, we had a similar density levels in 2005 as 2004. We believe the high densities in 2005 may be due to a fox removal program that allowed many nests to survive through to hatching (see below), and in effect, gave us more time to find the nests. Thus, we believe the density of nests from 2005 may be our best estimate of the number of pairs initiating nests calculated to date.

The species assemblage in Barrow has consistently included good numbers of Red Phalarope (REPH, 3-year average density = $25.9 \text{ nest}/\text{km}^2$), Dunlin (DUNL, 13.3), Pectoral Sandpiper (PESA, 11.5), and Semipalmated Sandpiper *Calidris pusilla* (SESA, 5.2). Only a few nests are discovered each year belonging to American Golden Plover (1.2), Long-billed Dowitcher (1.9) and Red-necked Phalarope (0.9). Three other species have only been documented nesting on our tundra plots in one year (Western Sandpiper, WESA; White-rumped Sandpiper, WRSA; and

Baird's Sandpiper). Pectoral Sandpiper densities are known to increase and decrease dramatically across years, and 2005 appeared to be an especially high year. A total of 136 nests were located on our plots, including 43 PESA, 38 REPH, 31 DUNL, 15 SESA, 5 Long-billed Dowitchers, 2 Red-necked Phalaropes, and 1 American Golden Plover. In addition we located our first Baird's Sandpiper on the tundra plots, near disturbed habitat in the new landfill. This species regularly breeds on the gravel areas near the Barrow Arctic Science Consortium housing.

The first shorebird clutch was initiated on 3 June and the last on the 4 July in 2005 (on or within 1 day for both dates in prior years). Median and peak initiation dates were the 13 and 10 June, respectively; the median was a few days earlier and the peak was nearly a week earlier than prior years. Median nest initiation dates for the more abundant species was the 10 June (DUNL, SESA), 14 June (REPH), and the 15 June (PESA). This pattern is similar to prior years for the more abundant species, whereas the rest of the species vary tremendously from year-to-year. Predators destroyed only 11.2% of the nests in 2005 compared to 42.6% in 2003 and 67.9% in 2004. A comparison of nesting success across the more abundant species indicated hatching success (number hatching at least one young/total number of nests) was highest in PESA (86.4%, $n=59$), followed by DUNL (76.1%, $n=56$), SESA (72.7%, $n=23$), and REPH (70.2%, $n=62$). A similar comparison across study plots indicated plots 1, 2, and 3 had extremely high hatching success (73.9, 66.6, and 88.8%, respectively) compared to that reported in 2003 (52.6, 46.2 and 38.8%) and 2004 (3.2, 4.2, and 11.1%). The two plots established in 2004 also had higher hatching success in 2005 (85.7 versus 11.1, and 75.6 versus 20.5%). These extremely high hatching success rates are likely due to the removal of Arctic Foxes in the Barrow area by contractors paid through the Steller's Eider Research Team.

R.B. Lanctot

74. Coastline and barrier islands, Arctic Coastal Plain, Alaska, USA (70°50'N, 152°30'W)

During aerial surveys from 23-27 June, near-shore ice cover was more extensive than the same dates in 2004 in both the Chukchi and Beaufort seas. Near-shore ice cover was the most extensive observed since this survey began in 1999 east to Brownlow Point on the Beaufort Sea. Open water was present near all large river mouths. From Brownlow Point east to the Canadian border near-shore ice was extensive but comparable to 2004. Beaufort Sea barrier islands, favoured as nesting sites by Snow Geese, Brant, Common Eiders, Glaucous and Sabine's gulls and Arctic Terns were accessible to terrestrial predators. No snow was present onshore; however, larger lakes were mostly ice covered. There was no observable indication of coastal green-up in coastal meadows (primarily *Carex* spp.) and ponds (primarily *Arctophyla* spp.). Experienced observers referred to green-up in 2005 as the "latest observed".

Snow Goose nests were hatching during the survey and several broods and numerous incubating birds were observed on Howe Island. There was no indication of hatching in other species.

Snowy owls were observed in low numbers throughout the area indicating increased microtine populations. No snowy owls were observed on this survey in 2004 or during extensive onshore surveys of the Arctic Coastal Plain of Alaska (E. Mallek pers. comm.).

C.P. Dau

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

Snow cover should have reduced to 50% by approximately 3 June (assuming that snow melt occurred consistently across time), as our snow cover surveys indicate that snow cover in the flat areas was about 42% on 5 June. Snow melted completely on flat areas by approximately 14 June. It appeared that the study plots closest to the Beaufort Sea had the deepest snow and highest snow cover. At this site, our study plots range 2-13 km inland from the coastline. The Kuparuk River ice break-up occurred on approximately 24 May (J. Harth, pers. comm.). Days were consistently colder than in 2004 for much of the season (especially June). There was more rainfall in 2005 compared to 2004 although it was not excessively rainy (3 days of pouring rain) and there were no snow storms during our time in the field although flurries did occur on 3 days.

Lemming numbers were low based on our field observations though we did no trapping. We only observed 3 lemmings during the season. No observations were made during timed surveys. No trend in lemming abundance was apparent during the course of the season.

Arctic Foxes were common and bred, also Red Foxes were recorded. Pomarine Skua, Snowy and Short-eared owls were seen without signs of breeding.

We reduced our effort at this site compared with 2004 by only sampling 12 of 24 established 10-ha plots. Nest densities were noticeably higher this season (75.8 nests/km²) compared to the two previous years (68.3 nests/km² in 2003, 58.3 nests/km² in 2004). The proportion of successful nests was comparable to 2004 (75.8% in 2005 vs. 73% in 2004) and noticeably higher than in 2003 (55%).

We discovered and monitored all nests on (or near) 12 10-hectare study plots every 3-6 days until nesting fate was determined. We discovered 129 nests of 13 species from 10 June to 25 July. Of the 129 nests, 36 were discovered off-plot. Eighty-two nests successfully hatched/fledged and 29 failed. We were unable to reliably assess the fate of 13 nests. Nest predation was the most important cause of nest failure (25 of 29 nest failures, 86%). Other sources of nest failure were abandonment ($n=3$) and predation due to observers ($n=1$). Mayfield estimates of nesting success for the three most common species were: 0.906 in Semipal-

mated Sandpiper ($n=33$), 0.291 in Lapland Bunting ($n=19$), and 0.422 in Pectoral Sandpiper ($n=17$).

We conducted three 10-minute point count surveys for potential nest predators on each plot at three different times (three replicates) during the course of the season. A total of seven potential predators were detected (n = number of detections): Glaucous Gull ($n=43$), Arctic Skua ($n=23$), Common Raven ($n=5$), Long-tailed Skua ($n=5$), Arctic Fox ($n=3$), Sabine's Gull ($n=1$). Thus, the most common potential predators were Glaucous Gull and Arctic Skuas.

J.R. Liebezeit

76. Kuparuk and Prudhoe Bay Oilfields, Alaska, USA
(70°19'N, 148°25'W)

April and May were warmer than average, followed by cooler June and July, thus the onset of the season and advance of vegetation was late and slow. The season was markedly cooler than in 2004 and probably similar to 2002. Flat areas were 50% snow covered on about May 28, and snow free June 9. The first flocks of Greater White-fronted Geese appeared on 8 May, and first Brants on 24 May. Snow Geese started hatching on about 24 June, White-fronted 3 July, Semipalmated Sandpipers 4-8 July, swans 10 July.

I saw predators carrying lemmings and voles (Red and Arctic foxes, Ravens, gulls), throughout my stay.

Potential predators were the same as listed by J.R. Liebezeit for 2003 (see 'Arctic Birds' 6: 23-24) plus a pair of local Rough-legged Buzzards at Kuparuk and Red Foxes at both sites. Short-eared Owls were seen only during spring migration (quite commonly), Snowy Owls were uncommon during spring, common 18-21 July, and not reported in between. Breeding of skuas was not recorded.

J. Klima

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

Average snow cover was approximately 54% on 7 June. Days were consistently colder than in 2004 for much of the season. Daytime temperatures in June were typically below +5°C. Mosquitoes did not emerge until early July this season. There were no snow storms but we had a wind/rain storm in late June. The stream next to our camp broke up on 6-7 June.

Lemming numbers were low. All 4 observers during almost 2 months in the field observed lemmings only six times. No trend in lemming abundance was apparent during the course of the season. We did not capture lemmings.

We discovered and monitored all nests on (or near) 16 10-ha study plots every 2-6 days until nest fate was determined. We discovered 170 nests of nineteen species from 11 June to 18 July. Of the 170 nests, 25 were discovered off plot. Ninety-three nests successfully hatched/fledged and 40 failed. We were unable

to reliably assess the fate of 31 nests. Nest predation was the main documented cause of nest failure (33 of 40 nest failures; 83%). Other sources of nest failure were abandonment ($n=3$), predation due to observers ($n=3$), and trampling ($n=1$). Trampling was most likely due to caribou. Mayfield estimates of nesting success for the 3 most common species were: 0.626 in Lapland Bunting ($n=60$), 0.748 in Pectoral Sandpiper ($n=27$), and 1.00 in Semipalmated Sandpiper ($n=13$).

We conducted three 10-minute point count surveys for potential nest predators on each plot at three different times (three replicates) during the course of the season. A total of eight species of potential nest predators were detected (n = number of detections): Glaucous Gull ($n=52$), Arctic Skua ($n=29$), Sabine's Gull ($n=17$), Long-tailed Skua ($n=16$), Arctic Tern ($n=13$), Red Fox ($n=1$), Gyrfalcon ($n=1$), and an unidentified lemming ($n=1$).

Nesting success was very high at this site with all species (except for one) having Mayfield nesting success estimates greater than 50%. As for potential nest predators, Arctic Fox and Common Ravens were very rare, but breeding, while Glaucous Gulls and skuas (Arctic and Long-tailed) were quite common. Snowy Owls were not recorded, while Short-eared Owls bred in small number. There were no signs of breeding of Pomarine Skua.

J.R. Liebezeit

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

There was more snow cover present when we arrived at the study site on 31 May and it persisted later into the season, compared with the previous 3 years at the study site. Snow cover reduced to 50% on 6 June and completely melted on 15 June. Near-shore sea ice persisted into mid July, compared to mid to late June in other years. Daily average air temperature during nest initiation and incubation were similar to previous years.

Two species of lemmings and Tundra Vole were rare.

Based on anecdotal observations at the study site, small mammal populations appeared to be slightly higher in 2005 than in previous years. As a result numbers of some predator species, skuas, gulls and Snowy Owls were higher compared to other years. Pomarine Skuas were not breeding. Short-eared Owls were rare and Snowy Owls common, but neither of them bred. Arctic Foxes were rare without denning being recorded.

