# **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



## No. 7 • 2005

## compiled by Mikhail Soloviev and Pavel Tomkovich

## A WORD FROM THE COMPILERS

The current issue of the newsletter of the Arctic Birds Breeding Conditions Survey (ABBCS) summarizes information on weather conditions, abundance of rodents, principal Arctic predators and effects of these factors on birds in the circumpolar area during summer 2004. Representation of the largest Arctic regions in the survey and the total number of localities, from which data on breeding conditions were available, did not change considerably compared with the previous 3 years (Table).

Table. Survey coverage in 1988-2004

Saacan			Total						
Season	IC	NW	FI	SW	RU	US	CA	GR	Total
1988	0	0	0	0	11	1	0	1	13
1989	0	0	0	0	19	1	0	1	21
1990	0	0	0	0	23	1	0	1	25
1991	0	0	0	0	35	1	0	1	37
1992	0	0	0	0	35	1	0	1	37
1993	1	1	0	0	35	0	0	2	39
1994	0	1	0	0	66	0	2	2	71
1995	0	3	1	1	45	3	4	3	60
1996	1	2	0	0	33	0	3	2	41
1997	0	1	0	0	47	1	2	2	53
1998	0	1	0	0	40	2	2	2	47
1999	0	1	0	0	30	6	10	3	50
2000	0	1	0	0	39	6	7	3	56
2001	0	1	0	0	49	17	8	2	77
2002	0	2	1	1	55	17	9	3	<b>88</b>
2003	0	1	2	0	45	14	8	3	73
2004	0	2	3	0	54	18	9	2	88

Countries: IC – Iceland, NW – Norway, FI – Finland, SW – Sweden, RU – Russia, US – USA, CA – Canada, GR – Greenland.

However, the total volume of information on breeding conditions was a record high in 2004 due to more comprehensive individual contributions, and exceeded by nearly a quarter the second highest, 2003. There is definitely an unrealised potential of further expanding the geographical coverage of the survey, but the current tendency of increasing the amount of information from individual localities is also encouraging.

2003-2004 the project During website (http://www.arcticbirds.ru) was updated with information for years 1988-1997 (Table), i.e. the period when the Arctic Birds Breeding Conditions Survey (ABBCS) did not exist as an international project. These data are almost exclusively restricted to the Russian Arctic, but the bias can be corrected if information from other Arctic regions becomes available. Given that much of the data from the late 1980s-early 1990s are already published, we encourage colleagues to submit relevant papers on the interactions of Arctic birds with the environment and thus make their findings widely available through the ABBCS website.

Information from the Arctic summer 2004 is supplemented in this issue by a regular compilation by ornithologists from the Victorian and Australasian Wader Study groups, who have continued to monitor proportions of juveniles among waders on the non-breeding grounds in Australia during northern winter 2004-2005. Assessment of breeding success in the Arctic from an Australian perspective allows us to validate conclusions based on scarce data from the north, although direct linking of non-breeding and breeding populations often represents a challenge in itself. Hopefully, comparisons of breeding success data from the Arctic with juvenile proportions on the wintering grounds will also become possible in the future for other flyways.

While monitoring data on Arctic birds have been collected in different parts of the globe during 2004 and early 2005, efforts were also undertaken by researchers to enable more coordinated and effective collection of data in the future. This aim was pursued by two workshops on monitoring Arctic-breeding waders in their breeding and non-

breeding areas respectively, held at the 2004 International Wader Study Group annual conference (Papenburg, Germany, 4-7 November 2004) in the framework of the Committee for Holarctic Shorebird Monitoring (CHASM) activities. The workshops focused on developing protocols for wader monitoring which should be published in the Wader Study Group Bulletin.

The need for standardized collection of ornithological data in the Arctic has become apparent in the recent years as more people have been attempting to undertake joint analyses of their diverse material. However, existing monitoring schemes have limited flexibility in respect to adopting new standards, and efforts towards standardization of protocols of data collection represent primarily an objective for the future, in anticipation of the continued increase in data flow. Meanwhile, data collection with a view to further information exchange between current schemes remains an immediate priority, with the next stage planned for summer 2005.

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For the latest information about the survey visit the website

## http://www.arcticbirds.ru

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









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

### LOCALITY REPORTS

#### 1. Malla Nature Reserve, Finland (69°04'N, 20°40'E)

Ice broke around 12 June at Kilpisjarvi Lake. An unusually cold early summer was reported from all of Fennoscandia including southern parts. Birch trees at the site were not yet in leaf and mosquitoes were virtually absent during the survey period.

On 18-20 June wader breeding was well under way despite cold conditions. Active territories were found on 11 km of transects, the most common breeding species were Whimbrel *Numenius phaeopus*, Greater Golden Plover *Pluvialis apricaria* and Greenshank *Tringa nebularia*. Willow Grouse *Lagopus lagopus* were frequently observed. Passerine breeding also appeared to be well in progress, notably nests with eggs of Snow Bunting *Plectrophenax nivalis*, Meadow Pipit *Anthus pratensis* and Bluethroat *Luscinia svecica* were common. Only one active nest of Rough-legged Buzzard *Buteo lagopus* was found. Rodent activity was not investigated or observed and we were unable to obtain any local information.

#### B. Totterman

#### 2. Mageroya, Norway (71°05'N, 25°40'E)

Local information stated 21 June was the first warm day of the season. Early summer was unusually cold all through Scandinavia.

Wader breeding activity appeared high despite the cold conditions during 21-23 June. On short transects at the

north, south and centre of the island, active territories were found, the most numerous were Ringed Plover *Charadrius hiaticula*, Greater Golden Plover, Redshank *Tringa totanus* and Red-necked Phalarope *Phalaropus lobatus*. Along the coastline west of Nordkapp, several active territories of Oystercatcher *Haematopus ostralegus* were observed.

Rock Ptarmigans *Lagopus mutus* appeared to be relatively common, Arctic Skuas *Stercorarius parasiticus* were observed breeding throughout and Long-tailed Skuas *S. longicaudus* were present but not observed breeding. No local information on rodent numbers was obtained and no signs of unusual rodent activity were noticed.

#### B. Totterman

#### 3. Gamvik/Slettnes, Norway (71°05'N, 28°15'E)

Local information described the season as cold. All areas of Scandinavia reported an unusually cold early summer. The Lakes on Nordkinnhalvoya, to the south of the site, were still icebound at the time of the survey.

Several short (<2 km) tundra and coastal transects were walked on 24-27 June. Active wader breeding territories were observed at higher sites but not on the coastline although Oystercatchers were common. The highest numbers of observed active breeding territories were of Ringed Plover, Greater Golden Plover and Dunlin *Calidris alpina*. Passerine breeding was also observed and well advanced, nests with young of Red-throated Pipit *Anthus cervinus* and nests with eggs of Lapland

Bunting *Calcarius lapponicus* were found along transects without special searching.

Arctic Skuas were numerous throughout but no Longtailed Skuas were observed. Local researchers advised that Arctic Skua and Dunlin breeding was in progress and indicated that no unusual rodent activity had been observed to date.

B. Totterman

#### 4. Finnish Lapland, Finland (69°54'N, 27°01'E)

The spring of 2004 was fairly early, and the snow melted on many fjell tops in April. May and early June, however, were considerably colder, and in mid- and late summer the weather remained cool and rainy for long periods.

The quantity of mosquitoes was normal after a few years with very low populations. A heavy outbreak of the autumnal moth *Epirrita autumnata* destroyed all the leaves in the birch forests in an area of 100 s km<sup>2</sup> in Enontekio, NW Lapland.

The populations of voles crashed almost totally during winter and spring, leading to one of the poorest years during recent decades.

Willow Grouse populations increased in numbers for the third successive year, and the species was exceptionally numerous all over Lapland. It is several decades since population sizes were so high.

My work concentrated on birds of prey. The number of breeding Gyrfalcon *Falco rusticolus* pairs was higher than during any other year of the present monitoring project, conducted since the early 1990s. Breeding success was very good, with an extremely rare brood of five full-grown fledglings in northernmost Sweden, near the Finnish border.

The Rough-legged Buzzard, however, was very scarce due to lack of microtines. Tens pairs were seen to build nests very early in late April, but in June almost all of them had abandoned their nests. Of the roughly one hundred known breeding territories from recent years in my Gyrfalcon study area, less than ten were inhabited. No breeding Long-tailed Skuas, Hawk Owls *Surnia ulula* or other vole-specialists were found although I was in the field in all parts of Northern Lapland.

Metsahallitus, the responsible governmental administrative body for monitoring Peregrine Falcons *Falco peregrinus* and Golden Eagles *Aquila chrysaetos*, reported one of the best years for both of these species during recent years. Both the population size and average number of young peaked. One pair of the Golden Eagle raised three young.

P. Koskimies

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

Observations from 25 May-18 July indicate that the season was warm for the last few days of May, but then turned cold and rainy for most of the rest of the season.

Small mammals were not seen, but a few winter nests were found.

We conducted intensive studies of Temminck's Stint Calidris temminckii. Hatching success was quite good (80-90% success). Many chicks died in the egg, for no apparent reason. Few avian predators (Northern Harrier Circus cyaneus, Rough-legged Buzzard, Golden Eagle, Eurasian Kestrel Falco tinnunculus, Merlin F. columbarius, Short-eared Owl Asio flammeus and Long-tailed Skua) and no mammalian predators were present. This field season was only the second at the study site. However, it was much colder and wetter than the 2003 season. From general observations, the abundance of flying insects (mosquitoes, blackflies, deerflies) seemed to be decreased by an order of magnitude from the 2003 season. There was evidence that Temmick's Stints, as single incubators, had difficulties acquiring enough food during periods off the nest. Nest abandonment was much higher than in 2003.

D.M. Tracy, D. Schamel

#### <u>6. Laplandsky State Nature Reserve, Kola Peninsula,</u> <u>Russia (67°57'N, 31°46'E)</u>

Yearly average air temperature was  $1.0^{\circ}$ C above the long-term average, and precipitation was 178% of the average. Mean monthly temperatures exceeded the average in all months with the exception of February, June and November ( $1.0^{\circ}$ C,  $0.3^{\circ}$ C and  $1.2^{\circ}$ C below average, respectively). The snow layer was similar to the long-term average measured on 9 March. Air temperatures dropped to  $-2^{\circ}$ C from 31 May – 9 June when snowfalls and rains occurred. Snow cover reduced to 50% on 17 May in the forest and on 28 May in the mountains. Snow melted completely from level areas on 24 May, and ice floated down larger rivers on 20 May. The water table was low in lakes in spring, and streams were shallow during summer.

Air temperatures exceeded the mean long-term monthly averages by 2.1°C in April, 1.1°C in May, 3.7°C in July and 0.8°C in August, and were 0.3°C below the average in June. Precipitation was 100% of the monthly average in April, 110% in May, 120% in June, 110% in July, 121% in August, 192% in September and 692% in October. Snow had blanketed the ground on 10 October. Autumn and winter 2004/2005 were warm.

The abundance of *Clethrionomys* spp. voles halved by autumn 2004, compared with the previous year, and reached 18.8 animals per 100 trap-nights in the Greysided Vole *Clethrionomys rufocannus*. The population cycle of the latter dominant species was protracted for a year, as relatively high numbers were recorded during 3 years in a row, compared with the usual 2 years. Abundance of *Microtus* spp. voles and shrews was low in summer 2004.

Numbers of Arctic Hare Lepus timidus, Red Fox Vulpes vulpes, Marten Martes martes, Ermine Mustela erminea and Weasel M. nivalis remained high. The yield of bilberry Vaccinum myrtillus, clusterberry V. vitis-idaea, bog bilberry V. uliginosum, crowberry Empetrum hermaphroditum and spruce seeds was good, but the crop of pine seeds was low.

Among birds of prey the Osprey Pandion haliaeetus, Northern Goshawk Accipiter gentilis and Merlin cer-

tainly or probably bred, while Rough-legged Buzzards and owls were rare without indications of breeding.

Tetraonid density determined in the course of counts in August was 83 birds/10 km<sup>2</sup>, which is the record low value found during 1998-2004. Abundance of waterfowl per unit length of lake and river shoreline was at its lowest for the period 1995-2004. Waders bred in usual numbers, including Greater Golden Plover, Dotterel *Eudromius morinellus* and Whimbrel in mountain tundra.

A.S. Gilyazov, G.D. Kataev

## <u>7. Khibiny Mountains, Kola Peninsula, Russia (67°42'N, 33°40'E)</u>

The weather was generally cold from 21 May - 16 June. Temperatures dropped below freezing in the last five days of May and in the period from 5-10 June, which along with snowfall and prolonged rains in late May adversely affected reproduction by birds, in particular passerines.

Voles were rare.

Seven Lesser White-fronted Geese Anser erythropus passed over the Vud'yavryok River mouth to the northeast on 25 May. A single Canada Goose Branta canadensis stayed near the northern shore of Bolshove Vud'yavr Lake from 23 May -1 June. High numbers of Tufted Ducks Aythya fuligula nested on the lake. Also, for the first time in the last four years, 3 pairs of Pintails Anas acuta and a pair of Long-tailed Ducks Clangula hyemalis nested there. Aggregations of ducks (males and broods of Tufted Duck, Teal Anas crecca, Mallard A. platyrhynchos and 30 male Common Goldeneye Bucephala clangula) were seen in August near the northern lake shore. Little Ringed Plover Charadrius dubius, Wood Tringa glareola and Common Actitis hypoleucos Sandpipers, Temminck's Stint, Red-necked Phalarope and Common Snipe Gallinago gallinago nested in the lake area. Two or three roding Woodcocks Scolopax rusticola were seen in late May-early June near the Vud'yavryok River mouth for the second year in a row. Greenshank, Spotted Redshank Tringa erythropus, Ringed Plover and a solitary Oystercatcher were occasionally seen there in August. Approximately 50 pairs of Common Gulls Larus canus and 90 pairs of Black-headed Gulls L. ridibundus nested near the northern lake shore.

A pair of Merlins nested on the rocks of the Vud'yavrchorr Mountain and raised 3 juveniles in early August. A pair of Peregrine Falcons, which was incubating on the rocks in early June, presumably lost their clutch due to bad weather conditions, as only adult birds were seen in the area in August. Solitary Northern Goshawks were observed on migration in the Polar Alpine Botanical Garden on 8 and 17 August. A single Rough-legged Buzzard was recorded in August.

Insectivorous birds (swallows, wagtails, pipits, small thrushes, Willow Warbler *Phylloscopus trochilus*) arrived and started breeding later than normal due to cold weather in spring. Fieldfares *Turdus pilaris* and Bramblings *Fringilla montifringilla* abandoned some nests after they had been covered with snow. The low abundance of seeds of birch and spruce forced Bramblings and Redpolls to spend a lot of time feeding, leading to egg-losses as females spent less time incubating and more time searching for food. Almost all pairs of Great Tits *Parus major* lost their eggs or 1-2 day-old chicks in late May-early June. Unusually late broods of Great Tits, Bramblings, European Greenfinches *Chloris chloris*, Sedge *Acrocephalus schoenobanus* and Arctic *Phylloscopus borealis* warblers, Common Reed-Buntings *Emberiza schoeniclus* and Spotted Flycatchers *Muscicapa striata* were seen in August.

Stony tallus in the mountains remained snow covered longer than normal due to deep snow accumulated during the winter, which prevented Snow Buntings from nesting there.

A heavy crop of spruce seeds attracted White-winged *Loxia leucoptera* and Red *L. curvirostra* crossbills to the area in August.

V.D. Kokhanov

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

Voles overwintered successfully. The density of voles based on snap-trap catches was 1.0 animals/100 trapnights at the end of May, and dropped to 0.2 animals/100 trap-nights in September. Actual abundance was probably higher, as catching efficiency was adversely affected by rain or wet snow occurring on all days. Catching with cylinders yielded abundance indices of 3.3, 0.8, 2.5 and 2.2 animals per 10 days in May, July, August and September, respectively. Wood Lemmings *Myopus schisticolor* were not captured.

N.S. Boyko

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

The head of the bay became free of ice by 8 May. Snow melted almost completely on the islands by 20 May, although ice fields were brought from the sea on this date and were floating around until 29 May. Ice completely melted on the coast by 31 May. Air temperatures ranged from +3-7°C in the morning and from +6-15°C during day time in the second half of May, and there was precipitation during 7 out of 16 days. Similar air temperatures prevailed until 20 June, but the following period until 10 August was very warm with air temperatures ranging from +20-27°C during daytime. Precipitation occurred on 11 days in June, 8 in July and 16 in August. As in 2003 air temperatures dropped after 20 August, and the first night frost was recorded on 17-18 September. Snow cover established from 26-28 October on the islands.

A heavy crop of bilberries (rank 4-5), bog bilberries (4-5), clusterberries and crowberries (2-3) was recorded.

Voles, *Clethrionomys* and *Microtus* spp., were seen in July-August on 53% of forested islands and on 31% of ludas (small rocky islands). No voles were captured using snap-traps on Ryashkov Island in spring or autumn, while relative density based on catches with cylinders was 1.7 and 13.3 animals/10 days in July and

August, respectively. For the second year in a row Wood Lemmings were migrating *en masse* on the Kola coast in the vicinity of Luvenga and Kolvitsa settlements in August and September. E.V. Shutova observed up to two hundred dead animals on roads in the forest and on lake shores. As in previous years Norwegian Lemming *Lemmus lemmus* and Water Vole *Arvicola terrestris* have not been recorded anywhere. Voles were found in 0.4% of 444 pellets of Herring Gulls collected on 19-28 June on 10 ludas, which is a considerably lower proportion than in 2003 (3%).

A pair of European Kestrels was the only breeding avian rodent specialist, which successfully raised chicks on Berezhnoi Vlasov Island (67°05' N, 32°42' E, pers. comm. E.V. Shutova). Nesting of common seabirds occurred on the usual dates. Islands of the Northern Archipelago were inhabited by two single Red Foxes and one pair with a litter of 3 young. Nests of common seabirds were destroyed by Red Foxes on these islands, due to the relatively low abundance of voles. 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 142 Common Eider *Somateria mollissima* females (1-12 per island) by the time bird counts were made in the last third of June. Remains of eider chicks and eggs were found in 6.1% of pellets of Herring Gulls *Larus argentatus*. Despite predation pressure, Common Eider, Oystercatcher, Great Black-backed *Larus marinus*, Herring and Common gulls, Arctic Tern *Sterna paradisaea* and Black Guillemot *Cepphus grylle* successfully raised chicks on many islands. The numbers of breeding birds were in the normal range for the last 5 years.

N.S. Boyko

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

The season's temperatures and precipitation were mostly average. July was warmer and drier than average. Extreme weather events were not recorded. A survey of 28 islands (10.6 ha in total) of the Kandalakha Nature Reserve resulted in estimated high densities of many breeding birds. The following figures were obtained when converted into numbers of nests per 1 km<sup>2</sup>: Oystercatcher – 774, Ruddy Turnstone *Arenaria interpres* – 198, Common Eider – 4132, Red-breasted Merganser *Mergus serrator* – 38, Greater Scaup *Aythya marila* – 18, Common Gull – 1151, Herring Gull – 802, Great Blackbacked Gull – 104, Arctic Tern – 634, Black Guillemot – 142, White Wagtail *Motacilla alba* – 142.

E.V. Shutova

## <u>11. Kola Bay, Murman Coast, Russia (69°00'N, 33°05'E)</u>

The summer was very warm. Numbers of the Capelin *Mallotus sp.* continued to decrease in 2004 in the Barents Sea, and fish approached the coast in low numbers. Numbers of Kittiwakes *Rissa trydactyla* nesting within the Murmansk fishing harbour increased, and they utilized all areas remote from people, including ships at anchorage. Nesting was successful in these conditions.

S.V. Zyryanov, I.P. Shestopal

#### <u>12. Gryaznaya Gulf of the Kola Bay, Russia (69°04'N,</u> 33°16'E)

The weather was typical for the area and average in timing. The summer was warm with day-time air temperatures ranging from +7-15°C during the period of studies between 21 May and 26 June. The amount of precipitation was low.

Lemmings, voles, Arctic Foxes *Alopex lagopus* and birds of prey were not recorded.

Oystercatcher and Ringed Plover nested in the area, while Bar-tailed Godwit Limosa lapponica occurred in flocks reaching 200 birds (on 18 July). Dunlins were common. Numbers of Arctic Terns in the colony halved in 2004 compared with 2003, dropping to 20 pairs. Nesting of terns was also delayed compared with 2003, as the first clutch was found on 18 June 2004, while chicks had already hatched on 24 June in 2003. Common Gulls nested in the area, while Herring and Great Black-backed Gulls bred on the nearby islands. A pair of Arctic Skuas nested in the vicinity of the colony of Arctic Terns. Common Eiders are present year round in the area, and nest on the nearby islands (two broods with 5 and 6 chicks were recorded in 2004). Numbers of Common Goldeneye were increasing during May-June. We also saw Long-tailed Duck, Red-breasted and Common Mergus merganser Mergansers, Tufted Duck, Teal and Pintail. Observation of Common Shelduck Tadorna tadorna in the area were noteworthy.

D.V. Yanina

#### <u>13. Kharlov Island, Sem' Ostrovov Archipelago,</u> the Barents Sea, Russia (68°49'N, 37°20'E)

Snow cover reduced to 50% before 11 June when we arrived. A very powerful storm in early June swept away all the low-level nests from parts of the colonies of Kittiwakes, Thick-billed and Common Murres.

Neither lemmings nor foxes were recorded.

Breeding by Red-throated Divers Gavia stellata (one pair raised 2 chicks) and Rock Ptarmigan (2 pairs with broods) was recorded on Kharlov Island after a long break. Numbers of Gannets Sula bassana dropped from 48 to 30 breeding pairs in 2004, compared with 2002, but up to 290 birds stayed in the colony which bodes well for an increase in breeding numbers in 2005. Great Cormorant Phalacrocorax carbo numbers in the colony on Veshnyak Island decreased slightly due, probably, to nest loss during a fierce storm in June. Clutch size was 2.72±0.07 (range 1-4, n=76) before hatching. Doublecrested Cormorant Phalacrocorax aristotelis abundance increased by a factor of 1.5, compared with 2002, and brood size was  $2.37\pm0.10$  (range 1-3, n=30). The total number of the Bean Geese Anser fabalis increased slightly, while numbers of Pintail, Long-tailed Duck and Common Eider dropped. Mean clutch size was 3.83±0.07 (range 1-6, n=235) in eider, and 9.4% of known nests were depredated.

Three alarming pairs of Rough-legged Buzzards were found along 14 km of the continental coast. A nest of Peregrine Falcons with 4 downy chicks was found on one of the islands for the first time. White-tailed Sea Eagle and Merlin were recorded several times each, while Gyrfalcon was not seen.

Turnstone, Oystercatcher and Red-necked Phalarope bred on the islands, while Greater Golden Plover (2 pairs), Ringed Plover (16 pairs), Turnstone (2 pair), Wood Sandpiper (1 pair) and Temminck's Stint (1 pair) were recorded on along 11 km of continental tundra, from Vostochnaya Litsa River to cape Voyatka.

Both Great *Stercorarius skua* and Arctic skua increased their breeding numbers on the islands compared with 2002. The mean size of completed clutches was  $1.81\pm0.05$  (range 1-2, n=69) in Arctic Skuas, and reproduction was successful in 66.9% of nests. All species of gulls breeding on the islands (Herring, Great Blackbacked, Common gulls and Kittiwake) notably reduced their numbers. Mean clutch size was  $2.05\pm0.15$  (range 1-3, n=20) in Common Gulls, and hatching success was 64.1%. Brood size before fledging was  $1.11\pm0.01$  (range 1-2, n=1216) in Kittiwakes, and approximately 25.2% of nests were empty by the end of the nesting period. Arctic Terns did not nest.

Numbers of Thick-billed Murre *Uria lomvia* decreased and of Common Murre *U. aalge* increased slightly on Kharlov Island, compared with 2002.

Meadow, Red-throated and Water Anthus spinoletta Pipits, White Wagtail, Hooded Crow Corvus cornix, Raven Corvus corax, Willow Warbler, Wheatear Oenanthe oenanthe, Bluethroat, Fieldfare, Redwing Turdus iliacus and Snow Bunting bred on the islands, while nesting of Common Redpoll Acanthis flammea was not recorded.

M.V. Melnikov

## <u>14. Iokanga River, Kola Peninsula, Russia (67°50'N, 38°30'E)</u>

June was cool but not cold in the area. On arrival on 23 June, the water table in the rivers was unusually high for the time of year. Air temperatures increased consistently in late June. July was hot, with temperatures ranging from  $+18-30^{\circ}$ C, more often  $+20-24^{\circ}$ C with short-term drops of temperature to  $+12-14^{\circ}$ C. Ground temperatures dropped below freezing on 20 July. Precipitation was slightly less abundant than usual in July. Extreme weather events were not recorded.

Although special rodent surveys were not carried out, numbers of under-snow nests of rodents were above average. Both, lemming and voles were seen often, and their numbers were probably higher than average.

The Arctic Fox was not recorded, but we saw a Red Fox. Rough-legged Buzzards and Merlins bred, while Short-eared Owls and Northern Harriers were seen without signs of breeding.

A concentration of moulting Whooper Swans *Cygnus cygnus* was found in the Kalmozero Lake vicinity, where over 100 birds that were still able to fly were observed on 25 June. A flock of 8 Barnacle Geese *Branta leucopsis* was seen on 25 June on the Kalmozero Lake, which is unusual for the region. Willow Grouse and Rock Ptarmigans were numerous.

There were only low numbers of waterfowl and waders in the area, due to the habitats comprising well-drained moraine hills with dry tussock, moss-lichen and gravellichen tundras. Breeding conditions for waterbirds were typical for the region.

Among waders Greater Golden Plover, Wood Sandpiper and Red-necked Phalarope were the most common and undoubtedly bred. Dunlin, Common Snipe and Ruff *Philomachus pugnax* were common. Ringed Plover, Bar-tailed Godwit, Common Sandpiper and Temminck's Stint were rare.

S.A. Dyluk, E.M. Zainagutdinova

#### <u>15. Tersky Coast, Kola Peninsula, Russia (66°11'N,</u> <u>39°30'E)</u>

Birds of prey were represented by Peregrine Falcon, Merlin and White-tailed Sea Eagle during the survey period from 15 June - 8 July between the Chapoma and Sosnovka rivers. Nesting was confirmed in the Greater Golden Plover, Oystercatcher, Ringed Plover, Common Snipe and Turnstone, among which Oystercatcher and Ringed Plover were particularly numerous. Wood Sandpiper, Redshank, Temminck's Stint, Bar-tailed Godwit, Dunlin, Ruff, Greenshank, Whimbrel and Red-necked Phalarope were also recorded. Coastal tundra was inhabited by the Willow Grouse at approximately 2.5 nesting pairs per 10 km of a transect. The nesting density of the Common Eider was very low - a single nest was found per 100 km of coastline. The nesting density of Arctic Terns was 40 nests/ha as evaluated in one of the three colonies found.

Mean daily temperature ranged from  $+3-5^{\circ}$ C, and rains occurred daily. Mean daily air temperatures in May were +5.2, +8 and  $+14.5^{\circ}$ C for the first, second and third 10-day periods of June, respectively, while precipitation occurred on 15 days in total during the month.

Pathways, feeding places and latrines of voles were found in large numbers everywhere on coastal meadows and in sedge marshes, while burrows and piles of excavated soil were found in dry habitats. Numbers probably decreased compared with 2003, when vole abundance was high.

Y.I. Goryaev, Y.V. Krasnov

#### <u>16. Chernaya and Velt rivers, Malozemelskaya Tundra,</u> <u>Russia (67°30'N, 48°00'E)</u>

The weather was very hot in June and July, when air temperatures occasionally reached  $+30^{\circ}$ C.

Lemmings and voles were rare in the Velt River basin. Lemmings were not abundant in the Chernaya River basin, while Water Voles were relatively common in the river valleys there. Arctic Hares were numerous and bred. Arctic Foxes were rare, and signs of their breeding were not recorded.

During the survey period from 28 June – 9 August, Rough-legged Buzzard was rare, with 1 nest (4 eggs on 30 June) found in the Chernaya River area and 1 nest (chick and 1 egg on 21 July) in the Velt River area. No owls were seen. Among skuas, Arctic Skuas bred in small numbers. The Bean Goose, Glaucous Gull *Larus* 

*hyperboreus* and Arctic Tern were abundant breeding and moulting birds, while all waders, in particular the Dunlin and Ruff, were rare compared with 2001. The Little *Calidris minuta* and Temminck's Stints and Ringed Plover also bred in small numbers. Ringed Plover migrated in flocks of up to 100 birds in the first half of July, while Ruffs migrated in flocks of 10-60 birds from 20 July.

The abundance of Willow Grouse increased compared with 2001, and broods of 6.9 chick on average (range 2-12, n=12) were seen from 11 July. Lapland Bunting, Willow Warbler, Little Bunting *Emberiza pusilla*, Sedge Warbler, Redwing, Fieldfare and Redpoll occurred at very low densities compared with 2001. Hooded Crows are characteristic of the area.

Human impact was absent from the area in summer, but migrating geese were hunted in spring, as evidenced by numerous hides found on the sea coast.

Y.N. Mineev, O.Y.Mineev

#### <u>17. Kolokolkova Guba coast, Tobseda settl., Russia</u> (68°35'N, 52°20'E)

According to observations from 28 May-18 August, spring was late, but cold weather did not return after mean daily temperatures rose above the freezing point on 6 June and warming started on 17 June. Ice broke on the Pechora River in the vicinity of Naryan-Mar on 27 May, when snow melt had not yet started in the study area. Snow melt started at the coastal marshes on 3 June. Snow cover reduced to 50% on 14 June and completely melted on 18 June. Precipitation occurred in total on 12 days of 80, and did not occur for 20 days in a row after 26 June. Unusually warm and dry weather established from late June to mid August, during which period air temperatures often rose above +25°C and reached +28°C. The sea ice receded several kilometers from the coast in the area of Kolokolkova Bay by late May.

Rodents were seen only in the settlement.

The first flocks of Barnacle and Brent *Branta bernicla* geese arrived on 22 May and 23 May, respectively, according to reports by locals. Daily observations of migration were started on 29 May, while the first flock of Barnacle Geese landed on the coast on 30 May. Migration of Brent Geese occurred in 2 waves, on 2 June and 6 June, and had finished by 8 June. Barnacle Geese migrated later, with peaks on 6 June and 15 June. In total, 30,000 Brent Geese and 6600 Barnacle Geese were recorded on migration.

The first nests of Barnacle Geese were found in the colony in dunes, and the mean date of clutch initiation in the marshes was 12 June.

Arctic Foxes were not seen, while predation pressure by gulls, Arctic Skuas and White-tailed Sea Eagles was low to average. Favourable conditions prevailed during the brood-rearing period. The total number of nests of Barnacle Geese was 1047 on the mainland of the study area and 1107 on the islands in the northern part of the Kolokolkova Bay. Nest success (proportion of nests with at least one chick hatched) was about 78%. The mean

clutch size was 3.6 eggs, and the mean brood size just after hatching was 2.9 goslings.

Non-breeders and failed-breeders regained their ability to fly after moult in early August, and broods fledged from mid August.

Numbers of breeding Little Stints were unusually high. The finding of a Grey Phalarope *Phalaropus fulicarius* nest substantially extends the species' breeding range westwards. Nesting of waders and ducks was successful, judging by records of numerous broods.

Generally, the breeding success of land-nesting birds, despite the late spring, was high due to favourable weather and the total absence of lemmings and Arctic Foxes, which is typical for coastal marshes. Lemmings, Arctic Foxes and avian rodent-specialists were also absent in tundra away from the coastal marsh zone, with the exception of a single record of Rough-legged Buzzard. Short-eared Owl was observed only a few times. 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, D. Ochinashko

#### 18. Pechora River delta, Russia (68°20'N, 53°18'E)

It was estimated that snow melted on 50% of flat surfaces during 1-5 June, and melted completely on 10-15 June. Ice break on rivers occurred in mid May. Falling snow mixed with rain at night occurred on 18 June, and there was a severe thunderstorm on 22 June in the Korovinsky Bay. The weather was windy on at least 20 days during the period of studies which lasted from 9 June to 14 July, but especially from 25 June to 1 July.

Lemmings were not recorded visually, but 1 Collared Lemming *Dicrostonyx torquatus* was captured in a snap-trap. Voles were often seen during bird counts, and several Tundra Voles *Microtus oeconomus* were captured.

Areas in the vicinity of riverbeds and areas connected to the Pechora River were flooded for the second time in early summer, which was reported to be an annual event by local researcher A.S. Glotov. This flooding resulted in nest losses for Pintail, Common Snipe, and presumably for other ducks and waders nesting in low-level coastal sedge tundra. A repeat survey in July of the plot in the vicinity of Naryan-Mar city revealed that numbers of these species had decreased considerably. Temporal coincidence of the highest tide with onshore winds was observed on Lovetskyi Island. Given that shallow waters are widely spread and low-level polygonal mires are cut by numerous channels, tidal inundation turned into an important environmental factor periodically occurring in the area and resulting in nest losses of e.g. Common Snipes and Red-necked Phalaropes.

Predation by skuas and Arctic Foxes was not observed, probably due to low numbers of these predators in the survey period. However, pairs of Hooded Crows often specialized on bird clutches (Fieldfares, Redwings, ducks), even if their own clutch had already been lost.

Crows preferred nesting habitats modified by humans: hayland, fishermen huts, areas of exploration. In vicinity of settlements, predation by crows was supplemented by an impact of dogs.

Common Snipe was common, but not numerous, occurring primarily in willow bushes in low tundra and nesting in wet sedge habitats in marginal parts of willow bushes. Nests suffered primarily from tidal inundation and during the second flood. Jacksnipe Lymnocryptes minimus was rare, and we mostly recorded this species on migration before 20 June. After this date, only displaying birds were recorded, with no more than 10 occurrences during daily counts. Nests of Jacksnipe were not found, although special searches were undertaken. The density of birds (ducks, Great Snipe Gallinago media, Fieldfare, Redwing) was considerably higher in the vicinity of a Merlin nest. This pair laid 5 eggs in an old crow nest and started incubation around 10 June. However, many nests were destroyed by crows despite the proximity of Merlins.

R.M. Anoshin, A.P. Mezhnev

## <u>19. Dolgy Island, the Barents Sea, Russia (69°12'N, 59°13'E)</u>

July was very warm, and of 26 days in the field only 6 days were not sunny, 4 days with day-time air temperatures below  $+14^{\circ}$ C and 4 days with precipitation, including 2 days with rain and 2 days with drizzle.

Lemmings, their burrows or droppings were not seen.

All dens were occupied by breeding Arctic Foxes. However, fox numbers were not high, presumably due to low island relief and shortage of den sites. Arctic Foxes were apparently feeding on bird chicks.

Geese and waders bred on the island in high numbers, and also occurred in huge flocks. Little Stints were so abundant that walking in the tundra required caution to prevent trampling of nests.

O.L. Makarova

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

Typical winter weather prevailed in May, and air temperatures dropped to  $-18^{\circ}$ C in daytime on 9 May. Snow was thick and completely covered the ground. The first warming with rain occurred on 15 May. Snow cover reduced to 40-50% by the end of May, and creeks started to thaw. Early June and spring in general was typical with respect to weather conditions: cold days with freezing air temperatures at night and snowfalls during daytime alternated with warm sunny days with positive temperatures. Flooding occurred on 28-30 May on the river floodplain, completely covering the floodplain with water. An average to high flood was recorded in the mountains.

The summer was warm, sunny and very dry. Many rivers, including the large ones like the Usa and Vorkuta rivers, became shallow, while many mires completely dried out losing their attractiveness as feeding areas for waders. Just a single night frost, on 2 July when air temperature dropped to  $-4^{\circ}$ C, was recorded for the

whole period of summer weather from 12 June–5 August. Another event of potential importance for birds was recorded on 20 July when pelting rain continued non-stop for 13 hours. Early August was cool with periodic drizzle and night ground-frosts, but the second 10-day period of the month was dry, sunny and warm.

Collared Lemmings and Narrow-skulled Voles *Microtus gregalis* occurred in high numbers, as they were regularly seen on the tundra and signs of their recent activities could be found everywhere. Siberian Lemmings *Lemmus sibiricus* were visually recorded on a few occasions, which indicated their low to average numbers.

Arctic Foxes, Red Foxes and Ermines were not recorded, but tracks of Wolves *Canis lupus* and Brown Bears were seen in the mountains.

Rough-legged Buzzards bred everywhere to the north of the forest tundra, although their distribution was uneven, from locally high to low in the south, in the northernmost parts of the southern (shrub) tundra sub-zone and in the mountains. Most clutches were of 4-5 eggs. Chicks were fed primarily rodents, reproductive success was high and most pairs raised 3-4 young to fledging. Northern Harrier nested at average to high densities, and the prevailing clutch size of 5 eggs indicated sufficient food supply. Reproductive success was also high in this species. Long-tailed Skuas bred everywhere across plain tundra, reaching particularly high density in bogs adjacent to forest tundra, but were very rare in mountain tundra. Short-eared Owls bred in considerable numbers, and their clutches contained 5-9 eggs.

Waders occurred in typical numbers and in typical habitats for southern tundra. Reproductive success was high for most species due to favourable weather conditions in summer and low predation pressure. However, broods were recorded in low numbers and were not recorded at all in the Common Snipe and Jacksnipe, respectively, in the second half of summer. It is possible that summer drought resulted in low abundance and low availability of food for these hydrophilic species, causing reduced chick survival.

V.V. Morozov

#### 21. Voikar River middle reaches, lower Ob' River area, Russia (65°48'N, 63°57'E)

According to observations from 1-12 June, spring was late and cold weather prevailed until the end of May. The following rapid warming resulted in intensive snowmelt and ice-break up on rivers. Ice broke on 28 May on the Voikar River and on 27-30 May on the Ob' River, later than average. Snow completely melted on 8-10 June. Greening of birch was delayed until mid June, as falling temperatures and frequent drizzle occurred in the first half of the month. The water table was low in the Ob' River floodplain, and snow was not washed away by floodwaters so remained on some of the grassland ridges.

Numbers of *Clethrionomys* voles increased notably compared with 2003, but did not reach a high level. Arctic Foxes do not stay in this area in summer.

Numbers of most species of birds decreased, but remained stable in the Herring Gull, Common Snipe, Whimbrel and Arctic Tern. Numbers of Common Gull, Terek Sandpiper *Xenus cinereus* and Short-eared Owls increased slightly, in the latter species due to increasing abundance of rodents. A range of other avian predators were breeding in the area, but not the Rough-legged Buzzard.

M.G. Golovatin

## 22. Polarny Ural railway station, the Urals, Russia (67°03'N, 65°22'E)

In the upper reaches of the Sob' River ice broke on 6 June. The weather was extremely hot, windless and cloudless in early July.

Narrow-skulled Voles were rare. Other voles, lemmings and Arctic Foxes were not seen.

Greater Golden Plover, Whimbrel, Ringed Plover, Pintail Snipe *Gallinago stenura* and Wood Sandpiper were among waders seen in early July. Breeding Roughlegged Buzzards were uncommon. Skuas were seen quite often, but without signs of breeding.

T.R. Andreeva

#### 23. Longotyegan River, Polar Ural, Russia (67°18'N, 66°43'E)

The first half of the spring was cold in the north of West Siberia. Snow did not melt until 20 May, snowfalls were frequent, air temperatures were below freezing point and dropped to  $-17-19^{\circ}$ C on some days. Arrival of early migrants had been delayed by 1-2 weeks; their mass arrival started after rapid warming on 20 May. Rapid warming in the south of the region resulted in ice breaking on the Ob' River at the average time on 31 May, despite the cold start to the spring. Arrival of most birds was not delayed and occurred from 21-31 May, and reproduction occurred at the average time, due to warm dry weather in the second half of June and July.

The weather was remarkably stable in the study period from 26 June – 6 July, with a single cloudy day, 20 June. Precipitation did not occur, and most days were warm with air temperatures rising to +14-23°C from 8.00-12.00 AM, and from +19-20°C during day time. However, temperatures dropped to +4.5-6°C at night. Strong winds were not recorded. The weather was favourable for reproduction by birds.