In 2005, we located and monitored 160 of nests of 14 species. The most abundant nesting species were: Pectoral Sandpiper (24.0 nests/km²), Lapland Bunting (21.5 nests/km²) and Semipalmated Sandpiper (12.0 nests/km²). Pectoral Sandpipers' nest densities were the highest observed thus far at this study site. Red Phalaropes continued to nest in low densities (5.5 nests/km²) compared to 2002 (21.1 nests/km²), when they were the most abundant nesting shorebird. Low densities of phalaropes are expected in years of late snow melt, such as 2005. Their nesting habitat is typi-

cally found in low areas, which are the last areas to become available. We observed one Spectacled Eider nesting at the study site, a first for this species. May-field estimates of nest success rates have shown much variability among years and for most species in 2005 the success rates were within the range of variability previously observed. Among species with samples of 10 or more nests success was 0.428 in Pectoral Sandpiper, 0.785 in Semipalmated Sandpiper, 0.621 in Stilt Sandpiper *Calidris himantopus*, 0.714 in Red-necked Phalarope, and was 0.465 (including incubation and nestling stages) in Lapland Bunting.

S. Kendall

79. Niglintgak Island, Mackenzie Delta, Canada (69°01'N, 134°50'W)

Our objective was to examine Red-necked Phalarope nest fate and habitat preferences on Niglintgak Island, NWT. The 6 km² study site was at the mouth of the Mackenzie Delta and consisted primarily of low arctic wetland. In 2005 we located and determined the fates of 33 nests. 64% of nesting attempts successfully hatched at least one chick. The vegetation surrounding successful nests was taller and primarily composed of graminoid with little mud relative to nests that failed. These results suggest that Red-necked Phalaropes do not have a preference for particular habitat features of nest sites within their home range but they are choosing home ranges that are different from surrounding, unoccupied habitats. Furthermore, concealed nests have increased success compared to nests surrounded by shorter vegetation and a greater proportion of mud.

B. Beveridge, E. Nol, V. Johnston. 2006. Red-necked Phalarope (*Phalaropus lobatus*) nest fate and site preference in the Mackenzie delta, NWT, Canada. P. 42 in: Shorebird Science in the Western Hemisphere, 27 Feb – 2 Mar 2006, Boulder, Colorado USA.

80. Mackenzie River delta, 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 *Cygnus columbianus* in North America and support about 1/3 of the Eastern Population of this species. Surveys carried out in the region in June and August 2005 indicated good numbers of nesting swans and a relatively early nesting season. Overall, 44% of the indicated pairs nested and 84% of those nests produced broods meaning that 37% of the pairs successfully raised broods. These estimates are well above the productivity measured in recent years (2001-2003) when the three parameters averaged 39%, 35% and 14% respectively. (J. Hines, CWS, pers. comm.).

Canadian Wildlife Service Waterfowl Committee. 2005. Population Status of Migratory Game Birds in Canada: November 2005. CWS Migr. Birds Regul. Rep. No. 16.

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

Small mammal abundance was at medium levels at Karrak Lake in 2005 (1.7 captures per 100 trap-nights). All captures were Red-backed Voles. Collared Lemmings *Dicrostonyx groenlandicus* are common at Karrak Lake in some years (previous peaks were in 1996 and 2000) whereas Brown Lemmings are rarely encountered at Karrak Lake.

Breeding density by Arctic Foxes was relatively high in 2005 (6 breeding dens per 100 km²) and average litter size was 6 pups per litter (range 3-10 pups per litter).

G. Samelius, R. Alisauskas, D. Kellet

82. Melville Island, Canada (75°30'N, 111°30'W)

According to satellite imagery, most of Melville and Prince Patrick Islands remained snow covered on 30 June 2005. Similar conditions in the past resulted in <10% young in the fall flight. This suggests another poor production year for Western High Arctic Brant.

U.S. Fish and Wildlife Service. 2005. Waterfowl population status, 2005. U.S. Department of the Interior, Washington, D.C. 60 pp.

83. Isachsen, Ellef-Ringnes Isl. and Sverdrup Islands, Canadian Arctic Archipelago, Canada (78°47'N, 103°33'W)

The study period from 19-30 July was too short to evaluate the weather conditions. Temperatures varied from +0.3-9.4°C, averaging +5-6°C. Five of the 12 days were sunny, 2 with light rain and 2 with fog. Weak northerly winds prevailed.

Lemmings were common, and Arctic Foxes rare.

Severe environmental conditions (mean July temperature +2°C), sparse vegetation and low humidity were responsible for low abundance and diversity of birds (waders, Brent Geese, Rock Ptarmigans, skuas, gulls and Passerines). Snow Bunting was the only common bird species.

O.L. Makarova

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

The snow pack in spring 2005 was near normal with an average snow depth of 33.6 cm on 1 June compared to a long-term average of 31.5 cm. Despite the deeper snow pack in 2005 compared to 2004, snowmelt was relatively fast this year.

The spring of 2005 was characterized by a normal snowmelt at the Base-camp and close to normal temperatures. Air temperature averaged -0.40°C between 20 May and 20 June (0.24°C below normal) and +1.52°C during 1-15 June (0.12°C below normal).

Summer 2005 was the second wettest on record on Bylot Island, with 132 mm of rainfall compared to the long-term average of 97 mm. Precipitation was high in June

(40.5 mm of rain) but concentrated over just 5 consecutive days. Precipitation was very high in July (a record 87 mm) but August was characterized by exceptionally good weather with lots of sunshine, warm temperatures, and little precipitation (5 mm up to 20 August).

During our small mammal survey using snap traps, we accumulated 1196 trap-nights in the Base-camp Valley at our 2 trapping sites from 23 July to 3 August, and 548 trap-nights at the Camp-2 from 5 to 20 July.

In the Base-camp sites, we caught 2 Collared Lemmings in the mesic site and none in the wet meadow site, and no Brown lemmings were caught, which yielded a combined index of abundance of 0.17 lemmings/100 trap-nights, a low value. In the Camp-2 site, 4 lemmings were caught, 1 Brown and 3 Collared Lemmings for an index of 0.75 lemmings/100 trap-nights. Lemmings at the Base-camp Valley had decreased considerably following the moderate peak of last year and were in the low phase of their cycle. However, similar to the situation observed during the previous peak, it appeared that the peak in lemming abundance at the Camp-2 area was delayed compared to Camp-1.

For the second year of our live-trapping monitoring program for lemming populations, we captured a total of 55 lemming individuals. Preliminary analyses based on capture-recapture models indicate that average densities of Brown Lemmings in 2004 was 2.2 lemmings ha⁻¹ and 0.4 lemming ha⁻¹ for Collared Lemmings, and in 2005, 0.3 and 0.2 lemming ha⁻¹, respectively.

Results from our dead and live-trappings showed that lemming abundance was quite low in 2005, and confirmed that 2004 was a peak in lemming abundance at the Base-camp, even though the numbers captured last year were relatively low compared to previous peaks.

In 2005, we visited 108 fox dens during the summer and we detected signs of activity (fresh digging and/or footprints) at 80 of them. The breeding activity of foxes was low as we found 7 litters (7% of known denning sites with a different litter) of Arctic Foxes and none of Red Foxes. This level of use is lower than last year (15%) but typical of the proportion of fox dens used in years of relatively low lemming abundance (~5%). Minimum litter size varied between 3 and 9 pups (mean of 6.9 pups \pm 0.8, $n=7$). This value is higher than the long-term average litter size (Arctic Fox: 4.0 pups).

Snowy Owls only nest in peak lemming years, which occur every 3-4 years on Bylot Island. Owl nests were thus previously found in 1989, 1993, 1996, 2000 and 2004. In 2005, no Snowy Owls were found nesting in our study area.

In 2005, we found 11 nests of Glaucous Gulls in the Qarlikturvik Valley and 1 at the goose colony, and 9 nests of Long-tailed Skuas at each study site. Mean egg laying date of gull nests was 13 June and 16 June for skuas; mean hatching dates were 10 July and 11 July, respectively. Mean clutch size was 2.9 in gulls and 1.8 eggs in skuas. Nesting success of gulls was 80% while most skua nests were predated and only 8% of them produced young.

Overall, the median date that the first egg was laid in Greater Snow Goose nests (*i.e.*, egg-laying date) in 2005 was 12 June, which is also the long-term average. Our field observations suggest that the reproductive effort of

geese was moderately high at the main colony (Camp-2). Although nest density appeared slightly lower than usual in the centre of the colony, the colony tended to be more spread-out this year. Only 5 nests were found at the Base-camp Valley (predominantly a brood-rearing area), a situation common in years when no Snowy Owls are nesting.

The mean number of eggs per nest (*i.e.*, total clutch laid) was 3.60 \pm 0.08 eggs ($n=156$) in 2005, very close to the long-term average (3.70). Activity of predators at goose nests, especially Arctic Foxes, was moderate but slightly higher than in 2004. Nesting success (proportion of nests hatching at least one egg) in 2005 was good (66%, $n=226$) and very close to the long-term average (64%).

The young:adult ratio observed during our banding operation suggests that, overall, production of young on Bylot Island was relatively good this year. Based on this ratio, we anticipated a proportion of young in the fall flock of 23%. This prediction was upheld as juvenile counts conducted in Quebec indicated a proportion of young of 21% ($n=29,022$) in the fall flock, a value slightly below the long-term average (24%).

Thus, in 2005 Snow Geese nested around the usual dates, and their reproductive effort was moderate (*i.e.*, moderate nesting density). Even though no Snowy Owls have nested this year, geese still benefited from a relatively low predation pressure, due to the low abundance of foxes and skuas, which enabled them to have a relatively high nesting success.

Our new monitoring of shorebird species was successful in 2005. Among the eight species monitored, five of them were found nesting, mostly in the Qarlikturvik Valley. The most abundant shorebirds were the White-rumped Sandpiper (39 nests), the Baird's Sandpiper (20 nests) and the American Golden Plover (6 nests). Black-bellied Plover (1 nest), Red Phalarope (1 nest), Common Ringed Plover, Purple Sandpiper and Ruddy Turnstone were also observed on the island during the summer. Clutch size of all shorebird nests monitored was 4.0 eggs. Mean laying and hatching dates were between 10 and 18 June, and 4 and 18 July, respectively. Overall, Baird's Sandpipers had the highest nesting success (25%) followed by American Golden Plovers (19%) and White-rumped Sandpipers (11%).

In 2005, we found a record number of Lapland Bunting nests (68). Large annual variations in the number of nests found in part reflect variations in sampling effort among years. Median egg-laying and hatching dates of Buntings in 2005 were 21 June ($n=32$; long-term average: 17 June) and 3 July ($n=19$; long-term average: 4 July), respectively. The clutch size was 5.1 \pm 0.1 eggs ($n=57$), slightly below the long-term average (5.3) and no temporal trend was detected. Nesting success was very low (19%, $n=62$) and below the long-term average (54%).

G. Gauthier, A. Reed, J.-F. Giroux, D. Berteaux,
M.-C. Cadieux, J. Lefebvre

See also:

Gauthier, G., Reed A., Giroux, J.-F., Berteaux, D., Cadieux, M.-C., Lefebvre, J. 2005. Population Study of Greater Snow Geese on Bylot Island (Nunavut) in 2005: a Progress Report. 16 November 2005.