A single Collared Lemming was found in a pellet of Rough-legged Buzzard. Total catching effort was 1500 trap/nights, and yielded an average total density of 1.7 voles per 100 trap/nights, including 0.7 Grey-sided Vole, 0.5 Middendorff's Vole *Microtus middendorffi*, 0.2 Short-tailed Vole *Microtus agrestis*, 0.2 Northern Red-backed Vole *Clethrionomys rutilus* and 0.1 Narrow-skulled Vole. Numbers of voles were low in the study period, but they bred intensively, and could have reached average density in mid July. Arctic Foxes and owls were not recorded.

Rough-legged Buzzard, Merlin, Long-tailed Skua, Common Gull, Herring Gull and Hooded Crow occurred in low numbers, and their predation pressure on birds was low to average during the survey period from 26 June – 6 July.

M.G. Golovatin, S.P. Paskhalny

#### 24. Schuchya River upper reaches, Yamal Peninsula Russia (67°30'N, 67°30'E)

Snow cover reduced to 50% on 5-7 June and had gone completely from level areas on 15 June. The water table in the Schuchya River dropped by 2 m after the icebreak, but increased again to the flood-time level after the snow melt and heavy rain. Water levels were dropping and rising at a daily rate of 20-30 cm, and the floodplain and islands were flooded again.

By visual evaluation lemmings were rare and voles common. Arctic Foxes were not recorded.

Reproduction by birds was probably affected by abiotic factors and predation by skuas, but generally was developing normally. Breeding was observed neither in rare Rough-legged Buzzards, nor in common Short-eared Owls during the survey from 3-23 June.

A.Y. Blokhin

#### 25. Longotyegan and Khalatalbey rivers watershed, Polar Ural, Russia (67°18'N, 67°00'E)

Spring was early and prolonged. Snow cover reduced to 50% before our arrival on 8 June, and melted completely from level areas by 15 June. Ice broke before 8 June, but ice was still moving along the Longotyegan River and the water table was high on all rivers on that date. A thunderstorm with rain occurred on 15 June. Mean daily air temperatures rose above freezing point on 8 June, reaching +6°C in the day time and dropping to -7°C at night. Warm and dry weather established from 15 June – 1 July, with a few brief thunderstorms. Weather conditions in the second half of spring and summer were favourable for birds. A short-term drop in temperatures in early July probably had no adverse impacts on breeding birds. However, the periods of migration and displays were not pronounced in most species due to the weather.

Numbers of Siberian Lemmings were low overall, although locally undersnow nests were common near edges of bogs and cotton grass shoots were destroyed completely. Voles were common and apparently increasing but did not reach high numbers. Arctic Foxes and owls were not seen.

Observations from 8 June – 1 July indicated that numbers of Jacksnipes, Red-necked Phalaropes and Greater Golden Plovers were probably high, although no information is available for comparison with other years. Potential predators did not occur in high numbers. Rough-legged Buzzards laid eggs in just one of 3 occupied territories, and numbers of skuas were low. Three Ravens stayed in the river vicinity for several days.

Siberian Newt Salamandrella keyserlingii was abundant and bred.

T.R. Andreeva

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

Cold weather with frequent frosts prevailed in early June, with air temperatures not exceeding +3-5°C and winds were from the north or west before 10 June. Rivers broke up in late May, but were not clear of ice until 15-18 June, which had not been recorded previously. Snow melt developed slowly as well, and most slopes and bushy areas were still under snow in early June. This resulted in prolonged pre-nesting and laying periods in passerines and some waders. Most lakes were under ice in early June, and leads were present only on waterbodies connected to the rivers. Bird activity was very low before 10 June, but then air temperatures increased quickly due to southeasterly winds which, combined with heavy rains, resulted in rapid snow melt. Expansive areas of tundra became snow-free quickly, snow cover halved by 10-14 June and disappeared completely in the early 20s of June. Mosquitoes appeared by 14 June. The water table in the river remained high for a long time, decreasing only slowly.

Middendorff's Voles were common and Collared Lemmings rare; their reproduction was recorded. Arctic Foxes were rare with no signs of breeding.

Extreme weather events were not recorded. While early June was late and cold, afterwards breeding conditions became generally favourable. Predators were not abundant, while numbers of rodents were of average level. Densities of the Willow Grouse and Common Snipe were the highest on record during the last 5 years. As to avian predators, neither owls, nor Pomarine Skuas *Stercorarius pomarinus* were recorded, while Rough-legged Buzzards were common and bred.

V.A. Sokolov, A.A. Sokolov

#### 27. Yuribei River basin, Yamal Peninsula, Russia (68°46'N, 70°42'E)

The weather was favourable for terrestrial vertebrates in summer 2004. From late June to late July precipitation occurred on 16 and 21-22 July, and its amount was low in both cases. Sunny weather or low cloud cover, with weak to moderate winds prevailed during the period of studies, while dull weather was recorded on 5 days in the second half of July. The weather was warm on two third of days when temperatures exceeded +15°C. Occasionally air temperatures exceeded +20°C at mid-day, and a maximum temperature of +26°C was recorded on 20 July. However, temperatures dropped at nights, sometimes to +4-6°C, leading to the formation of dew and fog.

Numbers of lemmings and voles were average and increased during the study period. Total catching effort from 14-26 July was 550 trap/nights, and yielded an average total density of rodents, 5.45 animals per 100 trap/nights, including 0.36 lemmings and 5.1 voles. We captured 27 Narrow-skulled Voles, 1 Middendorf's Vole (an adult female), and 2 Siberian Lemmings. Fertility and reproductive state of females indicated an increasing phase of rodent populations, which was confirmed by observations of an outbreak on southern Yamal, largely voles, in autumn 2004.

Numbers of predators (the Arctic Fox, Rough-legged Buzzard, Merlin, Northern and Pallid *Circus macrourus* harriers, Long-tailed and Arctic skuas, Herring Gull and Short-eared Owl) were average. Broods were found in 6 of the 18 surveyed dens of Arctic Foxes, with approximately 4 cubs on average. Rough-legged Buzzards nested at a density of 0.2-0.7 pair/km<sup>2</sup>, which is slightly below average. Their mean number of chicks was 2.8, which indicates insufficient food resources. Long-tailed and Arctic Skuas bred at average density, ranging from 0.04-0.4 in different plots. Short-eared Owls and harriers were seen occasionally in the floodplain. Generally, predation pressure can be evaluated as moderate.

M.G. Golovatin, S.P. Paskhalny, V.A. Sokolov

## 28. Yasaveyto Lake, Yamal Peninsula, Russia (69°43'N, 70°17'E)

Ice covered approximately 60% of the surface of large lakes on 28 June. Rivers were free of ice at this time, and snow remained only in ravines and on steep slopes of watersheds. Snow melted almost completely and ice reduced to 30% of the surface of large lakes by 16 July. The weather was warm and dry during the period of studies, with air temperatures reaching +22.5°C and rain occurring on 2 days only. Four days were calm, while moderate to strong, mainly northerly, winds occurred on other days.

Rodent numbers were high. Siberian Lemmings were seen several times daily, prevailing in catches by a dog, and their burrows were found in both wet and dry habitats. The dog also captured two Narrow-skulled Voles, which were seen only rarely. Arctic Foxes were common, but their breeding was not recorded.

Among breeding geese, White-fronted Geese *Anser albifrons* prevailed over Bean Geese. Two nests of the former species found on 7 July contained 3 and 5 eggs, while a nest and brood of the latter found on the same day contained 2 eggs and 3 downy chicks, respectively. Breeding ducks were represented by the Greater Scaup and Long-tailed Duck.

Eleven nests of Rough-legged Buzzards were found in the surveyed area, containing 3-5 eggs. Chicks hatched in all nests in the period from 8-14 July. The Willow Grouse reached high abundance this year. Among waders, breeding was confirmed for Grey *Pluvialis squatarola* and Greater Golden plovers, Red-necked Phalarope, Little Stint, Dunlin and Ruff.

Long-tailed Skuas were numerous breeders, while Arctic Skuas were common in the area, and behaved aggressively towards humans and a dog. Hatching in a nest of the Arctic Skua occurred on 13 July.

Herring Gulls, Arctic Terns, Shorelark *Eremophila alpestris*, Red-throated Pipit, Willow Warbler, Chiff-chaff *Phylloscopus collybitus*, Common Redpoll, Pallas's Reed *Emberiza pallasi*, Little and Lapland buntings were breeding.

N.N. Emelchenko

## <u>29. Bely Island, the Kara Sea, Russia (73°16'N, 70°42'E)</u>

Spring was slightly later than normal. Snow completely melted in mid July, and sea ice broke up on 10 July in the Malygin Strait. The weather was warm in mid July, and extreme events were not observed in the rest of the summer and autumn. Humidity did not drop below 85% which is normal for the coastal area. Permafrost melted to a depth of approximately 10 cm in late July in upland tundra, and lowland mires were flooded with the water table reaching 30 cm, which did not decrease substantially until late August. Sea tides reached 80-120 cm, depending on wind direction.

Lemming numbers were above average, and they were seen almost daily at a rate of 4-10 animals per excursion. Siberian Lemmings substantially prevailed in records over Collared Lemmings. Inhabited burrows were most common in tundra, where their clusters occurred 150-350 m from each other. Probably a separate population of Siberian Lemmings inhabited a deserted polar station area, where occasional catches were conducted.

Arctic Foxes were seen regularly, including litters with up to 8 cubs.

Breeding and moulting geese were numerous almost everywhere on the island, in particular high numbers of moulting White-fronted Geese and birds with broods were recorded in the Nyabipakha Bay and seaside meadows at the northwest of the island. Breeding Pomarine Skuas were numerous everywhere, while records of Snowy Owls *Nyctea scandiaca* included only three solitary birds in the northwest of the island on 28 July, 16 August and 3 September. Rough-legged Buzzard was not seen. Three non-breeding White-tailed Sea Eagles were observed wandering on the island.

A.E. Dmitriev, N.N. Emelchenko

## <u>30. Pancha River, West Siberia, Russia (66°44'N, 82°14'E)</u>

At arrival on 20 June ice had disappeared on the river and the water table was decreasing, although still relatively high. On this date, willow stands were still flooded 1.5- 2 km from the main river channel, while on 9 July water remained only in the oxbow lakes and was still 1-1.5 m above the low water level. By 20 June, plant growth had just started, and permafrost melted to the depth of 10-15 cm, but arrival of birds, pair formation and establishment of territories had all terminated. The water table was only 1.5 m below maximum, determined from the marks on riparian vegetation on 22 June on the Pancha River, 150 km from Krasnoselkup settlement, down the Taz River. The water table had decreased by 1.5 m by 6 July when we were leaving for Krasnoselkup.

Signs of rodent activities were seen relatively often in the Pancha River floodplain, but only two voles were captured (Grey-sided and Tundra voles). Rodents were not seen on excursions.

Arctic Foxes were not seen in this north-boreal area. Bean Geese were rare, and probably bred. No records of skuas or owls were made, except for a single record of two Long-tailed Skuas on 30 June in the palsa bog. Rough-legged Buzzards were not observed, while White-tailed Sea Eagles were regularly seen and definitely bred, although nests were not found. Willow Grouse was seen once.

Numbers of large mammals were reported to decrease substantially due to hunting and poaching pressure.

A.E. Dmitriev

## <u>31. Keta Lake, Putorana Plateau, Russia (68°44'N, 91°00'E)</u>

Spring was very late, and winter weather alternated with periodic warming until 12 June. Snow cover reduced to 50% on 15 June and completely melted on 18 June in the lake valley, while on the plateau these events occurred on 25 June and 8 July, respectively. Warm and dry weather prevailed after 13 June until the end of studies in mid July.

Voles were common. Arctic Foxes were not recorded. Short-eared Owls and skuas were rare and probably did not breed. The White-tailed Sea Eagle, Rough-legged Buzzard and Northern Goshawk were common, while Merlin was rare; breeding was recorded in the former two species. Willow Grouses were rare.

A late spring adversely affected reproductive success in all birds, but otherwise conditions were favourable.

A.A. Romanov, S.V. Rupasov

#### <u>32. Mikchangda River basin, northern Putorana Plateau,</u> <u>Russia (69°45'N, 90°56'E)</u>

The second half of July and early August were warm and dry, favouring breeding by birds. Cool and rainy weather thereafter coincided with the post-breeding period in most species of birds.

Voles and lemmings were rare, but their numbers increased notably by the end of the season.

Owls and skuas were not seen. Among birds of prey, the White-tailed Sea Eagle was fairly numerous. Successful breeding was recorded in the latter species, Northern Goshawk, Rough-legged Buzzard and Merlin. Arctic Foxes were rare without signs of breeding.

Taking into account observations of broods and bird behaviour, many species (Black-throated Diver *Gavia arctica*, ducks, waders, Rock Ptarmigan, gulls, Arctic Terns and passerines) successfully hatched young.

S.V. Rupasov, E.A. Zhuravlev

#### <u>33. Agapa River basin, Taimyr Peninsula, Russia</u> (71°20'N, 86°00'E)

Spring was late, and 70% of the ground was snow covered at our arrival on 14 June. Snow reached 50% cover on 18 June, and had completely melted by 1 July. Shearing of ice started on the Agapa River on 18 June, and ice broke up on 23 June, which is 1.5 weeks later than average according to reports from local people. Mass emergence of mosquitoes occurred on 12 July, while in 2003 this event occurred on 18 June (V.I. Smolyakov, pers. comm.).

Populations of rodents were at a low. Only 2 Siberian Lemmings and 4 or 5 Tundra Voles were recorded in total during the whole period of the survey.

In total 69 species of birds were recorded during the survey along the Agapa River from 14 June – 20 July. A Great Snipe lek was found on 19-20 June in the upper Agapa River, while previously this species was known to occur to the west of the Yenisei River.

Arctic Foxes were common and bred. Snowy Owls were recorded, but did not breed. Rough-legged Buzzards were common breeders, and their clutches contained up to 5 eggs. We counted 18 territories (some with nests) of the Peregrine Falcon per 419 km of the trip, as well as 49 nests and several pairs of Red-breasted Geese *Branta ruficollis*, 5 nests and 2 broods of Bean Geese and 2 nests of White-fronted Geese. Hatching started in Peregrine Falcons on 15 July, in Bean Geese on 13 and in White-fronted Geese on 17 July. The first eggs of Redbreasted Goose with star cracks were recorded on 18 July. Hatching had not start in Rough-legged Buzzards before the end of our study on 19 July.

S.P. Kharitonov, S.A. Korkina

#### <u>34. Sopochnaya Carga Cape vicinity, Yenisey River</u> <u>lower reaches, Russia (72°00'N, 82°40'E)</u>

Pathways of lemmings were recorded, and a group of 6 observers saw 2 lemmings during 4 days. Rough-legged Buzzards were numerous breeders along the eastern coast of Yenisey Bay, between Sopochnaya Carga and Shaitansky Capes. A Muskox *Ovibos moschatus* was observed at the former locality, and 3 hares were seen at the latter one. A Reindeer *Rangifer tarandus*, Arctic Fox, two dens of Arctic Foxes, including one with cubs, one pair of Rough-legged Buzzards and two pairs of Peregrine Falcons were recorded per 5-6 km long excursion in the area approximately 10-15 km to the east from Sopochnaya Carga Cape.

#### F.A. Romanenko

## <u>35. Medusa Bay, Taimyr Peninsula, Russia (73°21'N, 80°32'E)</u>

The summer phenology was generally average, although plant growth started earlier than usual, while nesting of Snowy Owls was delayed. Snow covered 90% of the area when we arrived on 9 June. The snow started to melt slowly on 11 June, melting accelerated from 15 June, after heavy rain, and snow cover reduced to 10% by 18 June. Ice broke up on 18 June on the Medusa River, which is two days later than in 2003. Plant growth started early, although later than in 2000. The first flowers were seen on 13 June on a south-facing slope along the Varavikova River, and on 15 June near the research station. The highest day-time air temperature in the second half of June was +18°C, and the highest temperature for the season, +22.5°C, was recorded on 12 July. Precipitation was the most abundant in mid June, while the second half of the summer was colder than usual. The first cracks in the ice of Shirokaya-Severnaya Bay appeared on 23 June, ice started to move out of the bay in early July, and the bay surface was ice-free on 13 July.

The average density of Siberian Lemmings was 13-15 animals/ha, while the density of Collared Lemmings was 3-4 animals/ha, which is higher than in 2002. The abundance of both species increased during the summer, from 9-10 animals/ha in the first half of June to 17-20 animals/ha in late July in the Siberian Lemming. Assuming that abundance in an outbreak year, 1999, can be assigned rank 4, than abundance rank was 3.5 in 2004, 2.5 in 2003 and 3 in 2002. Arctic Hares were not seen in 2004, although there was an outbreak of this species in 2003.

Arctic Foxes bred, but, surprisingly, their numbers were not high. The population of Ermine was increasing, but did not reach the abundance of 2000. Wolves were rare, following high numbers in 2003. Migration of Reindeers in the station vicinity was not very intensive, although stronger than in 2002 and 2003, with hundreds to several thousands of animals passing by. Most animals migrated farther inland from the station.

Rough-legged Buzzards bred at a high density, with 31 nests in the 130 km<sup>2</sup> area. Snowy Owls nested very late, presumably due to moderate lemming numbers in the beginning of summer. Their numbers were low: 6 nests in 130 km<sup>2</sup>. Clutch size was 8 eggs maximum, and no signs of hatching were found in one nest on 23 July. Pomarine Skuas were rather common, with 12 nests in a  $30 \text{ km}^2$  area.

Brent Geese established 3 colonies with 30 nests in total from 20-21 June near nests of Snowy Owls on the mainland, but all nests were destroyed by Arctic Foxes. Egg-laying started on 14 June on the nearby islands, where most of the 49 nests found were successful. Migration to moulting sites by Brent and White-fronted geese was prolonged, similar to 2002 and 2003, and in the former species terminated in mid July, as it did in 2000 and 2001. The last flock of Brent Geese was recorded on 10 July, while on 27 July 40 presumably moulting birds were seen on the sea near islands. Two moulting Greylag Geese *Anser anser* were recorded on sea islands in the area for the first time.

Timing of reproduction was close to average in waders. Dunlins were present in the area by the time of our arrival on 9 June, and they were passing mostly in an unusual, westerly direction from 9-15 June. The first egg date was 19 June, and first chick hatched on 14 July. The first wave of southward migration by Curlew Sandpipers *Calidris ferruginea* was observed from 6-15 July. The first chick of this species hatched on 13 July, and flying juveniles were seen from 9 August. Little Stints arrived on 10 June, the first clutch of 4 eggs was found on 23 June, chicks hatched on 13 July and fledglings were observed on 3 August. Chick hatching started on 18 July in the Pacific Golden Plover *Pluvialis fulva*.

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#### <u>36. Cape Wostochny, Piasina delta, Taimyr Peninsula,</u> <u>Russia (74°08'N, 86°45'E)</u>

Ice between Cape Wastochny and Coastal Island broke up and floated away on 6 July.

Very few Siberian Lemmings were observed. Numbers were very low, comparable to other years with low lemming densities. Total catching effort for small terrestrial mammals exceeded 1500 trap-nights, and resulted in catching just 5 Siberian Lemmings.

This area of arctic tundra is dominated by sedges, mosses and grasses. Bare soil accounts for <10% of ground cover. Dwarf shrubs (willows only) are uncommon and always under 30 cm tall. Rocks sometimes protrude through the tundra. Gravel flats are found near the coast and along streams. Many offshore islands are covered with a mixture of bare rocks and arctic tundra. On some islands there are only a few patches of tundra.

We never saw or found tracks of Arctic Foxes in the study area and dens were unoccupied there. However, some active dens were found over 10 km away from the study area (one of them on Farwaterny Island). No young foxes were observed.

Among skuas, only Long-tailed Skua bred, although both Pomarine and Arctic skuas were seen regularly. Snowy Owls were rare and did not breed.

We monitored the abundance of breeding waders from 4-19 July by searching for their nests on a plot of ca. 6 km<sup>2</sup>. Little Stints were surveyed in a sub-area of the plot of about 1 km<sup>2</sup>. Mayfield daily nest survival rate over the whole period was 0.9770, which equals an estimated nest success of about 61% for an incubation duration of 21 days. Daily nest survival was higher in the first week of the study than in the second one (0.994 vs. 0.943, respectively). Failed nests were depredated by skuas and gulls.