Cadieux, M.-C., Gauthier, G., Gagnon, C., Berteaux, D., Levesque, E., Bety, J. 2006. Monitoring the environmental and ecological impacts of climate change on Bylot Island, Sirmilik national park. 2005-2006 annual progress report. 29 March 2006.

85. Cape Churchill Peninsula, Canada (58°30'N, 93°30'W)

The conditions last year were average, for the first time since 1998. The timing of breeding by birds, their hatching success and fledgling success were average (although this latter variable is the least responsive to variation in weather, presumably because weather is less variable than too).

Ravens and gulls are important predators at Churchill. The temperature does seem to affect the intensity of searching by predators, so lower mean temperatures result in greater predation pressure. Predation pressure on the Semipalmated Plover *Charadrius semipalmatus* was average but in the past the success of one species in Churchill has been closely correlated with that of others.

E. Nol

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

Snow cover reduced to 50% on 14 June and completely melted on 17 June. Though there was heavy spring snow cover, a very warm June led to its quick disappearance. In contrast to June, July was atypically cold with frequent rain and wind. Though we have no data on fledging rates, we expect that this cold wet weather at peak hatching caused problems for chick survival.

There were a few lemmings, both Greenland and Brown, at East Bay, and generally poor reproductive success of the breeding birds. At the same time Arctic Foxes were rather common and bred. Of skuas both Long-tailed and Arctic were common, but only the latter was found breeding. The only bird of prey seen was Peregrine Falcon.

We found many Brant nests in the coastal portion of the plot, though Brant had not nested at East Bay since 2000. Dunlins continue to increase in abundance at this site, and we found several nests there in 2005. Rock Ptarmigans were rare and breeding was not recorded. Across the eastern low Arctic the weather in July and August was cold and wet, which I expect adversely affected chick growth and survival.

P. Smith

87. Coats Island, Nunavut, Canada (62°51'N, 82°29'W)

Snow cover reduced to 50% before our arrival on 1 June, and completely melted on 7 June. In stark contrast to 2004, there was little snow upon our arrival at the field site this year. However, the summer was quite cool and rainy, particularly in July. Researchers

at another camp on the island tell us that this cool rainy weather persisted into August.

Coats Island has no lemmings or voles of any kind. Arctic Foxes were commonly seen, and their denning was recorded. No avian predators like skuas, owls or Rough-legged Buzzard bred and only one species, the Arctic Skua, was common. Willow Grouse was also rare.

This year was much earlier in terms of phenology than 2004. Shorebirds bred more successfully, at least to hatching. However, cold rainy weather throughout July may well have adversely affected fledging success – we have no fledging data to assess this directly.

The most interesting finding this year was that a Snow Goose colony has been recently established in the coastal portion of our study plot. We noted many nest cups last year, but no Snow Geese, and very few Canada Geese *Branta canadensis* bred here in 2004. This small colony of perhaps 500 nests was not present in 1994 when the area was visited by my colleagues. In 2005, I conducted aerial surveys of the coast of Coats Island and found that breeding snow geese now occupy the coastal tundra on the entire northern portion of the island. Aerial surveys of this portion of the island in the 1980s found no geese nesting there.

It is not surprising that new Snow Goose colonies are being established as the populations expand, but direct evidence of these new colonies is rare.

P. Smith

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

Weather conditions were average in the southern James Bay region, with early June nest initiation. Unfortunately hatching success in the Semipalmated Plover was very low (as usual) there probably because there are many aerial predators - Ravens and gulls.

E. Nol

89. Polemond River, Ungava Peninsula, and Hudson Bay, Canada

The 2005 nesting season was very mild and the bird breeding areas were snow free by early May. Although birds were late arriving at the breeding grounds, they were able to begin breeding almost immediately. Along Hudson Bay, a total of 297 nests of Canada Geese were found within the 7 sites surveyed, with a mean clutch size of 4.43, and 83% apparent nesting success. Until this year, 2003 had the highest productivity since the study began in 1997, but 2005 exceeded the previous highs on all counts. Along Ungava Bay, data collected at 3 sites indicated that production there would be above average, but not as markedly as at Hudson Bay (Cotter 2005).

Canadian Wildlife Service Waterfowl Committee.
2005. Population Status of Migratory Game Birds in
Canada: November 2005. CWS Migr. Birds Regul.
Rep. No. 16.

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

The 2005 season was early, warm and dry. Snowcover melted completely on about 18 June. Major rivers started to run on 1 June. Surge flooding of the river Zackenbergelven occurred on 24-29 July, drowning a Glaucous Gull nest. It also had an impact on the low tide counts, which might explain low numbers of juvenile birds, counted in the deltas.

No lemmings were seen this season, but with 234 winter nests, the 2005 data is near the median of the data for the entire ZERO monitoring programme.

The number of encounters with Arctic Foxes was very high, although no breeding was recorded. All known dens were visited, but no pup activity was observed, and it is considered unlikely that Arctic Foxes bred at Zackenberg this year.

2005 was yet another early season in Zackenberg. Laying was initiated in nearly 70% of all wader nests before 15 June. Median first egg dates were a bit later than in 2004, except for Dunlin which had the same median date, 12 June, as last year. However, compared to all the preceding nine seasons, median first egg dates from 2005 were among the earliest.

Nest success was very low due to the highest recorded nest predation since the beginning of the monitoring programme in 1995. In most cases of nest loss, the Arctic Fox is suspected, although Long-tailed Skuas and gulls are likely to have taken their share.

Sanderlings were at their lowest numbers in this season, in terms of both individuals recorded during the census and the resulting estimates of pairs/territories. Dunlin remains the most numerous wader species, although in slightly lower numbers than before.

Chick survival is assumed low, but the effects of surge flooding hampered estimates of juvenile numbers at post-breeding low tide counts. The deltas were covered with sandy mud from the flooding limiting access by waders to their food. Consequently, very low numbers of birds were counted in the delta.

No Rock Ptarmigan pairs were encountered inside the census area until a female with chicks was seen late in July. Outside the census area several pairs were seen.

Many pairs of Long-tailed Skuas did not breed this season. At 28-34 territories only 8 pairs were found breeding. Most eggs survived to hatching, but only one chick was alive at the last check. It is uncertain if this one chick survived beyond 18 days of age or whether it fledged. In the whole season only one fledged juvenile was seen.

Yet again, the number of Snow Bunting territories was very high. The total of 114-123 territories is the highest recorded figure at Zackenberg since the start of ZERO in 1995.

Aggregations of moulting, roosting and feeding Barnacle Geese included 14 families from adjacent colonies, 119 non-breeders inside census area and 287 non-breeders outside census area.

J. Hansen, H. Meltofte

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

By the time of our arrival in the field on June 15, snow cover was already below 0.01% in the Karupelv Valley, with compelling evidence that in 2005 snow melt was completed by far earlier than in all other years of the project. Such early melt suggests that there was not a great accumulation of snow during the winter or it may have been affected by warm weather especially in late winter – early spring (March-May). Likewise, 2005 was also unprecedented in the long-term record of the timing of the retreat of ice covering the fjord, pack-ice becoming dismantled as early as July 5th.

With only 211 winter nests recorded on a 1500 ha area, there was evidence that the lemming population was again in a low phase, a situation also corroborated by the poor output of the trapping surveys. Lemming densities were estimated to be of the order of one animal per 10 ha.

The response to low lemming abundance among the predators in summer was fully in line with this poor state of their staple prey at snow melt: absence of Snowy Owls, no reproductive output among Long-tailed Skuas as well as no breeding success in Arctic Foxes.

A striking feature revealed by the winter nest surveys was the very high number of nests taken over by Stoats. The figure of 30 such nests is the record for the present time series and testifies to an overall presence of Stoats in winter. Such high numbers are typical for the onset of the low phase after a lemming high and as a matter of course, despite records of winter reproduction, the lemming population was unable to increase.

Complementary observations conducted in several other sites around Kong Oscars Fjord (72°15' to 73° N) confirmed that the patterns recorded on Traill Island (Karupelv Valley) were typical for the region.

In several species hatching dates were noticeably early (by one week for Barnacle Geese as well as for the only observed Rock Ptarmigan family). Regarding waders, an early hatching date (30 June) was also observed for a Dunlin pair. Apart from Turnstones whose breeding numbers were low, the other species (Sanderling, Ringed Plover, Knot, Dunlin) were breeding in more or less usual numbers, but the fate of young (with few fledged ones observed) remained uncertain.

The sizes of Arctic Tern colonies censused on islands in the fjord were generally of the same order when compared with previous surveys.

B. Sittler, O. Gilg

**INFORMATION PROVIDED BY RESPONDENTS
WAS EDITED AND TRANSLATED INTO
ENGLISH (IF NECESSARY) BY PROJECT
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BIRD BREEDING CONDITIONS IN THE ARCTIC IN 2005

Pavel S. Tomkovich & Mikhail Y. Soloviev

Breeding conditions for birds in 2005 in the circumpolar Arctic are evaluated based on information from 57 submitted questionnaires, 29 free-form contributions and 5 publications available on the web. Accordingly the amount of data available for analysis remained at the high level of recent years. It is noteworthy that the number of the most informative submissions from localities previously surveyed during at least 2 seasons reached 40, while quantitative data on nest success of land birds were available from 23 sites, also mostly from long-term surveys. Other contributions including anecdotal observations were very important complements as they permitted an assessment of the wider applicability of conclusions drawn from intensive surveys.

Weather and other abiotic factors

Abrupt deviations from typical weather for a region usually have an adverse impact on breeding birds, particularly in the case of decreasing temperatures accompanied by precipitation occurring at some critical stages of the breeding cycle (e.g. hatching of chicks). Other events like fires or flooding can have considerable impact as well, but areas affected by the latter are usually more restricted. Various impacts of weather and other abiotic factors on populations of tundra birds were reported for 2005.

As in the previous summer, 2004, broad geographical patterns of air temperature deviations from long-term averages were generally similar in June and July 2005 (Fig. 1 and 2 on page 59).

Above average temperatures prevailed across most of the Arctic in both months, especially in June, which indicated favourable temperature conditions for reproduction by birds. Mean monthly air temperatures were especially high in June in the north of Yakutia, and in July also in the southeast of the Canadian Arctic, south and east of Greenland and areas of West Siberia near the Arctic Circle. Unlike 2004 when two extensive regions of cold weather were present during the summer, a single such area in the northwest of Canada was observed in 2005. This cold region enlarged in July, and deviation from the long-term average increased in the latter month compared with June.

Reports from researchers on spring phenology were generally in agreement with generalised air temperature data for June. Thus, warm June weather in north-eastern Greenland and Siberia corresponded well to the prevailing indications of an early spring. The largest discrepancy of the two parameters was

observed in Finland and the Kola Peninsula, which apparently was due to the early start of spring in these areas, in May, while June temperatures reflected summer conditions there.

Mean monthly air temperatures in July were also mostly in agreement with the evaluation of summer weather by respondents. However, some discrepancies were obvious and occurred at a relatively high rate in the western part of Eurasia (Fig. 2 on page 59). Some of the weather descriptions from this region indicate highly variable conditions during certain periods, which could have made it difficult for observers to produce an adequate evaluation, particularly in the course of a short-term survey.

According to observations in three localities, melting of large accumulations of snow, in Finnish Lapland and the central part of the Kola Peninsula, resulted in prolonged flooding of bogs and floodplains, and therefore reduced the availability of these habitats for birds and led to decreases in numbers of breeding birds. Rains and associated high water levels led to the destruction of nests of the Temminck's Stint in Finnish Lapland. Mass nest losses of different bird species occurred on 26-27 June in the Malozemelskaya Tundra close to the Pechora River delta due to a high spring tide coinciding with a strong north-western wind, while nests of Black Brant were flooded as a result of a similar event in mid May in the outer Yukon-Kuskokwim Delta in Alaska.

Flooding of river valleys, occurring after heavy rains in the second half of July on the rivers Kotuy and Yana in Siberia, was late in the season and thus unlikely to have had a severe adverse impact on birds. Repeated returns of cold weather with snowfalls in June and early July in the Polar Ural Mts. and east part of the Bolshezemelskaya Tundra resulted in the deaths of returning passerines and then in the breeding failure by many ground-nesting birds, in spite of otherwise favourable conditions. Short-term drops in temperature or heavy rain reported from some other sites in the Arctic probably were not catastrophic for birds. Tundra fires were not reported in 2005 in spite of the prevailing warm weather and locally dry conditions in the Arctic. Accordingly, although unfavourable weather conditions and extreme events of various kinds occurred in several regions, they were not likely to spread across wide areas and consequently had no strong impact on any geographic population of birds.

Rodents abundance

The importance of microtine rodents in the population dynamics of avian and mammalian predators and, in turn, the influence of the latter on the reproductive performance of ground-nesting birds have

been highlighted many times in the scientific literature and the previous issues of the "Arctic Birds" newsletter. Accordingly, the evaluation of rodent abundance has always been a focus of annual reviews of breeding conditions of tundra birds.

Rodent populations increased in 2005 in a wide area in the north of Siberia (Fig. 3 on page 60), and reached high numbers in the region from the middle Yamal in the west to lower Kolyma in the east. Siberian Lemmings *Lemmis sibiricus* were particularly abundant in the arctic tundra of north-western Taimyr, where the super-peak stage of the population cycle was reached, according to observers' opinion. The situation was more ambiguous in the south of the tundra zone and in forest tundra within the same broad region, where locally (*e.g.*, at southern Yamal, Yana and Alazeya rivers) low rodent abundance was detected. A small patch of high rodent numbers was recorded within the Meinypilgyno lake-river depression on Chukotka, where voles were numerous, while low rodent abundance prevailed elsewhere in the circumpolar region with some patches of average values.

Certain trends in rodent abundance were revealed in several regions. Numbers were decreasing by the summer in the Pechora delta area, the southern tundra to the west and east of the Polar Ural Mts, everywhere in the north-west of Chukotka, Chukotsky Peninsula, Wrangel and Bylot islands and north-eastern Greenland. Apart from the lemming outbreak areas in Siberia, rodent numbers were increasing in several sites in the south of Chukotka and on the northern coastal plain in Alaska.

Predators

While apparently depending on the current rodent abundance, the distribution and numbers of rodent specialists also depends to a considerable degree on rodent numbers in the preceding year. Arctic Fox is the predator that usually has the strongest impact on the breeding success of ground-nesting birds. As evidenced by Fig. 1 on page 45, Arctic Foxes were rare across most of the European Arctic in 2005, and their reproduction was recorded only in two localities there. Breeding Arctic Foxes were reported as common in a single site on the Yamal where rodent abundance was the highest for the region. The abundance of foxes varied widely across the area of the Siberian lemming outbreak, from very low in the Lena River delta to high in the north-west of Taimyr. Arctic Foxes were rare everywhere in south Chukotka, south Alaska and on Wrangel Island, although they bred in the latter area. Arctic Foxes were abundant and bred on the Belyaka Spit in the north of Chukotka, and occurred in average numbers in several sites of the Yukon-Kuskokwim Delta and on the northern coastal plain

in Alaska. Breeding by foxes was reported from some sites in the latter region, where rodent numbers started to increase. Information from the Canadian Arctic was not sufficient for a comprehensive picture, but breeding in variable numbers was reported from the Karrak Lake area, Bylot Island and islands in the north of Hudson Bay. Arctic Foxes were present in north-eastern Greenland but breeding was not recorded, which accords with low lemming abundance in the region.

Among other mammalian predators, Red Fox (in the southern part of the Arctic) and Ermine were the most often reported, and were followed by Brown Bear and American Mink. Brown Bears had the greatest impact at nesting colonies of gulls and waterfowl on small coastal islands in some areas of Chukotka, while American Mink was the most abundant and active predator in the Yukon-Kuskokwim Delta. Least Weasel was reported from several sites, while Polar Bear, Wolverine and Wolf were normally occasional predators on birds, except for the more systematic activities of Wolverine in some large colonies of geese.

Snowy Owl and Pomarine Skua although avian predators depend heavily on lemmings and breed in considerable numbers only when the abundance of lemmings is sufficient. Accordingly, Snowy Owls were common or abundant breeders in two localities in north-western Taimyr in 2005, while breeding in low numbers was reported from central Taimyr and the Lena Delta in Siberia, and the Barrow area in the north of Alaska (Fig. 2 on page 45). Solitary pairs of generally common Snowy Owls could have attempted breeding on Wrangel Island, but failed due to insufficient food availability. The more southerly distribution of Short-eared Owls tallies well with their primary dependency on voles rather than on lemmings. While records of this species were more frequent compared with Snowy Owls, particularly in the southern regions of the Arctic, breeding was rarely documented. Reproduction by Short-eared Owls was confirmed or alleged in 8 sites in 2005, and they were reported as common just in two localities in Siberia. Observation of a pair of Short-eared Owls within the high Arctic in the north-west Taimyr was of special interest.

Pomarine Skuas bred in 6 localities in Siberia (Fig. 3 on page 46), among which 5 were areas of high lemming numbers, and accordingly had average to high numbers of breeding skuas. The latter were rare breeders in the lower Indigirka area where low abundance of rodents reported.