Nests of Brent Geese and Herring Gulls were counted on all offshore islands. Each island was visited only once. In total, 755 Brent Geese nests and over 3000 Herring Gull nests were located. Never before have so many Brent Goose nests been recorded in this area. Brent Goose nests were depredated by Herring Gulls, as no foxes were present on islands with breeding Brent Geese. On one of the islands inhabited by the Arctic Fox, Brent Geese did not breed.

> R. Klaassen, R. Bom, B. Ebbinge, Y.I. Kokorev, I.Y. Popov

#### <u>37. Ledyanaya Bay of Taimyr Lake, central Taimyr</u> Peninsula, Russia (74°26'N, 99°43'E)

Spring was late, and less than 10% of the tundra was snow free on arrival on 11 June. Mean daily air temperatures rose above freezing point on 17 June, but freezing air temperatures were recorded until 22 June. Snowfalls were not recorded in spring and summer, but on 11-20 June snow squalls occurred several times. Flooding occurred on 22-24 June on mountain rivers, and the shallow Ledyanaya Bay was filled with water by 26 June. Ice broke on the Verkhnyaya Taimyra River in the vicinity of Rysyukov Cape on 2 July, which was considerably later than average (25-28 June). Mean daily air temperatures rose above  $+5^{\circ}$ C on 4 July, but failed to rise above  $+10^{\circ}$ C during summer, being  $+3.5^{\circ}$ C,  $+9.6^{\circ}$ C and  $6.3^{\circ}$ C for the periods of 11-30 June, 1-31 July and 1-15 August, respectively. Precipitation occurred on 60% of days in July and the first half of August, but pelting rains did not occur. Wind speed reached 18 m/s on several days in July. The water table in the bay started to drop rapidly in late July, and at least 40% of the bay surface turned into mud and stony flats by 15 August. These flats attracted migrating waders in high numbers: we counted at least 1000 Dunlins, Curlew Sandpipers and Little Stints daily in an area of approximately 5 km<sup>2</sup> on 13-15 August. Autumn was probably early in the area, as snow cover established in the mountains at altitudes exceeding 300 m a.s.l. on 12 August.

Total trapping effort for small terrestrial mammals was 1441 trap-nights, which resulted in catching 24 Siberian Lemmings and 13 Collared Lemmings (data of M.R. Telesnin). Thus catches averaged 2.57 animals per 100 trap-nights. Dead lemmings were regularly found in the nests of Rough-legged Buzzards and near inhabited dens of Arctic Foxes. We observed an Arctic Fox transporting 8 lemmings at a time, but visual records of live lemmings were almost never made.

Arctic Foxes were seen regularly. Among 24 of their dens, 5 contained litters, ranging from 2-4 cubs, while another 8 dens were inhabited by non-breeding animals. An Arctic Fox brood of 5 cubs was found in spring in a shallow pit in the tundra, outside a den. Although lemming numbers were above low, Arctic Foxes destroyed a considerable number of bird clutches, including 3 nests of Little Stints, 2 of Ringed Plovers, 2 of Lapland Buntings, and 1 of White-fronted Geese in the study area, all within 3 km from the field camp. A Wolverine *Gulo gulo* was seen on 3 occasions, which is a high rate, considering the author has had only 2 encounters during the 10 previous years. Tracks of wolves were common.

Mass northward migration by reindeer occurred from 23 July - 5 August, along the northern coast of the bay to the valleys of Uglenosnaya and Karovaya rivers. Five to seven thousand animals passed by during this period and, based on the condition of habitats, they probably migrate in similar numbers annually. Reindeers trampled both known nests of Red-throated Divers.

The Herring Gull, Lapland and Snow Buntings, Ringed Plover, Rock Ptarmigan, White-fronted and Bean Geese were already present in the area when we arrived on 11 June. The main arrival of birds occurred from 12-20 June, including Grey Plover, Turnstone and Little Stint on 13<sup>th</sup>, Dotterel and Pacific Golden Plover on 14<sup>th</sup>, Temminck's Stint and Long-tailed Duck on 17<sup>th</sup>, Shorelark, Wheatear, Brent Goose and Grey Phalarope on 18<sup>th</sup>, Red-throated Diver and Steller's Eider *Polysticta stelleri* on 25<sup>th</sup> and Bluethroat on 26<sup>th</sup> June. These dates were considerably later than average for the area, and were close to arrival dates in the Levinson-Lessing Lake area, 30 km to the northwest, in the extremely late season of 1996.

Prolonged snow melt resulted in the aggregated distribution of several nesting species of birds, e.g., Ringed Plovers nested in groups of 3-4 pairs on the earliest snow-free patches on the gravel flats, while available patches of tundra were inhabited at higher density by Little Stints, Pacific Golden Plovers, and Lapland Bun-

tings. Nesting started from 18-26 June in waders, with Ringed Plovers and Little Stints being the earliest breeders. Hatching was recorded on 9 July in Lapland Bunting, on 13<sup>th</sup> in Little Stint, on 15<sup>th</sup> in Grey Plover, Curlew Sandpiper and Rock Ptarmigan, on 20<sup>th</sup> in King Eider Somateria spectabilis, on 22<sup>nd</sup> July in Temminck's Stint, on 25 July in Steller's Eider and Rough-legged Buzzard and on 1 August in Red-throated Diver. The first fledglings were observed in July on 22<sup>nd</sup> in Snow Bunting, on 26<sup>th</sup> in Wheatear, on 28<sup>th</sup> in Little Stint, on 29<sup>th</sup> in Lapland Bunting, and in August on 4<sup>th</sup> in Rock Ptarmigan, on 5<sup>th</sup> in Curlew Sandpiper, on 9<sup>th</sup> in Pacific Golden Plover and on 16<sup>th</sup> in Bluethroat. Among 44 species of birds recorded in the area, 23 bred and 6 were probable breeders. Numbers of most species were low. The Lapland Bunting, Pacific Golden Plover, Dunlin and Snow Bunting were the only numerous species (the latter in the mountains). The Curlew Sandpiper, Little Stint, Grey Plover, Ringed Plover, King Eider and Rock Ptarmigan were common, while several species occurred only in specific habitats: Bluethroat in willow bushes along rivers, Dotterel, White Wagtail and Wheatear in the mountains. Shorelarks were very rare and breeding was not confirmed which is unusual for this part of Taimyr. The Arctic Tern, Pectoral Sandpiper Calidris melanotos, Ruff and Red-necked Phalarope were also rare. Skuas were rare, and a single breeding pair of Arctic Skuas was found. Herring Gulls were rare breeders in contrasting habitats: along lake shores and on limestone rocks 15 km to the north of the bay. The limestone plateau was also used by Ringed Plovers for nesting along with gravel flats, a typical habitat for this species. Three nesting pairs of Rough-legged Buzzards were found in an area of 300 km<sup>2</sup>, and one more nest was deserted at the start of the breeding season.

Only wandering Snowy Owls were recorded. Three flocks of moulting geese, 70-100 birds each, were seen in the Ledyanaya Bay, but numbers could be higher in other years as indicated by the presence of old feathers on the beaches.

Hatching success of birds was moderate given that chicks hatched in 53.3% of studied nests (*n*=30), including 53.8% in waders (*n*=13).

#### I.N. Pospelov

#### <u>38. Verkhnyaya Taimyra River delta, central Taimyr</u> Peninsula, Russia (74°08'N, 99°34'E)

Snow disappeared from 50% of the tundra surface on 20 June and the tundra cleared completely on 25 June. Ice on rivers broke up on 28 June. Summer did not differ notably from the previous 10 years of observations in the Khatanga River mouth area in respect of the total number of days with precipitation observed during the study period. However, only 4 days with precipitation occurred between 11 June and 15 July. In contrast, the second half of July and early August were rather wet in 2004. The frequency of rains and amount of precipitation in the latter period were not high enough to have an apparent adverse impact on bird reproduction. Thus, the late start to the season in 2004 was combined with extremely low precipitation in the pre-nesting period and

during incubation, average temperatures during July and the absence of extreme weather events.

Lemmings were seen in total 47 times by 4 observers in 2004, including 34 Siberian Lemmings, 1 Collared Lemming, and 12 lemmings which were not identified. The abundance of lemmings in 2004 was apparently closer to the low range of values we observed in 1994-2003 in the southeastern Taimyr. On completion of snowmelt, on 25 June, lemming undersnow nests were counted on a transect, located on the slopes of the first river terrace and watershed slopes. In total 7 nests were recorded on 4.0 km, which is a low number.

Two inhabited dens of Arctic Foxes have been found in the study area. Arctic Foxes bred successfully and juvenile animals were observed in August. In total seven nests of Long-tailed Skuas were found in the whole study area of 87 km<sup>2</sup>, but this probably represents an underestimate of the true density, because 5 nests were found in the most intensively surveyed area of approximately 15 km<sup>2</sup> in the vicinity of field camp. One chick hatched in one of three nests for which the outcome was known. One or two pairs of the Arctic Skua were breeding in the study area. Migrating Pomarine Skuas were seen daily from arrival on 11 June to 8 July, while later only a few birds were seen up to 15 August. Six nests of Glaucous Gulls and three nests of Herring Gulls were found in a small area of about 2 km<sup>2</sup> on Bolshoy Island in the delta, in a network of ponds in polygonal bog.

Snowy Owl did not breed, and was very rare in June and July. Six nests of Rough-legged Buzzards were found in the study area, and two more nests on the northern bank of the Verkhnyaya Taimyra River. Chicks hatched in all but one nest; the mean brood size was 2.6 chicks (range 2-4). Peregrine Falcons were seen only 3 times in June and July.

The abundance of Arctic Hares was very high at least locally – up to 20 animals were seen simultaneously on the remains of the first river terrace on Bolshoy Island. Tracks of wolf were seen twice in July and an Ermine once.

From our arrival on 11 June, reindeers were seen as solitary animals or in groups almost daily. They appeared in high numbers on 18 July, and at least 10,000 animals passed through the area on 19 July. Herds of 1000s still occurred in the vicinity on 20-23 July. Later numbers continued to decrease gradually. While chicks hatched in most nests by 19 July, 30% of remaining nests with eggs were trampled by migrating reindeers. The loss of chicks could not be evaluated, but it was probably of a similar magnitude to the loss of eggs.

Thus, numbers of Arctic Foxes, skuas, large gulls, owls and birds of prey in the study site on Central Taimyr in 2004 were low and rather close to numbers recorded on southeastern Taimyr in 1994-2003.

Among nesting geese, White-fronted were abundant, while Red-breasted and Bean geese were rare. Up to 4500 White-fronted Geese and small numbers of Redbreasted Geese moulted in the western part of the Verkhnyaya Taimyra River delta.

The density of waders in the floodplain in 2004 (149.5 nest/km<sup>2</sup>) was the record highest found anywhere in the Russian Arctic. The high abundance of waders was due mainly to Little Stints which occurred at a density of 49.8 nests/km<sup>2</sup>. Grey Plover, which had never previously been considered a typical floodplain species, nested on the floodplain of the Bolshoy Island at a density of 12.5 nests/km<sup>2</sup>, which is the highest value known to us for this species.

Breeding records of Redwing, Buff-bellied Pipit *Anthus rubescens*, Willow Warbler and Ross's Gull *Rhodostethia rosea* in the area expand ranges of these species northwards.

Apparent nest success was average in waders (51.5%, n=136) and other non-passerine birds (64.0%, n=25). Nest success of Dunlin (87.5%, n=16), Pectoral Sandpiper (77.8%, n=9), Grey Phalarope (73.3%, n=15) and Ruff (66.7%, n=12) was above the average for all waders combined, while Little Stint (50.0%, n=26) and Curlew Sandpiper (50.0%, n=12) were very close to the group average. Breeding performance of Pacific Golden Plovers and Grey Plovers was very low with 1 and 3 nests successful from 19 and 18, respectively. Most nests were lost due to predation, probably, primarily by Arctic Foxes, as avian predators were rare overall. Generally, overall nest survival in 2004 was similar to survival in other years, when lemming numbers were low, but still sufficient to support the reproduction of Arctic Foxes at a low density. Foxes managed to find lemmings, but also did not ignore bird clutches, which resulted in moderate predation pressure.

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## <u>39. Ary-Mas, Taimyr Peninsula, Russia (72°29'N, 101°50'E)</u>

Spring was late and prolonged. Rivers Khatanga and Novaya cleared from ice on 21 and 26 June, respectively, compared with 8 and 15 June in 2002 and 16 and 18 June in 2003. Low accumulation of snow during the winter resulted in a very low water table in spring. However, the first snow-free patches emerged only on 13 June on Ary-Mas. Snow cover reduced to 50% after 20 June, but the coverage was higher in the forest. June was cold, and snowfalls occurred until 20 June. An anticyclone established at the end of June, and warm weather with almost no precipitation prevailed during July. Drizzle occurred frequently in August. The first ground frost was recorded on 23 August.

Neither rodents, nor shrews were seen during the period of studies from 11 July to 3 September.

Arctic Foxes, Snowy and Short-eared Owls were not recorded, while Arctic Hares were common. Pomarine Skua was seen once, while Arctic and Long-tailed skuas were rare. Rough-legged Buzzards nested at low density: 2 nests with 2 chicks in each were found in an area over 50 km<sup>2</sup>, but all chicks fledged. Northward migration of reindeers terminated before the start of nesting by birds, and had no adverse impact on breeding success.

Bar-tailed Godwits and Pacific Golden Plovers occurred in low numbers. Red-necked Phalaropes and Ruffs were the most common waders in floodplain habitats. Ruffs appeared in high numbers in the second half of July, and were feeding in tundra mires until 31 July. Ducks were rare in the breeding period, and only two broods of Long-tailed Ducks were seen. Generally, bird density was very low.

A.A. Gavrilov

## 40. Kotuy River lower reaches, Russia (71°40'N, 102°3<u>3'E)</u>

According to reports by locals, spring and summer were relatively cold and wetter than usual. Based on data from the weather station in Khatanga, 33 km to the north of the study area, mean monthly air temperatures were  $+3.3^{\circ}$ C in June,  $+11.7^{\circ}$ C in July and  $+7.8^{\circ}$ C in August, precipitation was 21.7, 43.8 and 49.2 mm in these three summer months, respectively. Mean daily air temperatures dropped below  $+8^{\circ}$ C on 21 August, indicating the beginning of autumn. Precipitation occurred daily in the period from 17-21 August, and temperatures dropped below freezing on several days.

The surveyed area in the valley of the Kotuy River and its ancient river terrace belongs to the northern taiga sub-zone. Migration of reindeers to the south started in the period of our stay in the area.

Rodents were common in all habitats, and 61 animals were captured in approximately 1000 trap-nights (snap-trap), including Northern Red-backed, North Siberian *Microtus hyperboreus* and Tundra Voles, Wood Lemming and Arctic Shrew *Sorex araneus*. Northern Pika *Ochotona hyperborea* was seen on rocks near the river.

Two nests of Rough-legged Buzzards were found, which apparently had been occupied earlier in the season. Merlins, including one juvenile, wandered in the area. A Short-eared Owl was recorded. Among passerines, Willow Warbler and Dusky Thrush Turdus eunomus were the most abundant in the forest, while Bluethroat and Redpoll prevailed in the bushes. Ravens were relatively common. Waders (Little Stint, Ringed Plover) were observed on migration, feeding mostly in the shallows of rivers and lakes. Common Snipes occurred in mires of the Kotuy River floodplain at a high density, reaching 4-6 birds per 1 km of transect. Bartailed Godwit and Spotted Redshank were seen in marginal areas of forest mires. Gulls and skuas were rare. The breeding season for birds appeared successful based on records of unfledged broods of Red-breasted Merganser (three broods with 6 chicks in each), Long-tailed Duck, Greater Scaup, Red-throated and Black-throated Divers. Flocks of geese were migrating over the area to the south at a high altitude. Willow Grouse were very rare.

I.N. Pospelov

#### <u>41. Lena Delta, southern and eastern parts, Yakutia,</u> <u>Russia (72°48'N, 129°19'E)</u>

Spring was late and early summer was colder than usual. A single day with mean air temperature above freezing was recorded during May (22 May) at the

weather station "Stolb" in the southern part of the delta (72°24'N, 126°48'E), and daily air temperatures rose above freezing point on 10 June. Generally, May and June were 1.5° and 2.4°, respectively, colder than average. Flat tundra became 20% free of snow on 5 June, 50% on 10 June, 90% on 16 June and 100% on 20 June in the south-eastern part of the delta (72°11'N, 127°04'E). Snow still covered 50-60% of surfaces on 25 June in a 20 km-wide belt of coastal tundra in the northeastern part of the delta (72°52'N, 129°22'E), where it melted completely by 1 July. Snow and ice remained both in pools of polygonal bogs and low islands until July. Long-lasting snowfalls did not occur in June, but those on 5 and 8 June resulted in continuous snow cover, but this melted during the same day. Wind velocity reached 7-10 m/s on 5-7, 9-10 and 12 June, while storm winds of 14-20 m/s were recorded on 18-21 June. Ice started to break up at the usual time (7 June) in the southern part of the delta on the Bykovskaya Channel, but was more prolonged (until 18 June) and associated with jams due to the low water table.

Lemming numbers were high in the eastern part of the delta, east of  $127^{\circ}$ E.

Snowy Owls and Pomarine Skuas nested in the eastern part of the delta, where Siberian Lemmings were abundant, but in lower numbers than in the previous lemming peak year (2000). Clutch size was also lower in Snowy Owls. If lemmings further increase in numbers in 2005 and expand to the western part of the delta, Snowy Owls and Pomarine Skuas will have a chance to breed for the second season in a row. Solitary Shorteared Owls were seen several times in the south-eastern part of the delta in the first half of June. Breeding numbers of Peregrine Falcons remained stable, while Rough-legged Buzzards nested in numbers typical for years of low lemming populations, even in the southeastern part of the delta. Merlin and Raven bred only in the south of the delta. Although numbers of Arctic Foxes were not high, they bred and were regularly observed. Ermines were relatively numerous and bred everywhere.

A late spring and cold summer adversely affected reproduction by most birds. Little Buntings and Bramblings died due to food shortage, wind and cold was observed during spring migration in the south-eastern part of the delta. We observed 2 Little Stints with icecovered legs on 5 June, and carcasses of three dead Brant Geese, a Ruff, Little Stint, Grey Phalarope, Brambling and Willow Warbler were found in late June and early July in the eastern delta. Mass mortality of waders and large gulls was reported by the staff of the weather station for Dunai Island in the northernmost delta. We got an impression that vagrant forest birds occur in the tundra in increased numbers in years with a cold spring, for example, Bramblings and Dusky Thrushes were recorded in the delta in 2004, as well as in another cold year 1996. Other vagrants included Willow Warbler, Siberian Tit Parus cinctus and Daurian Redstart Phoenicurus auroreus.

The general impression was that waders nested in considerably lower numbers compared with 2003, with the

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exception of Grey Plover and Turnstone in which densities appeared stable. Nesting density of Sabine's Gull *Xema sabini* was not affected by the cold spring, while Ross's Gulls bred in a single colony of 4 monitored since the year 2000. The Brant Geese colonies under observation were 2-5 times smaller than in 2003, and most nests were located on elevated coastal areas of the islands which resulted in a circular pattern of distribution of nests. At the same time, several new sites with atypical habitats for the species were occupied by 1-3 pairs each. Breeding numbers of Steller's and King Eiders did not change from the previous year. Egg-laying was delayed and prolonged in almost all species of birds.

Predation of clutches by Arctic Foxes was not observed in bird colonies. Herring and Glaucous gulls and skuas destroyed up to 30% of Brant Goose clutches. Wandering and nesting Pomarine Skuas destroyed completely 27.3% and partially 13.6% of incomplete clutches of Steller's Eider at the start of nesting. Monitored nests of waders included 8 nests of Turnstone, 6 of Grey Plover, 2 of Dotterel, 6 of Grey Phalarope, 2 of Curlew Sandpiper and 4 of Little Stint, of which a single nest of Turnstone and 2 nests of Grey Plovers were destroyed (apparent nest success 89.3%). This indicates high nest success, but overall reproductive performance of most birds was probably low, due to the low breeding effort caused by poor weather in spring.

The effects of human activities were not significant due to the huge size of the area.

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#### 42. Bolshoi Lyakhovsky Island, Kygylyakh Cape, Yakutia, Russia (73°30'N, 140°35'E)

As usual in the area, drizzle, fog and moderate wind prevailed during the period of surveys from 25 July to 7 August.

Lemming abundance was average, similarly to the southern coast of the island.