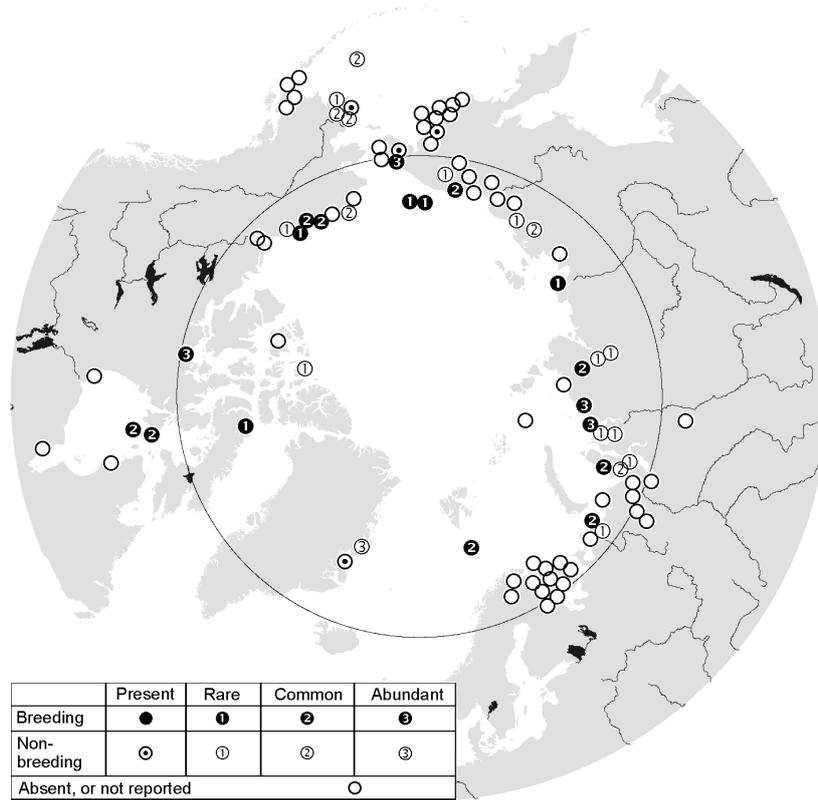


Figure 1. Abundance of Arctic Foxes in the Arctic in 2005

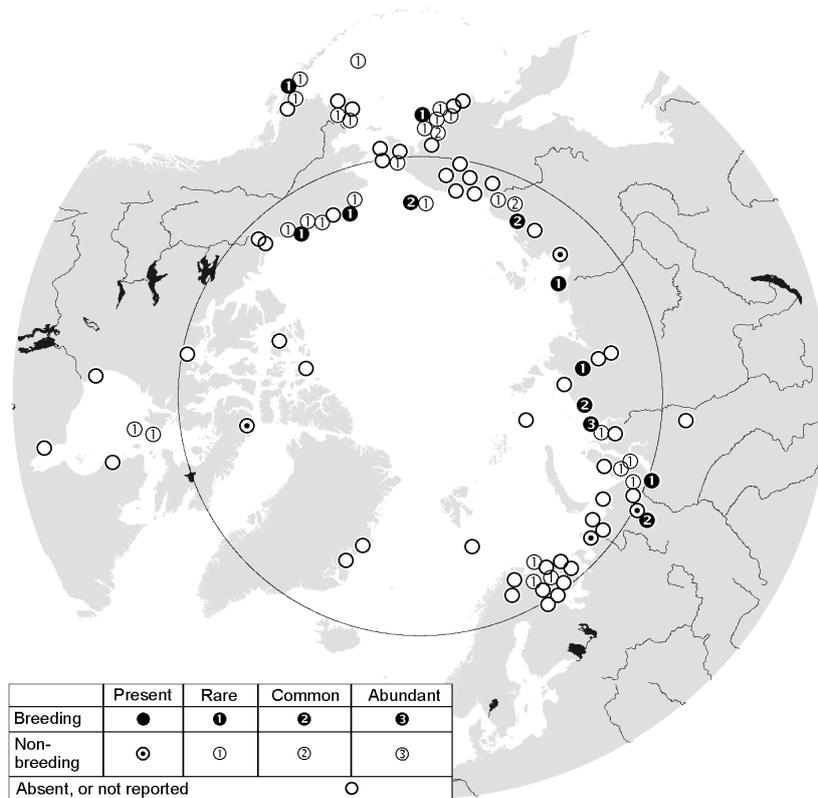


Figure 2. Abundance of owls in the Arctic in 2005

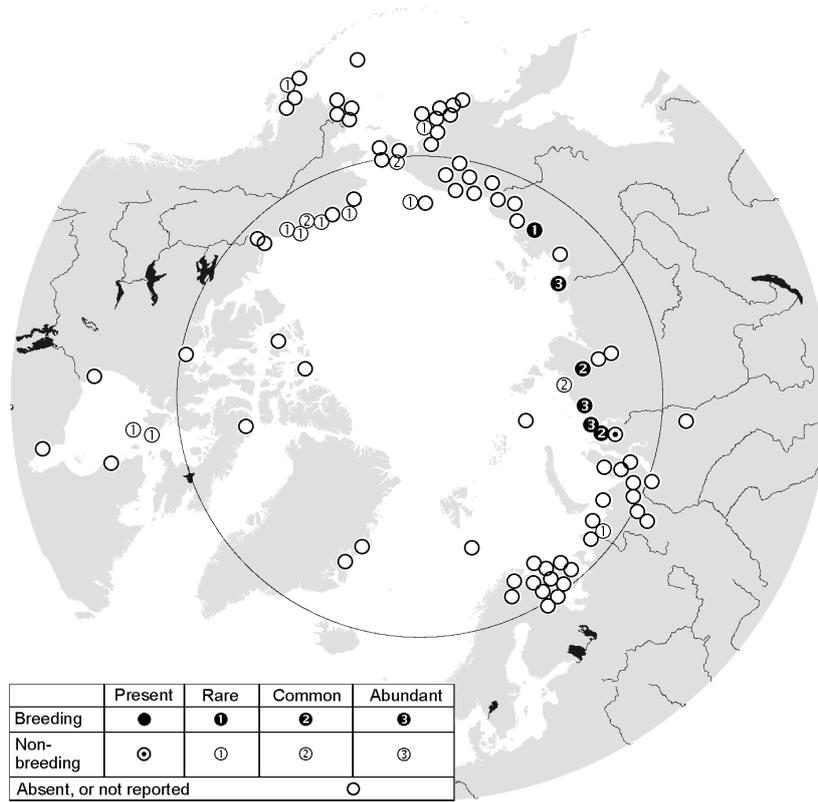


Figure 3. Abundance of Pomarine Skuas in the Arctic in 2005

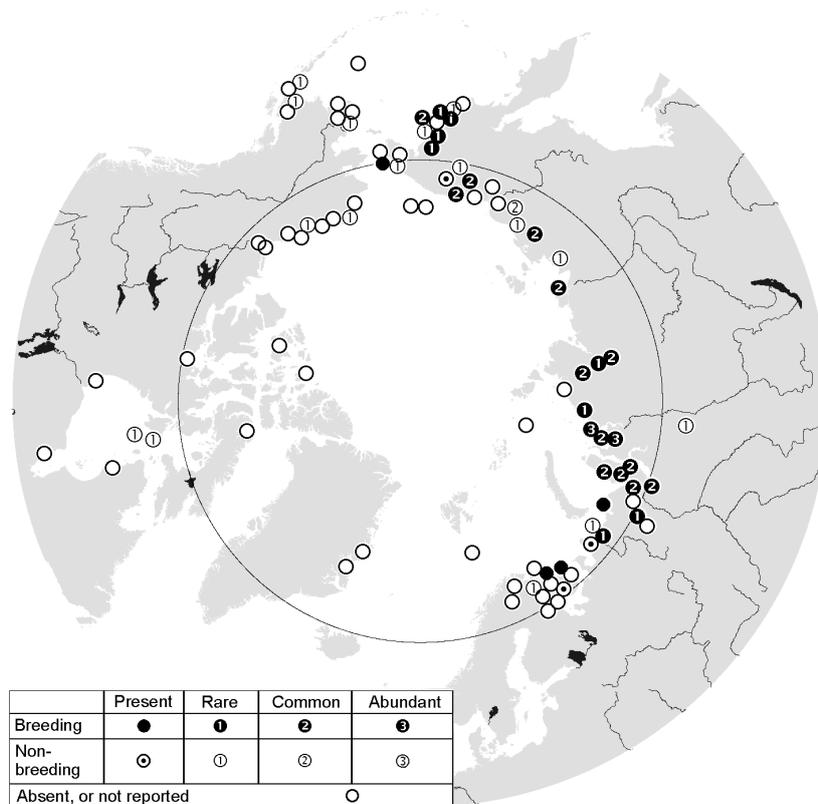


Figure 4. Abundance of Rough-legged Buzzards in the Arctic in 2005

As in the previous years, Rough-legged Buzzards bred across most of the north of Eurasia in 2005, while rare records of non-breeders prevailed in the American Arctic (a single unconfirmed breeding record was made in the north of Alaska). As buzzard dependence on rodents is less strict compared with Snowy Owls and Pomarine Skuas, their breeding in variable numbers was reported from 6 localities in the European north of Russia and 21 localities in Siberia. (Fig. 4 on page 46). High numbers of breeding Rough-legged Buzzards were observed in two sites in the lower Yenisei region with average to high lemming abundance. Increased mortality of buzzard chicks due to food shortage was reported from two sites only, including a locality on Yamal, where food deficiency resulted from a prolonged period of poor weather.

While a number of other species of avian predators were observed by respondents, their impact on the productivity of tundra birds appeared negligible. However, it is noteworthy that White-tailed Sea Eagle seems to have increased pressure on prey in the European part of the Arctic according to reports in recent years. This large predator was increasing in numbers, and had already expanded its breeding range to the north of the Kola Peninsula. Affected species included colonially nesting Common Eiders and Barnacle Geese.

Distribution and numbers of tundra birds

Warm summer seasons have become more common across broad areas of the Arctic, which has resulted in range expansion by several species of birds to the north, as reported by contributors to the ABBCS. The abundance of Grey Phalaropes and Turnstones decreased in 2005 in the Yukon-Kuskokwim Delta in Alaska, which probably indicated northward shifts in the ranges of these Arctic species. However, observations of species outside their previously known ranges are normally more readily detected. The following observations were reported in 2005, together with the above-mentioned extreme northern records of Short-eared Owl and White-tailed Sea Eagle. Barnacle Geese were found nesting for the first time near the northern coastline of the Kola Peninsula, and the first breeding record of Woodcock was made for the centre of the peninsula. Nesting Sparrow Hawks were observed on southern Yamal, while Red-breasted Geese expanded their breeding range to the south-east of Taimyr. Nesting records of White-billed Diver, Spotted Redshank and Long-billed Dowitcher on the central Taimyr expanded the breeding ranges of these species northwards. A nest of Eurasian Kestrel was found in the inner parts of north-western Chukotka. Other interesting observations included Common Pochard on the Kola Peninsula, Sharp-tailed Sandpiper on the northern coast of Taimyr,

Barnacle Goose on central Taimyr, Golden and Bald eagles on Wrangel Island.

Grouse populations show long-term dynamics which can be evaluated using data accumulated in the survey framework as these birds are easily distinguished even by amateurs. Numbers of Willow Grouse dropped from their previous high value in Fennoscandia, with the exception of Finnish Lapland and northern Kola Peninsula where grouse remained relatively abundant. Their numbers also remained high in the Pechora Delta and some localities of the Polar Ural Mts. and Yamal Peninsula. Respondents noted increasing abundance of Willow Grouse in the southeastern Taimyr, and that the species was common in localities of northern Yakutia, north-western Chukotka and Anadyr Lowland, but not in other areas of southern Chukotka, where these birds were rare. Willow Grouse were not numerous anywhere in North America, but observers reported them to be a common species in half of the localities of the Yukon-Kuskokwim Delta and on the Northern Coastal Plain, which indicated an apparently increased abundance in the case of the latter region. Numbers of Rock Ptarmigan increased in the north of Alaska where they became common, while elsewhere this species was reportedly rare, and apparently decreasing on the Kola and Taimyr peninsulas.

Breeding success

Evaluations of the reproductive success by ground-nesting birds were available from 40 localities of the circumpolar Arctic (Fig. 4 on page 60), which is not quite sufficient to characterize breeding performance in some regions. Therefore, we also rely on indirect evidence, like the abundance of rodents and Arctic Foxes, to outline general patterns.

Breeding success of birds, although based on few observations, was characterized as average or high from a wide area of northern Siberia, where high numbers of microtine rodents and predominantly warm weather occurred in 2005. Other pieces of evidence provided by respondents also indicated favourable conditions for birds in this region. High or average breeding success was reported by researchers from northern Alaska and Mackenzie Delta, although the weather conditions were not ideal and rodent populations were mostly at a low there. Successful reproduction by birds was probably enabled by the low abundance of predators and the early stages of increasing rodent abundance. Similarly, some increase in rodent numbers in the south of Chukotka led to predominantly average values of breeding success in birds. Many species of birds had average to high breeding success on Bylot and Wrangel islands, where numbers of both rodents and Arctic Foxes were low. Reproductive

effort by birds was probably variable along the coast and on islands in Hudson Bay, depending on local conditions.

Among other regions, breeding success was estimated as low in north-eastern Greenland due to high predation pressure by abundant Arctic Foxes and Ermines, when lemming numbers dropped to a low level. The collapse of rodent populations in north-western Chukotka did not result in increased predation pressure on birds, and breeding success was evaluated as average and high, respectively, for two localities there. This could be due to emigration of Arctic Foxes from this region to the neighbouring eastern Yakutia, where numbers of rodents still could be higher at this time. Information from the Yukon-Kuskokwim Delta is diverse and insufficient for an unambiguous conclusion, but generally breeding success for birds in western Alaska was probably not below average, based on unusually high numbers of juvenile Bar-tailed Godwits from this region observed on their wintering grounds in south-east Australia (see Minton *et al.* in the current issue).

The available data did not permit an assessment of reproductive success for birds in the north of Europe, but it probably varied both geographically and between species within a locality. Thus, breeding success was low in ducks and waders, average in the Barnacle Goose and high in the White-fronted Goose in Topsiseda, the Malozemelskaya Tundra. Weather conditions had an adverse impact on reproductive effort by birds in several sites, but nonetheless breeding output was probably close to average in the western part of the European region.

In summary, summer 2005 was predominantly successful for ground-nesting birds in the Arctic. The worst breeding conditions occurred in north-eastern Greenland, while average reproductive performance was shown in northern Europe and southern Chukotka.

Comparison with predictions for 2005

Predictions of bird breeding performance in several Arctic regions for 2005 were made in "Arctic Birds" No. 7 (pages 42-43) based on the implied regularity of variation in rodent populations, and a corresponding variation in predation pressure on eggs and clutches of ground-nesting birds. Current knowledge of the situation in 2005 now can be used to verify the predictions.

Variability between localities in terms of abundance of microtine rodents in Fennoscandia was expected to result in a generally good reproductive performance by birds. Low rodent numbers were reported from all sites, with the exception of one where abundance was average, but unfortunately the

available data did not permit a general evaluation of breeding success. However, breeding success was affected on one hand by flooding of lowland habitats and associated loss of some clutches, and on the other hand by low predation pressure reported by some respondents. Thus, breeding success of birds could be close to average in the east of Fennoscandia.