We found one occupied nest of Rough-legged Buzzards, observed broods of the Turnstone and Dotterel, wandering Sanderlings *Calidris alba* and a flock of about 50 migrant Grey Phalaropes.

I.A. Yakshina

#### <u>43. Bolshoy Lyakhovsky Island, Malakatyn Bay,</u> <u>Yakutia, Russia (73°20'N, 141°22'E)</u>

Flat areas of tundra were free from snow by the start of surveys on 25 June, with some snow-packs remaining in depressions and near bluffs. Permafrost retreated to a depth of 5 cm at this time. Low cloud cover, drizzle, fog and north-easterly winds prevailed during the survey which lasted until 25 July. Extreme events included pelting rain for 24 hours on 4 July, snow mixed with rain on 23 July and periodic frost at night.

Lemming numbers were average, and higher compared with 2003. We saw animals periodically, although records of undersnow nests were rare.

Arctic Foxes were rare; we saw one animal as well as occasional tracks near rivers. Wolf was also seen once,

but their tracks were more common compared with Arctic Foxes. There was a single observation of a Least Weasel successfully hunting a lemming. Approximately one Snowy Owl was seen per 7-10 km of a route. Neither nests nor young Snowy Owls were found. Breeding numbers of Pomarine Skuas were not high, while Longtailed Skuas were numerous breeders in the valleys. Two pairs of Rough-legged Buzzards inhabited the area, and a nest of one pair was found on a hillock 2 km from the seashore. Herring Gulls were often seen on the sea coast and bred, while Glaucous Gulls were not observed.

A pair of Snow Geese *Anser caerulescens* with a brood of 3 chicks was recorded on 14 July on the move to the sea. Red-throated Divers and Steller's Eiders nested in small numbers. Flocks of Long-tailed Ducks up to 30-40 birds were observed in shallow, coastal sea areas. Male Willow Grouse were common. Snow Buntings were seen everywhere, including numerous juveniles, while Lapland Buntings were observed mostly on watersheds.

Turnstone was the most numerous wader species, followed by similaraly abundant Curlew Sandpiper and Grey Plover, and then by the Little Stint and Ringed Plover. Pacific Golden Plovers and Knots *Calidris canutus* were rare. All the species listed, with the exception of Knot, bred judging by the behaviour of birds. Breeding of Ringed Plover was confirmed by the finding of one chick.

I.A. Yakshina, V.I. Pozdnyakov

#### <u>44. Yana River lower reaches and southern delta,</u> <u>Yakutia, Russia (70°45'N, 135°40'E)</u>

Spring was late and cold, and the summer was colder than usual according to a report by staff of the local weather station ("Yubileinaya"). This resulted in a low crop of berries and mushrooms. During the survey period, lasting from 9 August till 10 September, the weather was typical for this time of year.

Dedicated surveys of rodents were not conducted, but frequent records of animals, primarily Northern Redbacked Vole, indicated their high numbers.

The number of predators was high: 8 Brown Bears, including a female with a cub, were recorded per 55 km of the shoreline of the river and its channels. Tracks of Red Foxes and Wolves were often seen on the banks. Arctic Fox was common, but left fewer tracks than Red Foxes. A local hunter, Y.N. Sizov, reported an outbreak of rabies in Red Foxes during the previous winter. Ermines were common and bred successfully. Arctic Hares were numerous, as animals and their tracks were seen on all surveyed sandy spits, and pathways of hares were found in willow and alder stands. Ungulates are almost absent in the area due to the relatively high density of hunters. A single record of Elk *Alces alces* tracks was made in a remote area of the Tatai channel.

Among avian predators, Rough-legged Buzzard was numerous and Merlin common. The density of the former species was 0.5 bird/10 km of secondary channels of the Yana River. Flying juvenile Buzzards were often seen from mid August. Solitary records of Peregrine Falcon and Gyrfalcon were made near rocky bluffs of the Yana banks in the southern part of the area. A migrant Short-eared Owl was seen in early September. Wandering broods of the Carrion Crow and groups of 1-3 Ravens were regularly seen along the main Yana River channel, where migrating Glaucous Gulls appeared from 20 August. Herring Gulls occurred at a rather high density of 4.9 birds/10 km on the Yana River and 2.4 birds/10 km on secondary channels. The gulls bred successfully judging by the high proportion of juveniles.

In total, 38 species of birds were seen, among which 32 species are known to breed in the area. The main migration of waders was over by the start of surveys on 9 August, but we recorded solitary Ringed Plovers, Wood, Green and Common sandpipers, Wimbrels and Little Curlews *Numenius minutus*. Mass migration of Pintails, Teals and Eurasian Wigeons *Anas penelope* finished by 20 August. Willow Grouse bred successfully, but their numbers were not high. An invasion of Eurasian Nutcrackers *Nucifraga caryocatactes* occurred on 9 September, when they passed eastwards down the Yana River.

V.I. Pozdnyakov

#### <u>45. Berelyakh River upper reaches, Yakutia, Russia</u> (70°33'N, 144°10'E)

Since the start of our observations on 9 August and until 20 August, the weather was warm and pleasant. In early September, air temperatures regularly dropped below freezing at night. Wet snowfall on one day in early September was followed by a stormy wind.

Numbers of voles (primarily Northern Red-backed Vole) were probably high, as they were seen several times.

Tracks of Brown Bears, Wolves, Arctic and Red Foxes were often seen along rivers. Rough-legged Buzzards and a Golden Eagle were the birds of prey recorded. Flocks of 20-50 adult and juvenile Bean Geese were often seen, and flying flocks appeared after 20 August. Three broods of Red-breasted Merganser contained 4, 7 and 8 chicks. Herring Gulls with chicks were common. Raven, Wheatear and Bluethroat were the passerines observed.

V.E. Tumskoy, A.E. Basilyan

#### <u>46. Dzhukagirskoe Lake, "Kytalyk" Nature Reserve,</u> <u>Indigirka River basin, Yakutia, Russia (70°30N',</u> <u>145°30'E)</u>

A rise in air temperatures started at the usual time, snow melt was recorded from 12 May, when warm weather with temperatures +2-3°C in the day time and -3-8°C at night lasted until 22 May. Thereafter, the weather turned cold, and the wind changed to easterly. The weather improved slightly on 29-31 May. On the latter date, bird migration started with the main flow passing about 5-10 km to the south from the main observation point. A snowstorm started on 2 June, became most intense on 3 June and lasted until 4 June. The wind gradually changed from northeasterly to westerly, and tempera-

tures dropped to  $-8^{\circ}$ C at night. Birds were not seen during the snowstorm, including White Wagtails, which had started building a nest on 1 June, and Temminck's Stints, which had been displaying near the camp. A White Wagtail was found dead after the snowstorm under a stack of wood by N.I. Rozhin.

Lemmings were not recorded, while Northern Redbacked and Grey-sided voles were seen only in fishermens' cabins.

Arctic Foxes were common, but presumably did not breed. Owls were only rare visitors to the area. Skuas and Willow Grouse were common, and breeding was recorded.

Birds started nesting later than usual due to snowstorm on 2-4 June. Bewick's Swans *Cygnus bewickii* arrived in late May and started nesting on hillocks, habitat that had not been used for nesting previously according to our observations. Siberian Cranes *Grus leucogeranus* started breeding later, but raised chicks successfully. All known nests of Rough-legged Buzzards (clutches of 2, 2 and 5 eggs) were deserted, and some other pairs even did not attempt to breed. Waders were rare compared with other years, and 3 nests only, one of Pectoral Sandpiper and 2 of Grey Phalarope, were found on 21 June, on a transect of 40 km in length. The season was unfavourable for most species of birds.

S.M. Sleptsov

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

The season was warm and dry. Extreme weather events were not recorded.

Rodent numbers increased considerably compared with 2003.

Based on a survey undertaken from 15 July to 4 August, Arctic Foxes, Rough-legged Buzzards, Snowy and Short-eared Owls bred everywhere. We were able to survey rivers and tundra on the nearby slopes, so nothing can be said about the breeding status of Pomarine Skuas. Breeding success was very high in geese and average in swans. Divers, in particular Yellow-billed Gavia adamsii, were seen in high numbers, with broods. The average density of White-fronted Geese on rivers was 0.29 broods/km and 3 birds/km. Their mean brood size was 4.85±0.29 chicks (range 1-8, n=26). The density of Bean Geese on rivers was 0.74 broods/km and 8.7 birds/km. Estimates of the proportion of birds breeding were 61.8% and 30% in White-fronted and Bean Geese, respectively, while juveniles represented 61.8% and 39.8% of these two species.

D.V. Solovieva, A.G. Dondau, S.L. Vartanyan

#### 48. Rauchua River middle reaches, Chukotka, Russia (68°30'N, 168°15'E)

Observations were made between 28 August and 30 September. The first snowfall occurred on 1-2 September, when air temperatures dropped to  $-5^{\circ}$ C. Prolonged rains followed, and warm weather re-established until 20 September. Autumn was very late according to reports from local people.

Numbers of lemmings and voles were evaluated as moderate. Nevertheless, no Arctic Foxes were seen, and only few owls and skuas occurred.

Mass migration of Sandhill Cranes *Grus canadensis* was observed on 20 September, with 14 flocks of 80-100 birds passing by to the south-south-east at an interval of 30-50 minutes in the first half of the day. In total, approximately 1500 cranes passed that day, as well as 2 flocks of Bewick's Swans, 100 birds each, which moved due south. Daily day-time observations during the whole period yielded the following total numbers of migrating birds of prey and owls: 271 Rough-legged Buzzard, 27 Marsh Harriers *Circus aeruginosus*, 22 Gyrfalcons, 18 Peregrine Falcons, 17 Northern Goshawks, 4 Merlins, 10 Hawk Owls and 3 Snowy Owls. The relatively high numbers of Northern Goshawk were notable in a habitat which is not typical for this species.

I.R. Enaleev, A.M. Chaplashkin

#### 49. Chaun-Palyavaam river delta, Chukotka, Russia (68°50'N, 170°30'E)

Spring was average in timing, but developed rapidly, and snow melted completely during 2-3 days by 4 June. Mean daily air temperatures rose above freezing point from 22 May. Generally, the season was warm and dry. Adverse weather events did not occur. June turned out to be very warm and mosquitoes emerged *en masse* on 26 June, a week earlier than in 2003.

Vole numbers started to increase in 2004, while lemmings were not recorded.

According to observations made from mid June to mid July, Arctic Foxes bred in small numbers, while most foxes were not breeding. The Rough-legged Buzzard, Snowy Owl and Pomarine Skua did not breed, but a record of nesting by Short-eared Owls was made.

Bewick's Swans nested at a lower density, 0.98 nest/km<sup>2</sup>, than in the early seasons 2002-2003. Ross's Gulls and Grey Phalaropes bred in 2003, but not in 2004. Breeding ducks included Pintail, Greater Scaup, Long-tailed Duck, King and Spectacled *Somateria fischeri* Eiders, which raised young successfully. Spectacled Eiders nested at a density of 1.89 nests/km<sup>2</sup>, and their nesting success was 28.7%, which can be treated as high.

Breeding waders included Grey Plover, Turnstone, Curlew Sandpiper (lower density than in 2003), Pectoral Sandpiper, Sharp-tailed Sandpiper *Calidris acuminata* (unconfirmed), Dunlin, Red-necked Phalarope and Long-billed Dowitcher *Limnodromus scolopaceus*.

D.V. Solovieva, A.G. Dondau, S.L. Vartanyan

#### 50. Keveem River upper reaches, Chukotsky Peninsula, Russia (68°50'N, 173°40'E)

Total catching effort for small terrestrial mammals was 250 trap-nights during the survey period, 16-21 June, and resulted in 23 animals being caught, including 5 Brown Lemmings *Lemmus trimucronatus*, 1 Grey-sided Vole, 2 North Siberian Voles, as well as Tundra Voles and Northern Red-backed Voles. Arctic Hares were rare in the area, although signs of their activities were seen

everywhere. We did not see Northern Pikas, but Arctic Ground Squirrels *Spermophilus parryi* were common.

Arctic Foxes were not seen, but tracks of Red Fox were found. Ermine was seen in deserted Maiskoe settlement on 16-18 June.

A nest of Rough-legged Buzzards with a clutch of 5 eggs was found on a metal platform 3.5 m above the ground near a building on the outskirts of the deserted settlement. Four pairs of Long-tailed Skuas were recorded in the study area of 40 km<sup>2</sup>. Owls were not seen. Waders were rare in the area, but we saw alarming pairs of Pacific Golden Plovers, Ringed Plovers and Greytailed Tattlers *Heteroscelus brevipes*, found a nest of Red-necked Stints *Calidris ruficollis*, saw displaying Temminck's Stint and flushed Common Snipes from willow bushes along a river.

I.V. Dorogoi

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

A small amount of snow accumulated during the winter 2003-2004 (41 mm of winter time precipitation vs. 79 mm on average for 1927-2004). However, snowstorms in May resulted in prolonged snow cover on more than 90% of surfaces to the end of the month across most of the island and also in the Snow Goose colony area in the middle reaches of the Tundrovaya River. The snow layer was only 10-15 cm thick on flat surfaces, while southern slopes of the mountains were already free of snow in late May. May was relatively warm, and the mean monthly air temperature of -4.2°C was above long-term average of -6.8°C for 1927-2004. Day time air temperatures rose above freezing point on 29 May and continued to increase rapidly thereafter. Temperatures passed the +10°C on 2 June, resulting in intensive snow melt. Snow cover dropped to 50% by 6 June, and completely melted on flat surfaces by 10 June. The water table was increasing in creeks from 2-4 June, and ice broke on the Tundrovaya River on 4 June. Clear sunny weather prevailed until 18 June, with maximum temperatures reaching +25°C on some days, which resulted in drying of the tundra and the disappearance of many snowbanks and creeks. Cool weather with variable cloud cover, fogs and occasional rain prevailed on 19-26 June, and was followed by a warm period until 4 July. July was mostly cold with frequent fog and rain. A single period of warm, sunny weather with day time air temperatures over +20°C on 10-11 July ended in the evening of 11 July, when windspeeds of unusual force for summer westerlies reached 30 m/s. Air temperatures dropped below freezing at night, while rain on 14 July turned to wet snow which blanketed the ground, but melted the next day. Generally, the season was average in timing, with a mainly warm and dry June and cold, wet July. August was warm and dry compared with July. Mean monthly air temperatures were 2.9°C above the long-term average in June, 0.4°C below average in July, and 3.0°C above average in August.

The Wrangel Island population of Snow Geese is currently estimated at between 115-120 thousand birds. Breeding by geese in the main colony in the Tundrovaya River valley started 2-3 days earlier than average in 2004. Mass arrival of geese happened on 29-30 May, but the first nests were found earlier, on 28 May. Because much of the area was still covered with snow at this time, the geese were lacking sufficient territory for nesting. Thin snow melted first in willow bushes, and this habitat attracted geese, resulting in increased competition for nesting territories, increased breeding density (up to 240 nests/hectare), abandonment of nests due to hostile social interactions, nest parasitism and egg dumping (up to 28 eggs in a nest). Rapid snowmelt in June enabled the geese to establish a colony of 28,400 nests. Mean clutch size was 3.60±0.05 eggs (n=645), being significantly higher in the area of intense competition for nesting territories. Hatching started on 24 June, which is earlier than the average date, 27 June, for the period 1970-2004. The first broods started to leave the colony on 25 June, moving to the northern plain of the Tundra of Academy. The main flow of broods was along the Tundrovaya River, because elsewhere the tundra was too dry due to dry season conditions. Mean brood size was  $3.16\pm0.08$  goslings (n=455) for the broods which left the colony. Hatching occurred in about 75% of nest in the main colony, which means that approximately 7000 nests failed, primarily due to the numerous predators. Approximately 67,000 goslings left the main colony area. Unfavourable weather conditions in the brood-rearing period, especially during the first two weeks of July, and abundant predators in the Tundra of Academy are likely to have adversely affected the number of goslings surviving to fledging. Generally, reproductive performance of Snow Geese was slightly below average in 2004. The proportion of juveniles on the wintering grounds was reduced to about 12%, while normally it should have been about 20% for a rather large colony such as that in 2004.

Numbers of Arctic Foxes were high around the colony. They were in good condition, and many of them bred despite low lemming numbers. This resulted from rapid warming with rain and ice on the tundra, followed by mass mortality of reindeers in late October and early November 2003, after which 50 corpses remained in the colony area of about 100 km<sup>2</sup>. Thus, there was abundant food ensuring survival and good physical condition of Arctic Foxes during the snow period. However, low lemming numbers adversely affected the survival of their young in summer 2004. Many cubs were in poor condition already in July, and cases of deaths from diseases were also recorded. However, lemming numbers were considerably higher and reached the rank of average in some parts of the Tundra of Academy, where Arctic Foxes and Snowy Owls bred, and fledglings of Pomarine Skuas were recorded. Snowy Owls and Pomarine Skuas were rare and did not breed in the vicinity of the goose colony.

Apart from traditional predation by Arctic Foxes and Glaucous Gulls, goose nests were also destroyed in 2004 by Wolverine and Red Fox. The number of Wolverines has increased on the island in recent years, and they became regular visitors to the goose colony. A visit by a pair of Wolverines to the colony was documented in 2004. A Red Fox was observed eating eggs in the colony at the beginning of the incubation period. The Red Fox and Wolverine are stronger predators than the Arctic Fox, and unlike the latter they cannot be driven away from a nest by a defensive pair of geese. Similarly, while geese can stop or change the direction of movement of a reindeer herd, they are not able to influence approaching muskox, whether a single animal or herd. Muskoxen are also attracted to the breeding habitats of geese, but formerly they appeared at the goose colony after the hatching of goslings. However, in 2004 two males came to the colony before hatching and stayed in the area of high nest density. Muskoxen apparently did not predate eggs and could trample them, but the harm from disturbance was far greater. Geese were flushed from nests on approach of muskoxen at a distance of 3-4 m, and unattended eggs were often destroyed then by Glaucous Gulls, which did not fear muskoxen. Approximately 600 goose nests were destroyed by up to 50 Glaucous Gulls associated with two muskoxen males in 2004.

V.V. Baranyuk

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

The snow started to melt on 29 May, reduced to 50% on 7 June and completely disappeared on 13 June. Spring flood occurred on the Neizvestnaya River on 5 June. Spring was late, but snow melted quickly, which benefited the start of nesting by most bird species. June was warm with few windy days. July and August were rainy and windy. Extreme events were not recorded, although snowfalls occurred in July and August. Weather conditions were generally unfavourable.

Lemming numbers were lower than in 2003, based on counts of undersnow nests: 3.97 and 2.42 nest/km in 2003 and 2004, respectively. Nests were counted on transects totaling 51.2 km and split into 28 fragments. Numbers of Siberian Lemmings declined, while numbers of Collared Lemmings increased, in 2004, the converse of the situation in 2003. The number of inhabited burrows in the study plot decreased from 11.3 per 1 km in 2003 to 3.5 in 2004. Lemming numbers were also low elsewhere on the island, with the exception of local areas with moderate numbers in the Neizvestnaya River valley in the Tundra of Academy (observations by V. Kazmin).

Arctic Fox numbers were low to average across the island. Density on the study plot was average -0.29 fox/km<sup>2</sup>. Apart from breeding animals (62%), the plot was inhabited by territorial individuals (23%) and non-territorial juveniles (15%, *n*=13). Five broods were found in 12 dens in the study plot and its vicinity, while den occupation generally on the island was 32% (*n*=50), which is considerably lower than in 2003. Mean litter size on the island was 5.5 (*n*=12, range 3-8), which is close to the 2003 value.

Pomarine Skuas were not observed on the island with the exception of 2 breeding pairs found by V.V. Baranyuk in the lower reaches of the Neizvestnaya River. Long-tailed Skuas occurred in low to average

## **ARCTIC BREEDING CONDITIONS**

numbers and were unevenly distributed, with density varying by a factor of 10 across the island. Most birds bred, but nest success was very low due to heavy predation and low lemming numbers. Only 4 broods with flying juveniles were observed in August. Nest density was 0.33 nest/km<sup>2</sup> on the study plot, which is close to the 2003 value. Two of 14 nests were successful and chicks fledged by 10 August. Long-tailed Skuas started gathering in flocks on 18 July, and began to leave territories by the end of July.