An increase in rodent abundance and associated high breeding success of birds were predicted for the area from the White Sea to eastern Taimyr in 2005, and a decrease in localities where numbers were already high in the previous year, 2004. Reality provided partial support for the prediction, as lemming populations reached super-peak stage in 2005 on western Taimyr, where numbers already had been high in 2004. The area of high lemming abundance spread from middle Yamal to the east at least to central Taimyr, and probably even farther eastward, linking areas of high rodent numbers in Yakutia. Accordingly, reproductive performance by birds was average to high across this area. In contrast, the abundance of rodents turned low in the eastern part of the European Arctic and some localities on the Yamal Peninsula, which together with adverse weather resulted in decreased productivity of tundra birds.

Predictions for Yakutia were uncertain and allowed for a predominantly low abundance of rodents and low breeding output by birds in the subarctic part of the region, while the numbers of rodents were expected to increase and bird productivity to reach high values on the eastern and western limits of Yakutia, as well as on the New Siberian archipelago. This prediction was fully confirmed, in spite of the scarcity of available information. Unfortunately, no direct observations were made on the New Siberian archipelago, but the high abundance of juvenile waders from populations breeding on the New Siberian islands recorded on their Australian wintering grounds (see paper by Minton *et al.* in this issue) provided unambiguous support for the predicted successful reproduction by birds.

Breeding success of birds should have become high on Chukotka in 2005, given the anticipated increase in rodent numbers in Anadyr Lowland and high abundance values expected in several areas in south and north Chukotka. The prediction was valid in respect to rodents in Anadyr Lowland, but their abundance turned mostly low in sites along the Arctic coast of Chukotka, with the exception of Kolyuchinskaya Bay area where voles were still common locally after the collapse of lemming numbers during the winter. Breeding success of birds was about average in the region.

A predicted increase in rodent numbers and associated successful reproduction by both predators and

tundra birds in Alaska was best confirmed on the northern coastal plain. The situation in the Yukon-Kuskokwim Delta was ambiguous, while information from the Alaska Peninsula was not sufficient for firm conclusions. However, low abundance of predators and favourable weather should have enabled successful reproduction of birds there.

A decreased pressure by mammalian predators on breeding birds was expected in the Hudson Bay area of the southern Canadian Arctic, which was probably the case locally, although information was not sufficient for reliable conclusions. Breeding of geese was really quite successful, while reproduction by waders still seemed to be affected by predators. A similar scenario was also realized on Bylot Island and north-eastern Greenland, fairly close to one of two predicted options. Lemming numbers decreased in the latter region while numerous Arctic Foxes were responsible for the highest nest predation on record.

Thus, many expectations based on the alternative prey hypothesis were confirmed, although other factors like weather, extreme events and uncertainty related to the cyclicity of rodent populations contributed to deviations from predictions.

Predictions for summer 2006

As in previous years, accumulated information on the dynamics of rodent and predator populations will be used to suggest scenarios for the stage of “prey-predator” systems expected in summer 2006 and the anticipated impact of the latter on the breeding success of tundra birds.

First indications of an increasing trend in rodent numbers were recorded in Fennoscandia in 2005, and this increase should develop further in 2006, resulting in favourable conditions for birds. Rodent numbers will most likely stay at a low in the north of Europe to the east of the White Sea, at best increasing locally. However, numbers of predators will be low after the poor 2005 season allowing for successful reproduction by tundra birds.

Populations of rodents should generally decline in a broad area from the Yamal Peninsula to the Lena Delta in northern Siberia, although rodent numbers can reach higher values in some localities on Yamal where populations were at a low during the two recent years. Given that numbers of predators in the region were supported by sufficient numbers of either lemmings or voles in 2005, predation pressure on birds is expected to be heavy in 2006.

In more eastern areas from Taimyr to the Lena Delta and in eastern Yakutia near the Kolyma Delta, numerous Arctic Foxes are expected to have a strong adverse impact on bird reproduction after the crash of lemming populations, which probably will happen following the outbreak in 2005. This pessimistic scenario can be locally moderated in areas where lemming populations crashed already in late summer 2005, as happened on western Taimyr, forcing numerous juvenile foxes to migrate from these areas or resulting in these predators perishing from starvation. However, breeding success of birds should be generally low in the north of Central Siberia.

Rodent numbers may start to increase in 2006 in northeastern Europe, localities of eastern Yakutia, northern Chukotka, Wrangel Island, southwestern Alaska and parts of the Canadian Arctic, where they were low in 2004-2005, and provide for moderate to high reproductive output of birds. If populations of rodents in northern Alaska reach a peak in 2006 it will result in superior conditions for breeding tundra birds. Breeding success of birds should also improve in north-eastern Greenland, as rodent numbers are expected to increase, while the abundance of Arctic Foxes is not likely to be very high due to their breeding failure in 2005.

In summary, moderate breeding success of birds is expected to prevail across most of the circumpolar Arctic in 2006, with a tendency to be above average in the western Hemisphere and in Europe, and below or close to average across Central and parts of Eastern Siberia.

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**ARCTIC BREEDING SUCCESS IN 2005,
BASED ON JUVENILE RATIOS IN
WADERS IN AUSTRALIA IN THE
2005/2006 AUSTRAL SUMMER**

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A principal objective of the Victorian Wader Study Group and Australasian Wader Studies Group catching and banding programs, in South-East Australia and North-West Australia respectively, is to catch a sufficient sample of each of the main wader species each austral summer to enable an annual index of breeding success to be determined. This index is based on the percentage of juvenile/first year birds in catches.

This monitoring program started in South-East Australia in 1978/79 (28 years), though initially on a limited range of species, and has been undertaken in North-West Australia since 1998/99 (8 years), though with some data from earlier years.

Australia is well placed to undertake a breeding success monitoring role on migratory waders from the Northern Hemisphere because it is the terminus of migration for most species, with populations of both adult and juvenile birds relatively static in the period from November to mid March. By standardising sampling techniques as much as possible potential biases in the results from year to year are minimised, with the result that both annual and longer term variations in breeding success are more likely to be detectable and meaningful.

The “% juvenile” results for each year since 1999 have been published in the Arctic Birds Newsletter (see Minton *et al.* 2005a) and more recently in The Stilt (see Minton *et al.* 2005b). A comprehensive paper on the percentage juvenile monitoring in South-East Australia covering right back to 1978/79 has now also been published (Minton *et al.* 2005c). Attempts to correlate the findings with Arctic breeding conditions such as temperatures, date of snow melt and predation levels have also been

made (Soloviev *et al.* in press, Boyd *et al.* 2005), but only limited correlations have so far been found.

This paper adds to the pool of information by detailing the percentage juvenile monitoring results for the 2005/06 austral summer in both South-East and North-West Australia. These are an indication of the breeding success of the different wader populations in the Arctic summer of 2005.

Methods

As usual fieldwork was programmed to try and obtain a number of samples of each species at their principal locations in each study area. As far as possible the timing of such catches is similar at each location each year. However in North-West Australia the main monitoring effort in the 2005/06 non-breeding season was brought forward, mainly for climate and logistical reasons, to November/early December from the late January/early March period employed during the two previous years.

Only waders caught by cannon netting are included in the data presented. Last year some supplementary information on birds caught by mist netting was included but there were insufficient mist netting samples this year.

The tables of results (see Tables 1-4) are presented in a similar form to previous years except that in the detailed catch information for the 2005/06 season in South-East Australia the long term *median* percentage juvenile figure is used as the yardstick for assessing breeding success. The average is however still used for judging the North-West Australia data because at present there is an insufficiently long data set for the median to be employed. Also incorporated into the tables is the overall assessment of breeding success for each species, these categorisations being arrived at in a similar manner to those presented in Minton *et al.* (2005c). Average percentage juvenile figures, for the last eight years, are also still used in Tables 3 and 4.

Results

The Victorian Wader Study Group spent 27 days in the field in the mid November to 20 March monitoring period and made 32 cannon net catches which contributed to the South-East Australia data. In North-West Australia 23 days were spent in the field, with 20 cannon net catches – all except three of these being in a concentrated period between 13 November and 2 December. All this fieldwork is undertaken by volunteers, usually with a team of 10-20 people involved on each day. The main effort in North-West Australia was carried out by the AWSG November/December 2005 Expedition.

The detailed results for the 2005/06 monitoring are presented in Table 1 (South-East Australia) and

Table 2 (North-West Australia). Tables 3 and 4 show the 2005/06 results in comparison with the previous seven years. Data in Tables 1 and 2 is only included for species where 29 or more birds were caught.

Satisfactory catch totals were obtained for all of the seven species for which annual monitoring is attempted in South-East Australia. A much better sample of Curlew Sandpipers* was obtained than in other recent years, principally due to one excellent catch of 393 birds, when fortuitously some 2500 Red-necked Stints walked to behind the nets leaving only the Curlew Sandpipers in the catching area. The Red Knot sample was also better than usual because of a particularly good catch of 232 at the main Red Knot location, in Corner Inlet. Unusually, three significant catches of Bar-tailed Godwits were made, again giving a larger than normal sample for this species.

Sampling in North-West Australia was more typical of other years with the usual species dominating catches. However a greater than normal sample of Red Knots was obtained. As usual Curlew Sandpipers were difficult to accumulate because, at their current reduced population level, they are dispersed thinly throughout flocks of other waders. It took 13 samples to accumulate a total of only 95 birds.

Discussion

South-East Australia

Overall the 2005 Arctic breeding season for wader populations which spend the non-breeding season in South-East Australia appears to have been the best since 1991 and the second best in the 28 years over which these populations have been monitored.

Bar-tailed Godwits and Sanderling had exceptional breeding success and in Curlew Sandpiper, Red Knot, Ruddy Turnstone and Sharp-tailed Sandpiper the breeding outcome was very good. Only Red-necked Stint fared poorly.

These results raise a number of interesting questions, in particular:

- a) What factors caused such a widespread and unusually successful breeding season across a broad range of species and covering such a wide span of breeding locations (Taimyr to Alaska)?
- b) What caused the Red-necked Stint to have such a poor breeding season? Its breeding range and its breeding habitat overlap those of several other species which had a successful breeding season.

This was the second consecutive poor breeding year for Red-necked Stint, with the 7.4% juveniles being even lower than the 10% of the previous year. Whilst a "correction" to population levels may have been considered likely following four very good breeding performances in the previous six years (two at record levels) there is no obvious explanation of the mechanism which caused such poor breeding success. A detailed examination of environmental factors, such as weather conditions and predation, will be made but it would be surprising if it proves possible to single out any of these which might have affected Red-necked Stints only.