Numbers of Snowy Owls were very low, and they occurred at a density of 0.23 bird/km (253 km). The proportion of females was at a record low in 2004: 1:2.5 on the study plot and 1:2.76 elsewhere on the island. All females bred, while 70% of males held territories, but failed to find mates. The density of Snowy Owls and their nests on the study plot was 0.30 bird/km<sup>2</sup> and 0.07 nest/km<sup>2</sup>, respectively, which is a record low for the periods of observations from 1990-1995 and from 1998-2004. Nesting density was also low elsewhere on the island, and the average distance to closest nests was 3.17 km (n=9) in the valley of the Neizvestnaya River. From 14 nests with known fate, 3 were deserted, 2 failed, while 1-3 chicks survived to fledging in 9 nests. One of the deserted nests was situated on the slope inhabited by large herd of Reindeers and 3 Wolverines, and another was very late. Mean clutch size was 5.25 (n=8). Chicks hatched from 52% of eggs (n=42), and 19% of chicks survived to fledging. Low reproductive performance was in all known cases associated with the deficiency of food.

The combined density of rodent-specialists was 0.59 animal/km<sup>2</sup>. The proportion of birds in the diet of breeding Snowy Owls was 28.8% (n=52), including Snow Goose (1.9%), Common Eider (7.7%), Brent Goose (1.9%), wader chicks (5.8%) and Long-tailed Skuas (7.7%). This fairly high proportional contribution of alternative prey to lemmings indicates a pronounced deficiency of rodents. Accordingly, predation pressure on birds was significant despite the low density of predators.

Approximately 300 nests of Snowy Geese were found in 11 colonies associated with 12 nests of Snowy Owls. One colony was destroyed almost completely by a grazing muskox male, and at least 30 nests were destroyed by skuas and Glaucous Gulls. Arctic Foxes, 5 Glaucous Gulls and 2 Arctic Skuas destroyed less than 25% of nests in two colonies, although owl nests had already been deserted. The remains of a Snowy Goose were found near a single owl nest, which indicates a considerably lower level of predation of geese by owls than in 2003. The mean clutch size of geese was 4.83 (n=29, range 2-9), while nest success was approximately 61% (n=201). Breeding conditions for geese near nests of Snowy Owls were poor in 2004 due to low numbers of owl females and low numbers of lemmings.

Common Eider nests (n=108) were found in the vicinity of 5 of 12 nests of Snowy Owls, while only 3 eider nests were found isolated. Mean clutch size was 5.72 (n=65, range 2-11), while three found broods contained 5, 3 and 3 chicks. Nest success was 2.7% (n=111), and 3.7%

(n=108) of females were captured by Snowy Owls. A large eider colony of at least 100 nests was established in the traditional area near the Neizvestnaya River. This area was protected from Arctic Foxes and Glaucous Gulls by a territorial owl male, and no nest predation was recorded in the colony until the start of hatching. However, the owl nest was deserted after a storm just before 10 July, on the first day of hatching of eider chicks. All but one eider nest in the colony were destroyed afterwards during one day by a male Arctic Fox, 6 Glaucous Gulls and 2 Arctic Skuas. All three eider females were killed by owls near one of the owl nests, while owls from another nest failed to catch a single eider female whose nest survived to hatching. Weather conditions were favourable for nesting by Common Eiders and the extremely low nest success was due to low lemming numbers.

A female Brent Goose nesting 30-40 m from a nest of Snowy Owl was captured by the owl female in the period of adverse weather from 7-8 July, while another Brent Goose nest (1.5 m from an owl nest) was apparently successful, with at least 4 chicks hatching, based on egg-shell remains in the nest.

Grey Plovers (4 pairs), Turnstones (6 pairs), Red Knots (2 pairs), Dunlins (3 pairs), Pectoral Sandpipers (1 pair) and Redpolls (3 birds and 1 pair) were observed on a transect 3 km long in the vicinity of the study plot on 23 June. Numbers of Pectoral Sandpipers and Dunlins increased compared with 2003. A nest of Redpolls was depredated by Arctic Fox, but at least two broods were seen in the vicinity of the field camp in August. Wader broods were rarely seen in August, which indicates low reproductive success.

#### I.E. Menyushina

## 53. Vaamochka River delta, Chukotka, Russia (62°39'N, 176°38'E)

Stormy weather in autumn 2003 resulted in the blocking of the river mouth by a dam of sand and pebbles. Ice on the waterbodies was unusually thin, ranging from 30-40 cm compared with the normal 100-150 cm. Spring was warm and very early with a high flood. The water table in Pykulneiskoe and Vaamochka lakes was very high, only 30 cm below the record highest level observed in 2001. Until 17 June, when the dam was broken, the high water level was retained, and vast lowlands around the lakes and in river valleys remained inundated and unsuitable for nesting by most species of waterbirds until late June. Ice melted on large lakes 7-10 days earlier than in 2003. Many relatively large snow patches remained in ravines until mid July. Minimum and maximum air temperatures were +1-4°C and +7-16°C during 18-30 June, and +2-9°C and +7-26°C in July, respectively. The summer was generally cool and windy with low cloud, high air humidity, night fogs, drizzle and frequent rains. Heavy rains occurred several times when over 25 mm precipitation fall within 24 hours, but this did not result in considerable increases in water levels in the rivers. The total precipitation was approximately 3 times higher than in 2003. Ripening of berries (crowberries, bog bilberries, clusterberries and cloudberries) was

several days later than in 2003, while the crop level was close to average. Salmon arrived in good numbers to their spawning rivers.

Lemmings were not recorded, while numbers of voles were higher than in 2003, in particular, on dry banks of rivers and some lakes. Shrews were rare. Arctic Ground Squirrels were abundant, as in 2003, and bred successfully. Hares were very rare.

Red Foxes were common to numerous, most of them bred and actively depredated eggs of birds before mid July. Brown Bears were numerous, and at least 25 different adult animals were recorded, including 3 females with cubs. Fresh tracks and excrement were seen daily. The majority of bears had no permanent territories away from the vicinity of the spawning rivers. Fresh tracks of wolves and a track of wolverine were seen.

Observations of Gyrfalcon, Peregrine and Merlin were solitary, and records of wandering White-tailed Sea Eagles rare. Two breeding pairs of Rough-legged Buzzard were found. Wandering Herring Gulls were abundant, while their nesting numbers were 2-3 times lower than in 2003, and they were often found in tundra up to 400 m away from waterbodies. Common Gulls were also less abundant than in 2003. Mammalian predators destroyed 60-80% of nests of these two gull species away from the lake islands. Wandering Arctic Skuas were rare, and only two nesting pairs were recorded. Long-tailed Skuas were also very rare and did not breed. Ravens were abundant; at least 15 pairs nested on rocks along 15 km of the Vaamochka River. Ravens were principal avian predators on bird clutches, in particular affecting geese and ducks flushed from their nests by humans.

Breeding dates were similar to those in 2003 for most species of birds, but the proportion of non-breeders was very high. Numbers of nesting divers, Red-necked Grebes Podiceps grisegena and most species of ducks were considerably lower than in 2003. Swans did not breed. Numbers of nesting White-fronted Geese were 2-3 times lower than in 2003, and approximately half of their clutches were depredated. Numbers of moulting White-fronted Geese increased 2.5-3 times compared with 2003, and reached 3000-3500 birds. Teal, Harlequin Duck Histrionicus histrionicus and Red-breasted Merganser were the only species of ducks, numbers of which were higher than in 2003. Willow Grouse were rare, and a single juvenile was seen. Sandhill Cranes occurred in similar numbers to 2003, but only 10-20% of birds nested, and no more than half of nests survived to hatching. Flocks of up to 11 non-breeding cranes wandered in the vicinity of breeding sites.

Numbers of most species of waders (Temminck's and Red-necked stints, Ruff and Common Snipe) were lower compared with 2003. Densities of Lesser Sand Plover *Charadrius mongolus* in different sites were 3-8 times lower than in 2003. Long-toed Stint *Calidris subminuta* and Wood Sandpiper nested in numbers close to those recorded in 2003, while Red-necked Phalaropes were twice as abundant. Most species of passerines nested at lower densities than in 2003. Redpolls were numerous in floodplain willow stands in July, but only a small proportion of these birds nested, primarily in alder shrub on mountain slopes. Numbers of the White Wagtail and Wheatear increased 2-3 and 3-4 times, respectively.

Mass non-breeding of birds in the flooded areas did not lead to increased numbers of breeding bird in surrounding areas.

#### A.I. Artyukhov

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

According to reports by local people, autumn storms in 2003 resulted in the blockage of the joint channel from Vaamochka and Pekulneiskoe lakes to the Bering Sea. Deep snow accumulated during the winter, and snow melt developed rapidly in spring. All these, accompanied by the late clearing of the river mouth (17 June), resulted in a very high water table in the second half of June across the whole territory of the Meinypilgyno lake-river basin. However, the floodwaters retreated rapidly and after the water table dropped by over 1 m it stabilized at a level similar to that in 2003 in early July. During the flood, water covered the low shores of lakes, first terraces of creeks near hills, islands and spits on Pekulneiskoe Lake and young spits in sea channels, while moraine hills and high ancient spits and terraces remained dry.

Snow still could be found in ravines and on some slopes of moraine hills until 20 July, and in greater quantity than in 2003. Late snow melt and flooding resulted in delayed development of vegetation in many sites, which retained a specific wintry appearance. However, on arrival on 18 June, we observed flowering of a rhododendron and other dwarf shrubs, and considerable numbers of mosquitoes. The first imago of craneflies and high numbers of chironomid midges emerged in late June.

Summer was notably colder and wetter than in 2003. Sea-fog and southerly winds occurred almost daily, and summer generally was relatively cold. Minimum, maximum and mean daily air temperatures in July were  $+8.9^{\circ}$ C,  $+14.5^{\circ}$ C and  $+11.4^{\circ}$ C, respectively, based on hourly measurements. Low cloud and drizzle were common, but heavy rain occurred only on a few days. Calm days were rare, as moderate to strong winds prevailed.

Small rodents, both lemmings and voles, were common on the tundra slopes of moraine hills. Trapping was not undertaken. Arctic Ground Squirrels were numerous and successfully bred as in the previous year.

Brown Bear was the only mammalian predator recorded (10 km from the settlement). Birds of prey were rare in the vicinity of the settlement and most probably did not breed there. White-tailed Sea Eagle and Rough-legged Buzzard were seen twice, and Gyrfalcon once. Owls were not recorded. Long-tailed and Arctic skuas were rare, and their nests were not found, while Pomarine Skua was not recorded. Herring and Glaucous gulls were numerous and common breeders, respectively, and their eggs were actively collected by local people on island colonies in the Vaamochka and Pekulneiskoe lakes. Aggregations of large gulls were common near settlement and along the seaward shores of the Pervaya Rechka channel. Ravens were common everywhere.

Sandhill Cranes were common, however, their breeding status remained unconfirmed. Nests of the White-fronted and Emperor Geese *Anser canagicus* were found, but their nesting results remained unknown. Among ducks, the Common Eider was the only species for which nests were found, although broods were not observed before our departure on 19 July. Local people actively collected eider eggs.

Numbers of breeding Lesser Sand Plovers decreased by a factor of two-three compared with 2003. However, numbers of Ringed Plovers nesting in similar habitats did not change notably, which leads to the theory that the decline in numbers of Lesser Sand Plovers was not related to local breeding conditions.

The numbers of passerines did not change notably. Clutches were found of Wheatear, Lapland Bunting, Red-throated Pipit, White Wagtail, and fledglings were observed of Snow Bunting.

Breeding success of waders was generally average. Chicks hatched in the Spoon-billed Sandpiper *Eurynorhynchus pygmeus*, Dunlin, Ringed Plover, Lesser Sand Plover, Temminck's Stint, Red-necked Stint, Knot, Red-necked Phalarope and Pacific Golden Plover. Fledged young were seen in the Dunlin and Spoon-billed Sandpiper. Mayfield nest success in the latter species was 1.08 chicks hatched per nest, compared with 1.42 chicks per nest in 2003, while breeding success was 0.5-0.6 fledgling per nest. Seven of 14 Spoon-billed Sandpiper nests under study were depredated.

Late snow melt, particularly in low-level habitats, and anomalous flooding early in the nesting period probably adversely affected reproduction of some waders and waterfowl. This was evidenced indirectly by the high variability of return rates of Spoon-billed Sandpipers ringed in different parts of the Meinypilgyno lake-river system, presumably related to the shortage of suitable nesting habitats or perishing of clutches during the flood. Some Spoon-billed Sandpipers, as well as eiders and Emperor Geese, nested in 2004 in more elevated areas compared with 2003. Breeding of geese had been delayed as we observed approximately 50 moulting geese, most of which were not yet able to fly, on 16 August on Pekulneiskoe Lake. Also, observations of goose broods with chicks unable to fly were the latest on record in 2004. Unfortunately, limited numbers of observations on many species and late arrival to the study area did not permit us to demonstrate clearly any impacts of environmental conditions on birds.

I.A. Taldenkov, E.V. Golub

#### 55. Avtatkul River basin lower reaches, Chukotka, Russia (64°00'N, 178°15'E)

Signs of lemming activities were not observed, but small isolated colonies of voles were found along margins of depressions.

Two inhabited dens of Arctic Foxes with signs of presence of juveniles were found 6 km from each other on the river bank. Wings of waterfowl prevailed in food remains near the dens. Reproductive success of geese was high as 2-3 broods with 3-5 chicks in each were recorded per 1 km of the river. Approximately 3000-5000 Dunlins were seen on 29 August on tidal mudflats of the estuary.

#### A.V. Andreev

## 56. Anadyr city surroundings, Chukotka, Russia (64°43'N, 177°29'E)

Winter and early spring were warm, with a large accumulation of snow. Rapid warming occurred in mid May, and no snowfalls or cold weather were recorded thereafter. The air temperature was 2.8°C above the longterm average in May. Dates of snow melt, ice-break on rivers, lakes, the Onemen Bay and Anadyr eastuary were 5-10 days earlier than normal, and even earlier by a further 5-10 days in the vicinity of the city. Snow covered 10-20% and 70-90% of flat tundra surfaces on 26 May close to Anadyr city and at a distance of 10 km, respecitvely. Snow cover remained in ravines, clumps of bushes and on southeastern slopes by 5 June, accounting for 5-7% of the total surface. The spring flood was early, brief and higher than average. June was warm and dry, which resulted in considerable drying out of the tundra by mid month. Small quantities of berries from the previous year were still present in spring. Mosquitoes emerged en masse on 17 June, which is very early.

Microtine rodents were not seen, and their numbers were low based on indirect evidence. Arctic Ground Squirrels were common, locally numerous.

Red Foxes were seen several times, but breeding was not confirmed. Short-eared Owl, Peregrine Falcon and Merlin were each seen once. We found one Gyrfalcon nest, one of Rough-legged Buzzard and two of Ravens. Red-necked Grebes and Teal were rare breeders, while Pintails were common. The Greater Scaup, Long-tailed Duck, Common Eider and Red-breasted Merganser were rare. Sandhill Cranes nested in low numbers at least 7 km from the city. Willow Grouse and Rock Ptarmigans were not seen, while Long-tailed and Arctic skuas were rare and did not nest. Herring Gulls occurred in aggregations ranging from 80-100 to several thousand birds, the latter on the city rubbish dump. Glaucous Gulls were 10-20 times less common than Herring Gulls. Arctic Terns were very rare and nesting was not recorded. Aleutian Terns Sterna aleutica were concentrated in marshes near the entrance to the Onemen Bay. The Pacific Golden Plover, Pectoral Sandpiper, Ringed Plover, Wood Sandpiper, Ruff, Temminck's Stint and Long-toed Stint were rare among breeding waders, while Dunlin and Red-necked Phalarope were common. Terek Sandpiper, Common Snipe and Whimbrel occurred in considerably lower numbers than in 2003.

Most species of passerines bred in lower numbers than in 2003. Wandering Redpolls were rare, and nesting birds were not found before 18 June. Snow Bunting, House Martin *Delicon urbica*, House Sparrow *Passer*  *domesticus*, White Wagtail and Dusky Thush occurred in numbers similar to 2003.

The general impression was that breeding conditions were favourable for most species, except for rodent specialists.

A.I. Artyukhov

#### 57. Nunlingran, Chukotsky Peninsula, Russia (64°48'N, <u>174°54'W)</u>

Air temperature varied from +4-+9°C in the period 12-23 June. Frequent fog, windy weather and drizzle made observations difficult. Voles were rarely seen. Lemmings, Arctic Foxes and birds of prey were not recorded, apart from a few owls. Bird abundance did not exceed the average value, and Sandhill Crane, grouse, waders and passerines were the only birds found breeding.

#### I.A. Schirenko, M. Leiser

#### 58. Providenia settlement, Chukotsky Peninsula, Russia (64°27'N, 173°12'W)

Fog and rain were common and air temperature varied from +4-+10°C during the period 24-29 June, but then sunny weather prevailed, and cloud cover ranged from 0 to 3 up to the end of observations on 3 July. Microtine rodents, Arctic Foxes and owls were not recorded, while Rough-legged Buzzards were breeding.

I.A. Schirenko, M. Leiser

## 59. Lavrentia settlement, Chukotsky Peninsula, Russia (65°35'N, 171°00'W)

During the period of observations from 6 August to 14 September, the weather was windy with changeable cloud cover, often with rain and fog, and we were told this weather is typical for the area at this time of a year.

Rodent numbers were probably high, as we saw recent signs of activities of Tundra Voles and lemmings during the whole period of our stay. According to reports of local people, domestic cats were catching lemmings even in the buildings of the settlement. Arctic Ground Squirrels were common and locally numerous.

Crop of mushrooms and berries (cloudberry, clusterberry and bog bilberry) were very heavy.

Arctic Foxes, Red Foxes, Brown Bears, and their fresh tracks were not found. An adult Ermine was seen on a creek slope. A brood of Snowy Owls of two flying juveniles accompanied by an adult bird was recorded on 17 August. Alarming Rough-legged Buzzards were seen in 3 sites along the rocky stretches of the Lavrentia Bay coast. Among skuas, only Long-tailed Skua, both adults and juveniles, was often recorded. Ravens were notable around the settlement on numerous rubbish dams.

Broods of Common Eider, Long-tailed Duck and Pintail were recorded on lakes in the vicinity of the settlement. Broods of Greater Scaup were found on almost every relatively large lake, which are rather uncommon in the area. Numbers of ducks started to build up from mid August. Grouse were very rare (a single record). Mass migration of Sandhill Cranes started on 10 August in the morning and continued for 3 consecutive days. Flocks of hundreds of birds were passing towards Alaska between 9-00 and 16-00. The intensity of migration decreased dramatically from 14 August, when solitary flocks continued to pass. Waders, other than Pacific Golden Plover, were uncommon in the area.

G.I. Atrashkevich, K.V. Regel

#### <u>60. Saint Lawrence Island, Savonga vicinity, Alaska,</u> <u>USA (63°41'N, 170°29'W)</u>

Snow cover was low in the winter of 2003/2004, and spring was early, according to reports by residents. On arrival on 17 June, snow was already absent, the tundra had acquired a green aspect and rivers had dried up after the period of high flows during snow melt.

The summer was exceptionally warm and very dry. The first half of June was probably relatively dry, while the second half of the month was rainy. July was unusually warm and sunny, with air temperatures reaching +20-24°C on some days. Rains were rare in July, and coastal tundra became considerably drier. Generally, July in 2004 was even warmer than in 2002, being equally dry. The first half of August was rainy, as usual, but the weather remained very warm, with temperatures exceeding +9°C at night and ranging from +12-16°C by day. Strong winds rarely occurred in 2004: a single daylong storm was recorded on 15 August.

Mosquitoes were first noted on 18 June, and they became abundant on 20 June. In previous years, mosquitoes appeared *en masse* on 7 July 2000, 15 July 2001, 25 June 2002 and 27 June 2003. Fledged juvenile Snow and Lapland buntings were recorded on 26 June and 1 July, respectively.

As in previous years, Tundra Voles were very numerous on the island, occurring in similar numbers to those present in 2003. However, the Northern Red-backed Vole was considerably less abundant in 2004 than in 2003. Lemmings were not seen, although records of Greenland Lemmings *Dicrostonyx groenlandicus* were reported in the literature.

The Arctic Fox was numerous as usual, and bred successfully. Avian rodent-specialists were almost absent from the island, as in previous years. Rough-legged Buzzards and Snowy Owls were not seen during my stay on the island from 17 June to 17 August, but Lisa Sheffield and Ian Rose reported a Snowy Owl in the vicinity of Savonga in late August. Pomarine and Arctic skuas were rarely seen, despite the abundance of voles. Long-tailed Skuas were seen almost daily, although they did not nest in the vicinity of Savonga. Occasionally, this species was seen in flocks of up to 10 birds, however, its abundance was lower than in 2000 when these birds were numerous in the area. As in 2003, Longtailed Skuas practiced kleptoparasitism in auklet colonies (primarily on Least Auklets Aethia pusilla), a behaviour which had not been observed before 2003 in this skua species on the island.

Among waders, breeding was confirmed in Pacific Golden Plover, Dunlin, Western Sandpiper *Calidris mauri* and Grey Phalarope, while Rock Sandpipers

## **ARCTIC BREEDING CONDITIONS**

*Calidris ptilocnemis* and Red-necked Phalaropes were likely breeders based on the behaviour of adult birds. Dunlins and Rock Sandpipers occurred in numbers similar to 2002-2003, based on visual evaluation. Turnstones did not breed, and similarly to 2003 nesting of Pectoral Sandpipers and Long-billed Dowitchers was not recorded. Migration of waders was not intensive prior to my departure on 17 August. Migrating Pectoral Sandpipers appeared only in mid-August and in very low numbers, presumably due to the dryness of the tundra. Rock Sandpipers were also not numerous migrants.

Nesting of Kittiwakes and murres was the earliest on record for the 5 years of our studies on the island. The first Kittiwake chicks were recorded on the permanent plots on 5 July, while probable hatching dates were 2-3 July there, and 29-30 June in other colonies on the island, based on back calculation for surveyed chicks. In other years, the first Kittiwake chicks hatched on 9 July 2000, 12-14 July 2002 and 7-8 July 2003. Hatching started in Thick-billed Murres on 9 July 2004, compared with 22 July in 2000 and 2002, 23-24 July 2001 and 13 July 2003, while in Common Murres it occurred on 13 July 2004, 28 July 2000, 27-28 July 2001, 26 July 2002 and 17 July 2003. Hatching in auklets occurred on the usual dates: on 22 July in Crested Auklet Aethia cristatella (compared with 24 July 2002 and 21 July 2003), and 19 July in Least Auklets (compared with 18 July or slightly earlier in 2002 and 20 July the latest in 2003).

Breeding was successful for Common and Thick-billed murres, Crested and Least auklets in 2004 (exact data are available from U.S. Fish Wildlife Service). Breeding success was high in Kittiwakes, although lower than in 2003: 44.7% of laid eggs produced fledglings compared with 51.4% in 2003 and 18% in 2002. High survival of chicks in 2004 was probably due to good feeding conditions for Kittiwakes, despite unusually warm weather.

V.A. Zubakin

#### 61. St. Paul Island, Pribilof Islands, Alaska, USA (57°10'N, 170°15'W)

During the period of observations, from 19 May-13 August, the weather was warmer than usual. Drizzle occurred less often than in previous years, but pelting rains lasted for several hours on three occasions.

Pribilof Shrew *Sorex pribilofensis* was seen once. Arctic Foxes were abundant. Short-eared Owls and Bald Eagles *Haliaeetus leucocephalus* were the only specialist avian predators recorded.

Breeding conditions were favourable before and during egg-laying by Kittiwakes and Red-legged Kittiwakes *Rissa brevirostris*. Many Kittiwakes laid 2 eggs, and some of them laid 3 eggs. Feeding conditions worsened rapidly then, and many chicks and even fledglings died. Both species of murres delayed egg-laying, and the number of eggs counted on survey plots was at best half of the normal number. Parakeet Auklets *Cyclorrynchus psittacula* perished, presumably from hunger. Least Auklets started breeding earlier than usual, bred successfully, and their chicks left the colonies 2 weeks ear-

lier than the average date. Red-faced Cormorants *Pha-lacrocorax urile* apparently had no problems feeding chicks.

N.B. Konyukhov

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

A large tidal storm surge, probably during the last week of November 2003, inundated vegetated intertidal habitats. Based on the deposition of drift wood and debris, water levels may have reached 2m above mean high tide. As a result, small rodents probably perished as no fresh signs were observed in the lowlands or adjacent areas of elevated ericaceous tundra in 2004. Arctic Foxes were correspondingly reduced with one observed, another heard and one set of tracks seen on one of 13 0.32 km<sup>2</sup> study plots: Fox activity was well below the level observed in 2003. No Short-eared Owls or Longtailed Skuas were observed at the study sites but Arctic Skua numbers appeared similar to 2003.

Goose nesting chronology in 2004 was >5 days earlier than in 2003 with the earliest broods as follows: Greater White-fronted Goose 3 June, Cackling Canada Goose 4 June and Emperor Goose 6 June. The only other species observed hatching prior to the 8 June was a Sabine's Gull clutch on 3 June.

Of incidental note is the subjective view of this observer that numbers of Ruddy Turnstones and Grey Phalaropes are well below historic levels. Short duration, opportunistic observations from 1997-2002 at a few sites with appropriate habitat along the coast of the Yukon-Kuskokwim Delta yielded no observations. Neither species was observed during extensive ground investigations on the Naskonat Peninsula in 2003 and only three Grey Phalaropes were seen there in 2004. Based on their relative abundance in the early 1970s these species have either declined or modified their distribution.

The first large mosquito hatch occurred on 31 May, compared with 3 June in 2003. Flowering of *Carex* sp. (29 May), *Petasites frigidus* (30 May), and *Ranunculus pallasii* (1 June) were 1-2 days ahead of 2003.

2004 was phenologically the earliest year observed since spring surveys were begun in 1981. During the last week of April, snow was absent, pond ice was absent or melting and there was no sea ice. Late April conditions during the previous earliest year (2003) were 30% snow cover with most ponds ice covered. In comparison with the past three decades, the disappearance of snow and ice in 2004 was 3-4 weeks early and sea ice conditions have been light to absent since the mid-1990s.

#### C.P. Dau

#### <u>63. Yukon-Kuskokwim outer Delta, south-west, Alaska,</u> <u>USA (61°15'N, 165°38'W)</u>

Aerial surveys at five Black Brant colonies on the Yukon-Kuskokwim Delta – Kokechik Bay, Tutakoke River, Kigigak Island, Baird Inlet Island, and a peninsula northwest of Baird Inlet Island were conducted on 2 June. The timing of surveys was the earliest ever due to an extremely early ice break-up.

Nest predation by Arctic Foxes was greatly reduced throughout the coastal region this year compared to 2003. Numbers of unoccupied nests and nests with strewn down seen in images were reduced from last year. The nest estimate at Kokechik Bay was again low this year and the number of nests found on groundtruthed transects confirmed the decline in number of nests.

Only 14 active nests and 5 destroyed nests (apparently flooded by an extremely high tide) were found in 3.5 hectares intensively searched during ground-truthing at Kokechik Bay in an area with historically high densities of nests. Counts of all-terraine vehicle and boot tracks indicated an increase in human activity in the brant colony. Boot counts have increased from 30 in 2001 to 34, 160, and 166 in 2002-2004, respectively.

Coincidental with the apparent increase in human activity in the Kokechik Bay area estimates of the number of nesting brant has declined. Consistently the colony with the most nests among five colonies surveyed annually since 1992, Kokechik Bay had the fewest nests in 2003 (655 nests), which was a year of high fox predation. By comparison, it had the largest nest population among all colonies in 2001, also a year of very high fox predation but with less evidence of human activity. The estimated number of nests in 2004 is 1996±116 nests, compared to an average of 6893±902 nests from 1995-2000. Although other factors influence fluctuations in productivity (fox predation, nesting conditions due to climatic factors, physical condition of females arriving from wintering areas) the dramatic decline in total nesting effort (i.e., evidence of failed nests as well as active nests) causes concern for the effect of disturbance by humans in this colony. Estimates of nests at Tutakoke River and Baird Inlet Island also were relatively low compared to previous years without high fox predation.

Brant nesting effort in 2004 increased in 4 of the 5 colonies on the Yukon-Kuskokwim Delta from 2003, but remained approximately 24% below the 8-year average. Clutch sizes and nest success on the delta were higher than in the very poor year of 2003. Production of brant in 2004 should be improved somewhat over 2003, but the autumn flight is expected to be similar to last year's.

R.M. Anthony

See also: U.S. Fish and Wildlife Service. 2004. Waterfowl population status, 2004. U.S. Department of the Interior, Washington, D.C.

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

Spring break-up in this region was early compared to the long-term (15-year) average. Temperatures were mild throughout the spring, and the limited winter snow pack melted early. When the field crew first arrived at Kanaryarmiut Field Station (KFS) on 21 April, the tundra was >95% snow-free and much of the ice on rivers and lakes was slushy with numerous holes and breaks. The Kuyungsik River broke-up on 6 May, the earliest on record, and Float Plane Lake was ice-free on 11 May. Between 21 April and 21 July, it snowed on two days (26 April and 9 May), 1.5 cm of snow accumulated on 26 April, then melted within 24 hours. Rain was recorded on 40% of days (concentrated in the middle of May and June (8 days, 13-24 May; 8 days 13-24 June). From Bethel, long-term weather reporting station 190 km SE of KSF, April was 4th warmest and 4th wettest in the last 40 years; May was not extraordinary, being warmer than the 40-year mean, but not significantly so (i.e., barely above the median value).

Voles were observed on 3 days during an eight week period.

A very dry winter, a thin winter snow pack, and a warm April resulted in an extensively snow-free tundra when breeding shorebirds arrived (Rock Sandpiper 23 April; Ruddy Turnstone 28 April; Grey Plover 29 April; Western Sandpiper, Dunlin 30 April; Black Turnstone *Arenaria melanocephalus*, Red-necked Phalarope, Wilson's Snipe *Gallinago delicata* 1 May; Bar-tailed Godwit 2 May) and when migrants began passing through (Semipalmated Sandpiper *Calidris pusilla* 30 April; Pacific Golden-Plover 1 May; Long-billed Dowitcher, Greater Yellowlegs *Tringa melanoleuca*, Red Knot 3 May; Bristle-thighed Curlew *Numenius tahitiensis* 5 May).

Breeding shorebird clutch initiations in the area were early in 2004. Rock Sandpipers began initiating clutches during the first week of May, and Western Sandpipers and Ruddy Turnstones began initiating clutches during the second week of May. The first Western Sandpiper nest in 2004 was initiated on 11 May, which tied with the earliest recorded initiation date for this species at the station (2003) and was nearly a week earlier than all prior years (1998-2002). The first Dunlin nest was initiated on 12 May, and the first Red-necked Phalarope clutches were initiated during the third week of May. Although Bar-tailed Godwit and Grey Plover nests were monitored at KFS, we did not discover nests of either species until 7 and 26 June, respectively. We have no data to suggest that the former was a particularly early nest, and the latter certainly was not.

In 2004, the combined frequency of all mammalian predator observations (i.e., Arctic Fox, Red Fox, and Mink) was the highest during the study. During 10 weeks of study at the station, Arctic Fox, Red Fox, and Mink were observed on 14, 15, and 18 days, respectively. Long-tailed Skuas are fairly common at this site, and a minimum of one pair of Long-tailed Skuas bred in 2004. There was no obvious correlation, however, between the frequency of predator observations and wader nest success. For example, during the year of lowest sandpiper nest success (2002), we made less than half as many predator observations as in 2004, and in the year of most frequent predator observations (1999), sandpipers had average nest success. The number of observations of mammalian predators on our study site has not been correlated with our qualitative assessment of rodent abundance.

Basic methodologies (1998-2004) for Western Sandpiper studies include two observers surveying a 16 ha

long-term study-plot daily from early May through late July for banded birds, nests, and broods. Adults and chicks are banded with unique color combinations at the nest, and the location and behavior of banded birds is recorded daily. The locations of discovered nests are mapped and nests are monitored through hatch, predation, or abandonment. After hatch, Western Sandpiper parent(s) and broods are resignted (brood location mapped, parent and chick behaviors recorded) once (1998-2002) or twice (2003-2004) daily through fledge, predation, or abandonment.

In 2004, we located and monitored a total of 53 nests on the 16 ha study-plot. Thirty-six of these nests were initial nesting attempts, and for one nest we were unable to determine whether this represented an initial nesting attempt as neither attending adult was banded. Thirteen males and 11 females attempted reproduction after initial clutch loss (re-nested) in 2004. Of the 13 males to receive secondary clutches, one male attempted reproduction a third time and another male attended a total of four nests. We have observed individual females producing three clutches within a single breeding season near our study site (1999 *n*=1, 2003 *n*=2, 2004 *n*=2); however, only one of these females placed its third nest of the season within our long term study-plot (2003). Based on initial nesting attempts, we estimate the density of Western Sandpipers on the long-term study-plot in 2004 was 2.25 pair/ha, and apparent nest success (i.e., percent of known nests successfully hatching >1 chick) among first nests in 2004 was 17% (Mayfield nest success = 0.19, 95% CI=0.13-0.27, n=36), and at least one chick fledged from all hatched nests. We estimated Mayfield nest success for all nests, including renesting attempts, on the main plot = 0.16 (95% CI = 0.11-0.22), *n*=53).

In 2004, we initiated a larger scale portion of the study, by establishing 29 outlying-plots (8ha/plot) across 29 km<sup>2</sup> of Western Sandpiper breeding habitat near the station. Outlying-plots were surveyed once and in random order, during the portion of the season/daily cycle when male display flights are most common (15-31 May, 11:30-18:00, Alaska Standard Time, unpublished data). During rapid surveys of outlying-plots, a single observer systematically walked back-and-forth across the plot to its lengths-end (30 min/plot), mapping the locations of all Western Sandpipers, and noting behaviors and pairing status. We also conducted rapid surveys on half of the long-term study-plot (8 ha) on the same days that out-lying plots were surveyed. During rapid surveys on outlying-plots, we observed an average of 11.4 Western Sandpipers /plot (range 0-31, 1.4 bird/ha). During rapid surveys on half of the long-term study-plot (n=16 surveys, area equivalent to outlying-plots, 8 ha), we observed an average of 19.3 Western Sandpipers /survey (range 9-28, 2.4 bird/ha).

During 1999-2000, four adult Rock Sandpipers, from three pairs, were banded at KFS. The pair banded in 1999 has returned and bred together every year since. During 2003, we banded 10 adult Rock Sandpipers from five pairs, and all 10 of these individuals were resignted in 2004. During 2004, we banded an additional three

adult Rock Sandpipers from 2 pairs. During 2004, we located and monitored nine nests from six pairs in a 48 ha area (0.13 pair/ha). Half of all pairs of Rock Sandpipers re-nested after initial clutch loss (3/6). Three of nine nests successfully hatched young (2-initial nesting attempts, 1-renesting attempt). Young successfully fledged (attained flight) from one brood, and another brood survived for at least 11 days post-hatch before we terminated observations. The third brood of Rock Sandpiper was likely taken by a Long-tailed Skua eight days post-hatch.

This was the first field season investigating the breeding ecology of Pacific Dunlin. We surveyed three wet meadows covering a total of 72 hectares. During nesting, each site was visited, at a minimum, every three days. Nests were found primarily through behavioural observations although each site was rope-dragged at least once during peak incubation. Once found, we attempted to trap and color band both adults. Each nest was visited regularly to check its status (active, depredated, abandoned, or hatched). If a clutch hatched the brood was searched for every one to two days and if found its location and which parent was attending was recorded. If we were unable to find a brood for more than two visits they were assumed dead or emigrated.

The first Dunlin was observed on April 30. The earliest nest was initiated on 12 May and the last was initiated on June 30. We located and monitored a total of 59 nests, and trapped and color banded 67 adults. We estimated that 42 of the nests found were first attempts, 14 were first renest attempts and three were second renest attempts. At a minimum, the nesting density was 0.58 pair/ha. The average incubation period was 22.1 days. Estimated Mayfield nest success was 36% (95% CI= 23-39%) and Mayfield fledgling success (the probability that nests that hatched fledged young) was 73% (95% CI= 58-91%).

We documented double brooding for the first time in North American Dunlins. On two occasions we had a female successfully hatch a clutch with one male then desert the brood and lay another clutch with a second male.

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

#### <u>65. Old Chevak, Yukon Delta National Wildlife Refuge,</u> <u>Alaska, USA (61°26'N, 165°27'W)</u>

Spring melt was early at Old Chevak in 2004. By the time the field crew arrived on 11 May, the tundra was > 99% snow-free in the vicinity of the field station, and by 14 May, all snow was gone. The Kashunuk River was ice-free as of 11 May, the earliest date on record. There were two stints of field work at Old Chevak, 14 May - 2 June, and 9 June – 28 June. Maximum daily temperatures remained above freezing for the duration of the field work. Measurable precipitation (rain and/or drizzle) occurred on 14-18 May, 20-24 May, 31 May, 2 June, 14-15 June, and 17-24 June. No snow fall occurred during the entire field effort.

The most severe weather occurred in the third week of May (i.e., during early clutch initiations) when 15-30 knot winds coincided with rain from 16-18 May, and a

storm broke at noon on 18 May. However, there was no evidence that it affected the timing of clutch initiations. The first major emergence of flying insects (chironomids) was on 19 May; the first day of major mosquito activity was 1 June.

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. No small rodents or their fresh signs were seen during the two bouts of field work at Old Chevak.

Small numbers of Long-tailed Skuas, including pairs, were seen on the study area on a daily basis. Only one pair actually nested, however (clutch size of 2, successfully hatched). Arctic Foxes and Mink were seen on nine and five of 20 field days, respectively, during shorebird laying and early incubation. Up to three Arctic Foxes were observed simultaneously on the 4 km<sup>2</sup> study area; waterfowl researchers familiar with the study site indicated that the frequency of fox observations was very high relative to most years.

Field work at Old Chevak focused on the breeding ecology of Bar-tailed Godwits. Potential predators of Bartailed Godwit eggs, chicks, and/or adults observed on the study site included Northern Harrier, Golden Eagle, Merlin, Gyrfalcon, Sandhill Crane, Arctic Skua, Longtailed Skua, Common Gull, Glaucous Gull, Short-eared Owl, Common Raven, Arctic Fox, Mink, Ermine, and Weasel. We observed adult godwits mobbing Northern Harrier (once), Sandhill Crane (once), Arctic Skua (12 times), Glaucous Gull (2), Common Raven (1), Arctic Fox (6), and Mink (2). We also observed adults spooked by a Short-eared Owl, and responding vocally to both a Golden Eagle and a Sandhill Crane.

Twelve Bar-tailed Godwit nests were found at Old Chevak in 2004 through a combination of focal observations and rope-dragging. The mean initiation date was 23 May (range from 14 to 30 May). Estimates of the age of chicks in two additional broods in the fourth week of June suggested that the clutches from which they had hatched were also initiated during the latter half of May, probably near or just prior to the mean clutch initiation date.

All 12 godwit nests found on the study area were depredated, three of them were found during, or after, predation. The mean length of survival after clutch completion was only 4.8 days (n=7). The nest surviving the longest lasted only until day 11 of incubation. Arctic Fox and Sandhill Crane were each observed depredating one nest; a third nest was apparently depredated by either or both of these species (based on observations of godwits mobbing both species in the immediate vicinity of their nest on the same morning that the nest was ultimately abandoned with only a single egg remaining). Subsequent to the depredation of known godwit nests, only 2 godwit broods were found that might have hatched from additional nests on the study plot.

The high rate of godwit nest predation was apparently a local and/or species-specific phenomenon. Overall, waterfowl nest success was quite high on the outer Yukon-

Kuskokwim Delta in 2004, and although sandpiper nest success at Kanaryarmiut Field Station, 19 km to the southeast of Old Chevak, was below the 7-year mean, it was >45% higher than in either 2002 or 2003.

Ten nests of Grey Plover were also found on the study area. At least seven of the 10 were depredated; the remaining three were all still extant when last checked. Between 18 and 27 May, approximately 80% of the study area ( $\sim 3.2 \text{ km}^2$ ) was rope-dragged a single time for nests. During this effort, 129 nests of 11 species were located, including 121 nests of seven shorebird species: Grey Plover (2), Bar-tailed Godwit (4), Black Turnstone (1), Western Sandpiper (105), Rock Sandpiper (5), Dunlin (2) and Red-necked Phalarope (2). The 105 Western Sandpiper nests represented 87% of all shorebird nests found during rope-dragging. No other shorebird species exceeded 4% of the shorebird nest total from rope-dragging. These numbers should not be converted to estimated densities, because even multiple visits by rope-draggers only find a fraction of the shorebird nests present on a plot.