A possible contributor could derive from the high breeding success in recent years. It is likely that the Red-necked Stint breeding populations in both 2004 and 2005 contained a greater proportion of young birds than normal. Young birds in most species tend to be less successful in their initial breeding attempts than older, more experienced, birds. However one would not expect an effect as large as found here. Red-necked Stints breed for the first time at age 2. It is interesting to note from Table 3 that there was a marked reduction in breeding success two years after the exceptionally high breeding success of 1998. However this was not apparent two years after the other high breeding success year in 2001. Again poor breeding success in 2004 was two years after low breeding productivity in 2002, but the 2005 low breeding output did follow two years after good recruitment in 2003. These conflicting results appear to indicate that it is unlikely that a higher than normal level of inexperienced young birds in the breeding population was the prime cause of the very low breeding success in 2005, though it may have been a contributing factor.

The very good breeding season experienced by Curlew Sandpipers in 2005 followed good breeding success in the previous year also. This is particularly welcome as it may herald the beginning of a population turnaround for this species which has declined markedly over the last 20 years.

Amazingly, Sharp-tailed Sandpipers had a third consecutive good breeding year. The figures for 2005/06 were not quite as high as in the two exceptional years preceding but were well above the long term median and average. This run of good breeding success has noticeably and markedly increased Sharp-tailed Sandpiper populations from the low level they had reached after a long period of decline. The most recent result has consolidated the improvement.

Perhaps the biggest winner of all in 2005/06 was the Bar-tailed Godwit, even though the actual figure (39.8%) was only slightly above that of the previous year. All the indications from observations in

* see tables for scientific names of birds

the field suggest that juvenile Bar-tailed Godwits were far more numerous and widespread in the 2005/06 non-breeding season than in any other year in recent times. Data from the breeding areas of these birds in Alaska (Brian McCaffery pers. comm.) also indicated that 2005 was an exceptionally good breeding season for the Bar-tailed Godwit populations breeding in the north and west of Alaska. It is particularly interesting that the ratio between his 2005 figure and the average of other recent years was the same (*c.* 3x) as a similar ratio in South-East Australia, though in absolute terms the percentage of juveniles in Australia was higher. The latter is at least partly caused by the fact that some juveniles which will ultimately join the New Zealand Bar-tailed Godwit populations spend their first non-breeding season in Australia.

This "New Zealand effect" is most pronounced in the Red Knot, where very few first year birds travel as far as New Zealand. This greatly increases the amplitude of the percentage juvenile figures recorded each year for Red Knot in South-East Australia. Nevertheless the 73.3% juveniles recorded this year would still be classed as a very good breeding outcome for the Red Knot, which probably mainly come from Chukotka in the far North-East of Siberia.

Sanderling was the other species, which had an exceptionally good breeding season in 2005. The full extent of the breeding grounds of the Sanderling population which comes to South-East Australia are not known and therefore linking this outcome to particular factors will be difficult. The only breeding season recovery of a South-East Australian banded Sanderling was in the New Siberian Islands so it is interesting that the Red Knot population from there, which mainly spend the non-breeding season in North-West Australia, also experienced an exceptionally good breeding season in 2005. At the main location in Victoria the size of the flock (600-800) in the non-breeding season was almost double the normal level for a period because of the huge numbers of juveniles present. However this species moves quite widely between different locations on the coast in the non-breeding season and this high concentration later dispersed.

North-West Australia

The overall outcome of the 2005 breeding season for wader populations which spend the non-breeding season in North-West Australia was above average, but not quite so good as in South-East Australia.

There are some interesting similarities and contrasts. Curlew Sandpiper and Red Knot both had exceptionally good breeding seasons, not dissimilar to the very good performance of both these species in South-East Australia. This is in spite of the fact

that two different subspecies of Red Knot are concerned, with the predominantly *piersmai* North-West Australian population probably breeding mainly in the New Siberian Islands. The breeding location of Curlew Sandpipers from North-West Australia is not known but probably overlaps significantly with that of birds from South-East Australia (mainly northern Yakutia); it could even be in the New Siberian Islands which would account for its high breeding success in 2005.

The figure of 56.8% juveniles for Red Knot in North-West Australia is exceptional as there is no "NZ effect" in that region. More probably the high figure is partly an artefact of sampling relatively early in the non-breeding season when there is a greater tendency for some juvenile birds to occur in separate flocks before they later become more integrated into the population as a whole.

Red-necked Stints in North-West Australia had a noticeably better breeding performance than those from South-East Australia. Recoveries and flag sightings on or near the breeding grounds indicate that there is probably significant overlap in breeding areas between these populations. This makes the marked difference in apparent breeding performance in 2005 rather surprising, although in some previous years there has also been a lack of correlation (Tables 3 & 4).

The Bar-tailed Godwits which spend the non-breeding season in North-West Australia (*menzbieri*) breed in northern Yakutia. They only had an average breeding season in 2005, much less good than the Bar-tailed Godwits from Alaska (*baueri*) which go to South-East Australia (and New Zealand).

The Greater Sand Plover was the exception in 2005/06 with a very poor breeding outcome – the lowest recorded in these studies. This species breeds further south than the other species monitored and could well have experienced unusually adverse weather conditions at a critical stage of its breeding cycle and over a widespread part of its breeding range.

Future work

As always it will be fascinating to see what the 2006 breeding season brings in the way of success for the wader populations which visit Australia from the northern hemisphere. One could perhaps expect that the excellent breeding success of 2005 for wader populations which go to South-East Australia will be followed by an unusually poor breeding year in 2006. This is what happened in 1992 after the previous exceptional breeding year of 1991. But in 1992 there was a major additional factor involved – the lowering of temperatures across Arctic regions all around the world due to

the effects of the cloud and dust which emanated from the Mount Pinutubo volcanic eruption in the Philippines (Ganter & Boyd 2000).

A key question is whether the recent much needed good breeding successes by Sharp-tailed Sandpipers and Curlew Sandpipers and Alaskan Bar-tailed Godwits can be consolidated by further good breeding years? Also of great interest is when will the recent low breeding success of Red-necked Stint return to more normal levels?

The intensive VWSG monitoring program will be resumed in mid November and sustained until mid March 2007. The North-West Australia situation will again mainly be monitored via a special wader expedition, which in 2006 will take place from November 4 to November 25.

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Table 1. Percentage of juvenile/first year waders in cannon-net catches in South-East Australia in 2005/2006

Species	No. of catches		Total caught	Juv./1st year		S.E., %	Long term median % juvenile (years)	Assessment of 2005 breeding success
	Large (>50)	Small (<50)		No.	%			
Red-necked Stint – <i>Calidris ruficollis</i>	12	8	4034	299	7.4	0.41	14.0 (28)	Poor
Curlew Sandpiper – <i>C. ferruginea</i>	1	11	558	149	26.7	1.87	10.0 (27)	Very good
Bar-tailed Godwit – <i>Limosa lapponica</i>	3	0	274	109	39.8	2.96	14.3 (17)	Exceptionally good
Red Knot – <i>C. canutus</i>	1	3	273	200	73.3	2.68	41.8 (15)	Very good
Ruddy Turnstone – <i>Arenaria interpres</i>	1	6	223	63	28.3	3.01	9.9 (16)	Very good
Sanderling – <i>C. alba</i>	2	6	185	115	62.2	3.57	12.6 (15)	Exceptionally good
Sharp-tailed Sandpiper – <i>C. acuminata</i>	1	4	155	40	26.7	3.51	10.7 (25)	Very good
Great Knot – <i>C. tenuirostris</i>	–	1	29	5	17.2	7.01	–	(Good)

All birds cannon-netted in period 15 November to 28 February except for Red-necked Stint, Ruddy Turnstone, and Sanderling, for which catches up to 20 March are included.

ARCTIC BREEDING CONDITIONS

Table 2. Percentage of juvenile/first year waders in cannon-net catches in North-West Australia in 2005/2006

Species	No. of catches		Total caught	Juv./1st year		S.E., %	Assessment of 2005 breeding success
	Large (>50)	Small (<50)		No.	%		
Great Knot – <i>Calidris tenuirostris</i>	6	7	673	82	12.2	1.46	Average
Bar-tailed Godwit – <i>Limosa lapponica</i>	3	11	479	52	10.9	1.42	Average
Red-necked Stint – <i>C. ruficollis</i>	3	4	478	97	20.3	1.84	Average
Red Knot – <i>C. canutus</i>	0	7	139	79	56.8	4.20	Exceptionally good
Curlew Sandpiper – <i>C. ferruginea</i>	0	13	95	35	36.8	4.95	Exceptionally good
Ruddy Turnstone – <i>Arenaria interpres</i>	0	5	38	8	21.0	6.05	Good
Sanderling – <i>C. alba</i>	0	2	29	4	13.8	6.40	–
Non-Arctic northern migrants							
Greater Sand Plover – <i>Charadrius leschenaultii</i>	3	5	433	41	9.5	1.41	Very poor
Terek Sandpiper – <i>Xenus cinereus</i>	2	7	273	36	13.2	2.05	Average
Grey-tailed Tattler – <i>Heteroscelus brevipes</i>	1	10	242	37	15.3	2.31	Average
Common Greenshank – <i>Tringa nebularia</i>	0	4	41	4	9.8	4.64	–
Whimbrel – <i>Numenius phaeopus</i>	0	1	30	0	0	–	–

All birds cannon netted in period 1 November to mid-March (actually all in period 13 November 2005 to 19 February 2006)

Table 3. Percentage of first year birds in wader catches in South-East Australia 1998/1999 to 2005/2006

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	Average
Ruddy Turnstone – <i>Arenaria interpres</i>	6.2	29	10	9.3	17	6.7	12	28	14.8
Red-necked Stint – <i>Calidris ruficollis</i>	32	23	13	35	13	23	10	7.4	19.5
Curlew Sandpiper – <i>C. ferruginea</i>	4.1	20	6.8	27	15	15	22	27	17.2
Sharp-tailed Sandpiper – <i>C. acuminata</i>	11	10	16	7.9	20	39	42	27	21.6
Sanderling – <i>C. alba</i>	10	13	2.9	10	43	2.7	16	62	20.0
Red Knot – <i>C. canutus</i>	(2.8)	38	52	69	(92)	(86)	29	73	52.2
Bar-tailed Godwit – <i>Limosa lapponica</i>	41	19	3.6	1.4	16	2.3	38	40	20.1

All birds cannon-netted between mid-November and third week in March (except Sharp-tailed Sandpiper and Curlew Sandpiper to end February only). Averages are given for last eight years excluding figures in brackets (small samples).

Table 4. Percentage of first year birds in wader catches in North-West Australia 1998/1999 to 2005/2006

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	Average
Red-necked Stint – <i>Calidris ruficollis</i>	26	46	15	17	41	10	13	20	23.5
Curlew Sandpiper – <i>C. ferruginea</i>	9.3	22	11	19	15	7.4	21	37	17.8
Great Knot – <i>C. tenuirostris</i>	2.4	4.8	18	5.2	17	16	3.2	12	9.9
Red Knot – <i>C. canutus</i>	3.3	14	9.6	5.4	32	3.2	(12)	57	17.7
Bar-tailed Godwit – <i>Limosa lapponica</i>	2.0	10	4.8	15	13	9.0	6.7	11	9.0
Non-Arctic northern migrants									
Greater Sand Plover – <i>Charadrius leschenaultii</i>	25	33	22	13	32	24	21	9.5	22.5
Terek Sandpiper – <i>Xenus cinereus</i>	12	(0)	8.5	12	11	19	14	13	12.9
Grey-tailed Tattler – <i>Heteroscelus brevipes</i>	26	(44)	17	17	9.0	14	11	15	15.6
Little Curlew – <i>Numenius minutus</i>	57	33	–	36	30	–	(40)	–	39.0

All birds cannon-netted in the period 1 November to mid-March. Averages are given for last eight years excluding figures in brackets (small samples)

MAP COLLECTION

Four maps below are provided to illustrate various aspects of bird breeding conditions in the Arctic in 2005.

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 2005 from the mean June/July temperature averaged for the period 1994-2003. This deviation indicates whether the respective month in 2005 was warmer (positive value) or colder (negative value) than average. The colour of the points at different study sites reflects a subjective evaluation by respondents of the spring as being early, average/moderate, or late (Fig. 1), and the summer as warm, average/moderate or cold (Fig. 2). Please note that, also referring to roughly the same period during the summer, the two types of information reflect essentially different phenomena that should not necessarily agree – for example spring could be early and cold. Temperature data were obtained from the National

Climatic Data Center (USA, <http://www.ncdc.noaa.gov/ol/climate/climateresources.html>).

Only stations with 26 or more daily records for a month were used for interpolation. The grid map was constructed using inverse distance interpolation in MapInfo Professional GIS software, with the following settings: cell size 50 km, search radius 500 km, exponent 1. The area covered by the grid includes the territory obtained from an overlay of Arctic boundaries, as defined by CAFF and AMAP, plus an additional 100-km buffer.

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

Base maps were downloaded from GRID-Arendal's WEB site

(<http://www.grida.no/db/gis/prod/html/arctic.htm>), projection – Lambert Azimuthal Equal-Area.

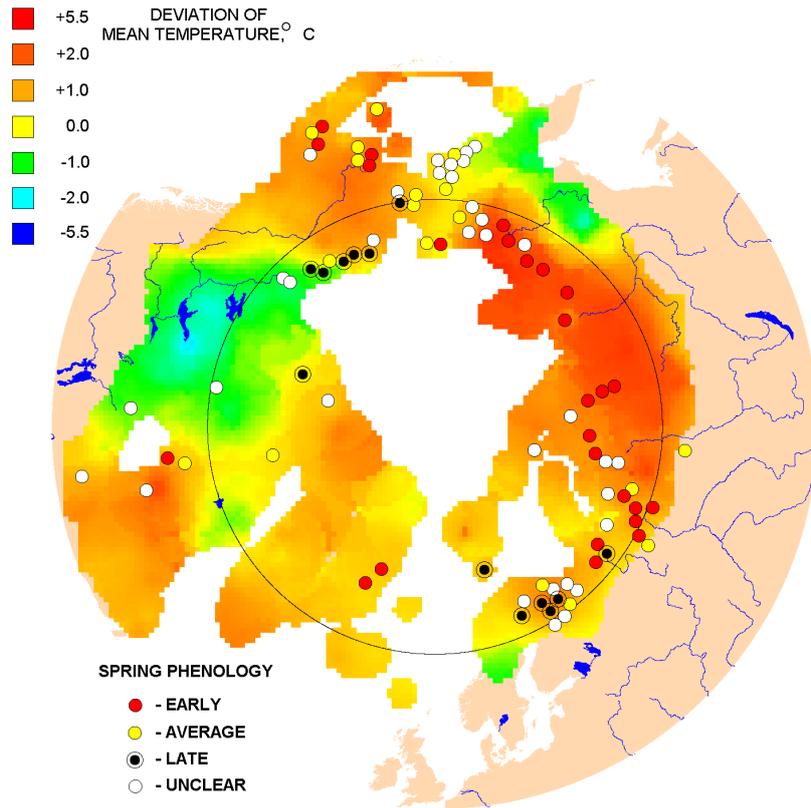


Figure 1. June temperature and phenological characteristics of spring in the Arctic in 2005.
See text above for legend

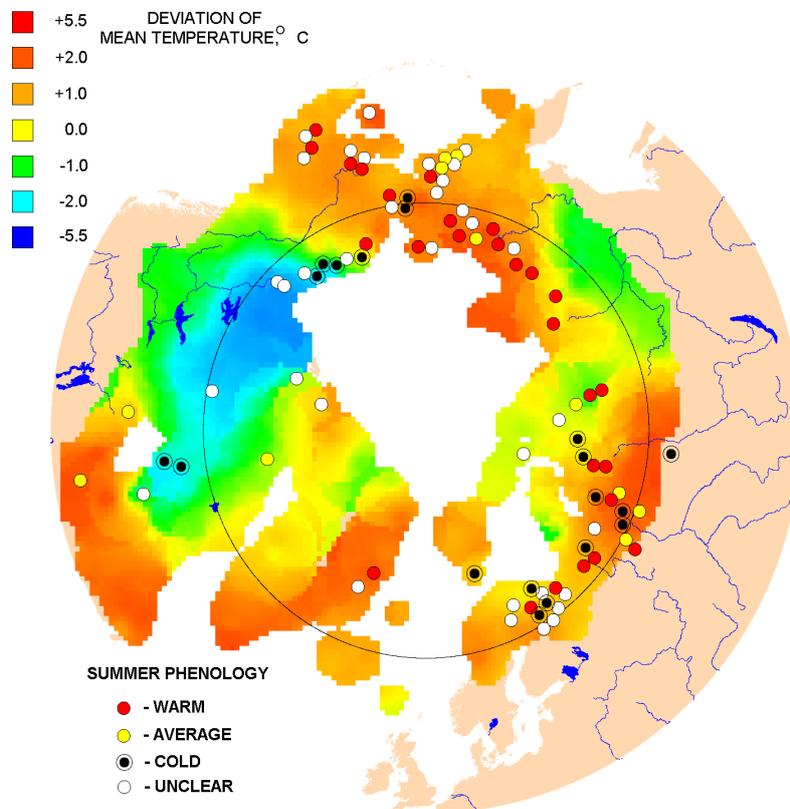


Figure 2. July temperature and phenological characteristics of summer in the Arctic in 2005

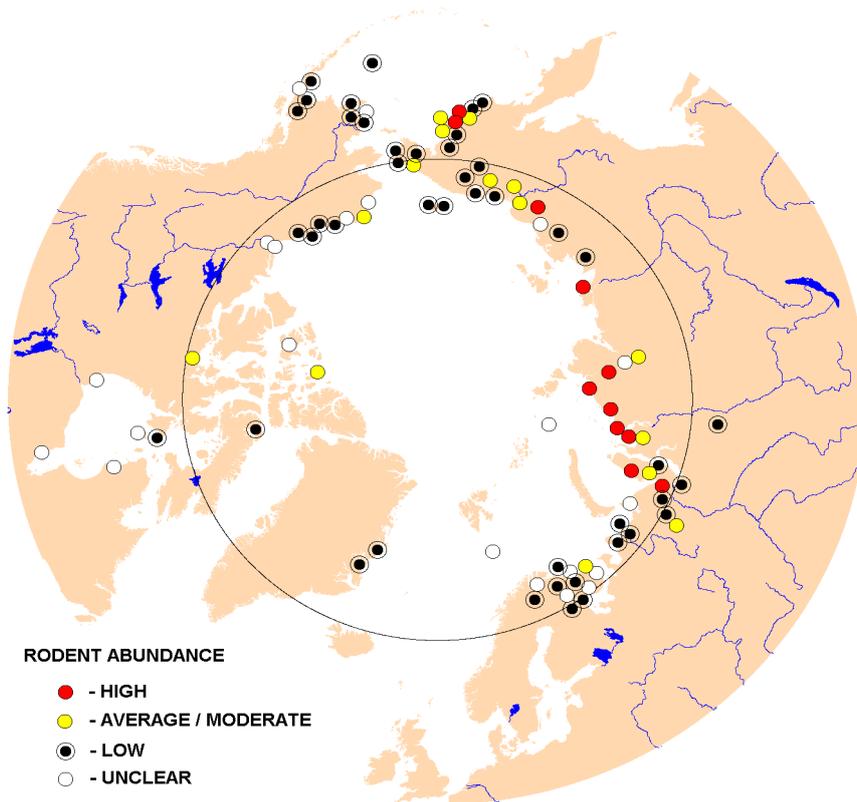


Figure 3. Rodent abundance in the Arctic in 2005

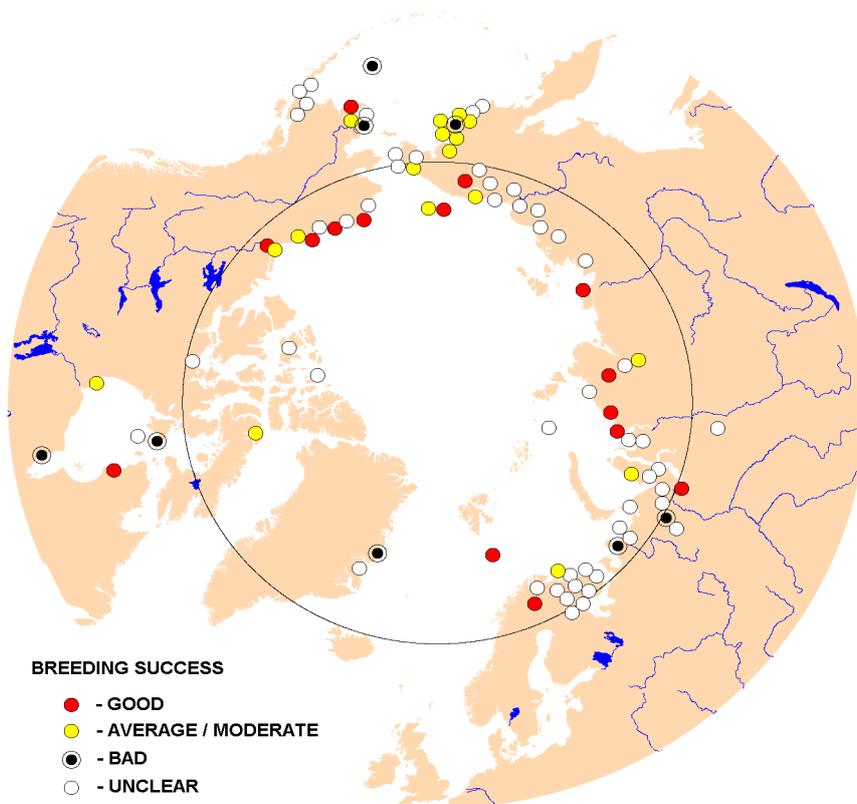


Figure 4. Bird breeding success in the Arctic in 2005