B.J. McCaffery

#### <u>66. Alaska Peninsula from King Salmon to Chignik</u> Lake, Alaska, USA (57°30'N, 157°00'W)

The area often has no continuous snow throughout the winter. No specific data is available for the 2003/2004 winter. The Naknek River broke up / refroze and broke up 3 times between February 28 and April 6, 2004. There was some wet weather in May causing major rivers to run high. I don't think it caused major effects on bird numbers. In general the season was early, warm and dry.

Rodents were trapped at seven sites over the study area in July and August. Species were variously abundant depending on habitat. Generally, Northern Red-backed Vole was more common than Tundra Vole. I do not believe that Northern Red-backed Vole cycles are synchronized across the Alaska Peninsula.

Arctic Fox was not recorded. Rough-legged Buzzards were rare and Bald Eagles common, both as breeding birds. Skuas and Short-eared Owl were uncommon without signs of breeding.

It is difficult to make an assessment of bird breeding success because most of these studies were new in 2004. We did not follow most nests found for breeding success. The seabird colony appeared to be stable and the hatching date was within the previous normal range. We did not appear to have a seabird die-off at this colony as reported in other parts of the state. Several waterfowl species monitored during spring migration had lower peak abundances than the 13-year averages.

S. Savage

## 67. Alaska Peninsula, Alaska, USA (58°00'N, 157°30'W)

Weather was variable from relatively cool to warm (10-20°C). In general the season was early, warm and dry. Neither microtine rodents, nor Arctic Foxes or birds of prey were recorded.

From 3-11.06 we searched for nesting Pacific Golden-Plovers and Grey Plovers in this region of the Alaska Peninsula. Although there were no previous reports of either species breeding on the peninsula, we found them nesting at several sites. Our observations extend the breeding range of each plover southward – by at least 350 km in Pacific Golden-Plovers and 550 km in Grey Plovers. Five nests of Pacific Golden-Plovers were monitored and the eggs hatched in mid-June, some 2-3 weeks earlier than hatching at the northern end of the species' range in Alaska.

O.W. Johnson

#### 68. Mount Redoubt eastern slope, Lake Clark National Park and Preserve, Alaska, USA (60°24'N, 152°37'W)

Snow reduced to 50% on 7 June on flat areas; the plot was 75% covered during the visit on 28-29 May. The date of ice-break is not known, but creeks were high and rushing in late May. No snowfalls occurred during the visit from 16-29 May. In contrast to sites on the western side of Chigmit Mountains (northern extent of Aleutian Range), spring phenology in eastern sites was approximately 3 weeks later than average. Snow cover extended to about 75%, 0.5-2 m deep, throughout most sites along the eastern slope of Chigmit Mountains. The surveyed plot described herein is typical of areas visited in eastern sections of the park. We experienced no extreme weather events during our two-week stay.

Neither lemmings, nor voles were seen.

Due to the short duration of our visit, we are unable to comment on how the early and late spring conditions may have ultimately affected breeding conditions on western and eastern sites, respectively, within the park.

D.R. Ruthrauff, R.E. Gill, Jr., L. Tibbitts

#### <u>69. Turquoise Lake area, Lake Clark National Park and</u> <u>Preserve, Alaska, USA (60°50'N, 153°54'W)</u>

Snow was present only in valleys and over 1200 m a.s.l. during the visit from 16-29 May. Creeks were in spate at this time, but dropping from maximum flows. No snowfalls occurred during the visit. In contrast to sites on the eastern side of Chigmit Mountains (northern extent of the Aleutian Range), spring phenology in western sites was advanced approximately 3 weeks earlier than average. There was minimal snow cover throughout most sites along the western slope of Chigmit Mountains. The Turquoise Lake Plot described herein is typical of areas visited in the western sections of the park. We experienced no extreme weather events during our two-week stay.

Under-snow runways of unidentified voles were seen.

Of potential predators, only Long-tailed Skua and sporadically breeding Common Gulls were recorded during the survey of the plot. As to all the plots surveyed, we saw Arctic Ground Squirrels on the majority of them, Wolf on 3, Red Fox on 4 and Wolverine on one. We saw no weasels, mink, ermine, or marten. We saw one live Great Horned Owl *Bubo virginianus* and the partial remains of another – no other owls were recorded.

D.R. Ruthrauff, R.E. Gill, Jr., L. Tibbitts

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

The spring and summer was unusually warm, especially compared to 2003, with no really cold spell. The snow melt was later than in 2003 however. Snow cover decreased to 50% on 9 June and had gone completely on 16 June. No severe winter storm took place during the field season. Weather data are available from NOAA weather station located near Barrow.

Brown Lemmings were seen at least once on 20 days and Greenland Lemmings on 5 days out of the 97 day field season, by the 5-person crew. Denver Holt, who was studying Snowy Owls in the area, laid out traps to capture small mammals. He indicated this was one of lowest lemming years in 12 years of trapping. Other terrestrial mammals seen included Polar Bear *Ursus maritimus*, Reindeer, Arctic Fox, Weasel.

The identity of species nesting on or near our plots was similar to that found in 2003, although the number of nests detected was higher in 2004 (total nests was 218 compared to 88). Nests located on our plots included Grey Phalarope (n=79), Dunlin (n=25), Pectoral Sandpiper (n=18), Semipalmated Sandpiper (n=10), Longbilled Dowitcher (n=3), Red-necked Phalarope (n=1), and American Golden Plover Pluvialis dominica (n=5). Two additional species were found nesting on our plots in 2004, including White-rumped Sandpiper Calidris fuscicollis (n=2) and Western Sandpiper (n=1). An additional 21 Dunlin, 15 Pectoral Sandpiper, 1 Longbilled Dowitcher, 25 Grey Phalarope, 6 Semipalmated Sandpiper, 2 White-rumped Sandpiper and 4 American Golden Plover nests were located on the periphery of our plots. We believe the increase in nests detected was due to an increase in the number of plots, more intensive nest searching, and higher levels of renesting due to high nest predation.

The first shorebird clutch was initiated on 3 June and the last on the 3 July in 2004 (1 day earlier for both dates relative to 2003). Median and peak initiation dates were the 16 June (2 days later than 2003). Nests were initiated first by Dunlin, Red-necked Phalarope, Whiterumped and Semipalmated Sandpipers (median lay dates - 9, 12, 13, and 15 June, respectively), followed by Grey Phalarope, Pectoral and Western sandpipers and American Golden Plover (17, 18, 19, and 19 June, respectively), and finally Long-billed Dowitcher (27 June). This pattern resembles that from 2003. Nest density, calculated as the number of nests found divided by the study area size (for six plots of 36 ha each) was 0.66/ha (compared to 0.51/ha in 2003). Nest density per plot varied from 0.47/ha to 1.0/ha. Predators destroyed 67.9% of the nests in 2004 compared to 42.7% of the nests in 2003. A comparison of nesting success across species indicated hatching success (number hatching at least one young/total number of nests) was highest in Dunlin (21.7%, n=46), followed by Pectoral Sandpiper (20%, n=20 after eliminating manipulated nests), Semipalmated Sandpiper (12.5%, *n*=16), and Grey Phalarope (10.6%, n=104). A similar comparison across study plots indicated plots 1, 2, and 3 had extremely low hatching success (3.2, 4.2 and 11.1%, respectively) compared to that reported in 2003 (52.6, 46.2 and 38.8%, respectively). The three new plots established in 2004 had higher hatching success, ranging from 11.1 to 23.7%. All of these values of hatching success are considerably lower than that reported in 2003 and is likely due to predators switching to shorebirds in what appeared to be a very low lemming year.

Having completed two years of study at this location, we noted a few major differences between years. In 2004, the weather conditions appeared to be more favourable for breeding shorebirds as the temperatures were much warmer, leading to much larger production of insects. These favourable conditions, however, proved to be undone by the extremely low lemming numbers and a much higher predation rate on nests. Indeed, hatching success was considerably lower in 2004 relative to 2003. We also noticed a greater diversity of shorebird species nesting in or near our study plots in 2004 although nesting densities were similar. In addition to the above mentioned White-rumped and Western sandpipers, new species included Buff-breasted Sandpiper Tryngites subruficollis. The other noticeable difference was the increase in the number of renests, probably driven by the extremely high predation rates and the relatively warm summer.

R.B. Lanctot

#### <u>71. Coastline, barrier islands - Arctic Coastal Plain,</u> <u>Alaska, USA (70°50'N, 152°30'W)</u>

Initially snow and ice melt on the Arctic Coastal Plain was reported as "delayed". However, conditions moderated and onshore reports suggest "normal" climatic phenology. Most of the Chukchi Sea east of 170° W was ice free by mid-June as in 2003 with estuarine conditions as follows: Kasegaluk Lagoon ice free, Peard Bay 95% ice covered. Sea ice was extensive along the Beaufort Sea coastline during the third week of June with open water near river mouths and ice-free areas in the eastern Beaufort. Larger lakes were 10-30% ice covered. Ice conditions in primary estuaries were: Elson Lagoon 80% ice with overflow, Dease Inlet 90% ice with overflow, open water near river mouths, Smith Bay 90% ice with overflow, Harrison Bay 60% ice with overflow, Simpson Lagoon west end 40-80% ice with overflow and ice free in east end, Stefansson Sound west end 80-90% ice with overflow and 50 % ice free in east end, Kaktovik lagoons mostly ice free, Demarcation Bay 80% ice cover with overflow.

Lemming numbers were apparently very low and no fresh sign was seen at Prudhoe Bay.

No sightings of the Snowy Owl or Pomarine Skua and <5 each of Arctic and Long-tailed Skuas indicated low rodent numbers. Several Short-eared Owls were seen across the area by various observers. Goose and brant nesting chronology in 2004 appeared comparable to 1999-2003 observations with first broods as follows: Greater White-fronted Goose 24 June, Canada Goose 26 June and Black Brant 25 June. Snow Geese in the central Beaufort Sea area were on the nest on 26 June with hatching in previous years on about 29 June.

Green-up of coastal areas had begun before 24 June with *Ranunculus pallasii* and *Petasites frigidus* in full flower on that date.

C.P. Dau

## <u>72-73. NE Planning Area of National Petroleum Re</u>serve, Alaska, USA (70°16'N, 151°30'W) and Colville

## Delta, Alaska, USA (70°20'N, 150°30'W)

A cool early June was followed by above normal temperatures in the second half of June, and a warm July. August was unusually warm with temperatures reaching  $20-25^{\circ}$ C in the third week of August. June was warmer in 2004 than in 2003 and river break-up was earlier (26 May) in 2004 than in 2003 (6 June). Snow cover ranged from 2 to 54% and averaged 21% on 6-10 June 2004. In 2003, snow cover during the same period ranged from 1 to 32% and averaged 6%.

Lemming abundance was low.

The first observed date of hatch for Lapland Buntings was 14 June in 2004 compared with 20 June in 2003. Mosquitoes began to emerge on 19 June in 2004, relatively early compared to the more normal date of 27 June in 2003. Lemmings and voles have not been observed to be very abundant in this study area since 1996, and numbers of predators (Arctic and Red foxes, Arctic and Long-tailed skuas, and Glaucous Gulls) have been relatively stable.

The most noticeable difference in numbers of nesting birds in 2004 was an increase in ducks (Spectacled Eiders, Long-tailed Ducks, and Northern Pintails) on the Colville Delta. Species composition on 10-ha plots was similar among years: 49% shorebirds (Pectoral Sandpiper, Semipalmated Sandpiper, Long-billed Dowitcher, Red-necked Phalarope, and Grey Phalarope, in order of most to least abundant for the 5 most common species [order of abundance differed slightly among years]), 42% passerines (primarily Lapland Bunting), 6% waterfowl (primarily Greater White-fronted Geese). Nest success in 2004 was high for geese, shorebirds, and passerines and similar to values in 2003. Nest success was higher than in 2003 for ducks and swans (swans were below average in 2003). Yellow-billed Loons nested in high numbers and had good productivity based on the number of broods observed in late August.

R. Johnson, P. Seiser

## <u>74. Kuparuk Oilfield, Alaska, USA (70°17'N, 149°45'W)</u>

The Kuparuk River ice break-up occurred approximately May 30th (just before our arrival to the site). Average snow cover was approximately 20% on 9 June when we began re-establishing study plots and had gone completely on 16 June. Days were consistently warmer than in 2003 for much of the season. Mosquitoes emerged on 16 June this season compared to 26 June during the colder 2003 season. There also were more sunny days in 2004. There were no heavy rain or snow storms in 2004.

All 4 observers during almost 2 months in the field only observed lemmings twice. No trend in lemming abun-

dance was apparent during the course of the season. We did not capture lemmings.

We discovered and monitored all nests on (or near) 24 10-ha study plots every 2-6 days until nest fate was determined. We discovered 198 nests of seventeen species from 10 June to 26 July. Of the 198 nests, 68 were discovered off plot. One hundred and twenty-six nests successfully hatched/fledged and 61 failed. We were unable to reliably assess the fate of 11 nests. Nest predation was the only documented cause of nest failure. Mayfield estimates of nesting success for the 4 most common species were: 0.526 in Lapland Bunting (n=38), 0.453 in Pectoral Sandpiper (n=27), 0.924 in Semipalmated Sandpiper (n=17), and 0.186 in Long-billed Dowitcher (n=16).

We conducted three 10-minute point count surveys for potential nest predators on all plots. We conducted 3 replicates of this survey on all plots during the course of the season. A total of ten species of potential nest predators were detected (n = number of detections): Glaucous Gull (n=98), Long-tailed Skua (n=42), Arctic Skua (n=41), Common Raven (n=6), unidentified Skua (n=6), Arctic Fox (n=6), Short-eared Owl (n=3), unidentified raptor (n=3), Golden Eagle (n=2), Northern Harrier (n=2), Pomarine Skua (n=1), and Sabine's Gull (n=1). Arctic Foxes were denning.

We discovered fewer nests in 2004 compared to 2003 (198 vs. 223) even though we had the same amount of work effort. Thus, overall nest densities were lower in 2004 compared to 2003 (51.7 nests/km<sup>2</sup> vs. 64.6 nests km<sup>2</sup> in 2003). More nests were successful in 2004 compared to 2003 (64% vs. 56%). We did notice more Short-eared Owls earlier in the season (first week or two of June) compared to previous years. However, by mid-June observations of Short-eared Owls were only occasional.

J.R. Liebezeit

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

The Kuparuk River ice break-up occurred approximately May 30th (just before our arrival to the site). Snow reduced to approximately 50% on 2 June (assuming that snow melt occurred consistently across time). Our snow cover surveys indicate that snow cover in the flat areas was about 35% on 6 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. Days were consistently warmer than in 2003 for much of the season. There also were more sunny days in 2004 (compared to 2003) and there was no heavy rain nor snow storms during our time in the field.

Lemming numbers were low, based on our field observations though we did no trapping. However, proportionally, more lemmings were seen at this site than in 2003. A total of about 15 lemmings were seen (5 seen in 2003). Only 3 of those were actually observed on surveys.

We discovered and monitored all nests on (or near) 24 10-hectare study plots every 3-6 days until nesting fate was determined. We discovered 191 nests of 20 species from 10 June to 16 July. Of the 191 nests, 61 were discovered off-plot. One hundred and nineteen nests successfully hatched/fledged and 59 failed. We were unable to reliably assess the fate of 12 nests. Nest predation was the most important cause of nest failure (55 of 59 nest failures, 93%). Other sources of nest failure were abandonment (n=3) and trampling (n=1), probably by caribou. Mayfield estimates of nesting success for the four most common species were: 0.684 in Semipalmated Sandpiper (n=35), 0.364 in Lapland Bunting (n=31), 0.431 in Pectoral Sandpiper (n=17), and 0.695 in Grey Phalarope (n=10).

We conducted three 10-minute point count surveys for potential nest predators on all plots. We conducted 3 replicates of this survey on all plots during the course of the season. A total of 10 potential predators were detected (n = number of detections): Glaucous Gull (n=148), Arctic Skua (n=72), Common Raven (n=14), Long-tailed Skua (n=12), Arctic Fox (n=7), unidentified Skua (n=5), Pomarine Skua (n=4), Short-eared Owl (n=2), unidentified Raptor (n=2), Peregrine Falcon (n=2), Red Fox (n=2), and Snowy Owl (n=2). The most common potential predators were Glaucous Gull and Arctic Skuas. Arctic Foxes were common and bred.

We expanded our effort at this site in 2004 by adding 12 new 10-ha plots covering a larger geographical area to the east and west. Overall, we found more nests this season than last season because of the expanded work effort, however, proportionally fewer nests were found. This is reflected in the lower overall nest density in 2004 compared to 2003 (52.9 nests/km<sup>2</sup> vs. 68.3 nests/km<sup>2</sup>). More nests were successful in 2004 compared to 2003 (62% vs. 48%).

We did notice more Short-eared Owls earlier in the season (first week or two of June) compared to previous years. However, by mid-June observations of Shorteared Owls were only occasional.

J.R. Liebezeit

#### <u>76. Canning River Delta, Arctic National Wildlife Ref</u> uge, Alaska, USA (70°10'N, 145°51'W)

Snow cover reduced to 50% on 3 June and melted completely on 10 June. We had very warm weather in July. We also had a few days of smoke from a record year of fires in the boreal forests of the interior of Alaska and thunderstorms on 2 occasions (both of these phenomena are very rare occurrences on the Arctic Coastal Plain).

Small mammal populations (both lemming species and Tundra Vole) appeared to be lower in 2004 than 2003.

In 2004, we located and monitored 148 nests of 12 species. The most abundant shorebird species were: Pectoral Sandpiper (16.0 nests/  $\text{km}^2$ ), Semipalmated Sandpiper (14.0 nests/  $\text{km}^2$ ) and Red-necked Phalarope (7.5 nests/  $\text{km}^2$ ). Pectoral Sandpiper densities were low in 2002, but have been similar in 2003 and 2004. Grey Phalaropes were abundant in 2002, but occurred in low densities in 2003 and 2004. Mayfield estimate of nest

success ranged from 0.574-0.955 in shorebirds, and was 0.299 in Lapland Bunting. For most species in 2004 the nest success rates were between the lower rates found in 2002 and the higher rates found in 2003. However, success rates were higher than in previous years for Semi-palmated Sandpipers (0.955) and Red-necked Phalaropes (0.638). Nests of Buff-breasted Sandpipers, Baird's Sandpiper *Calidris bairdii* and Long-billed Dowitchers were found at the Canning River Delta for the first time on this project. Predator abundance was similar to the previous year, except Snowy Owls were not present in 2004. No breeding Arctic Foxes were recorded.

S. Kendall

#### 77. Jago River, Arctic National Wildlife Refuge, Alaska, USA (69°51'N, 143°33'W)

Upon our arrival in late-May, 90% of the study area was covered by snow. On 9 June 50% of flat areas were snow free and the final loss of snow cover occurred on 15 June. Weather 1 June - 14 June was considered normal. The majority of this period was windy with temperatures below 0°C. No major precipitation events occurred during this period. Air temperature rose steeply during mid June, reaching an average of 12°C for the remainder of our stay. Weather was unusually mild 15 June - 7 July with average temperatures 10-18°C. Several days during this period were extremely warm, ca. 35°C. Smoke from large fires to the south blanketed the study area for several days in late June and early July. There were no major snow events and only one major rain event on 6 July, which caused minor flooding of the Jago River.

We did not capture rodents, but consider their numbers to be low this season. This estimate is supported by few observations of Tundra Vole, Greenland and Brown Lemmings (single animal seen of each species) combined with the scarcity of signs including tunnels, winter nests, droppings, and clippings near burrows. No apparent trend in numbers was observed.

As a result of the close proximity of two active dens <3 km from our camp, Arctic Fox were seen or heard daily throughout our stay from 1 June to 7 July. Caribou, primarily cows and calves, were observed (range = 1-125/day) daily until 27 June. In addition, we observed a single wolf on 21 June, a Moose cow and calf on 28 June, a bull Moose on 29 June, and single Grizzly Bears in early June. Because this was our first visit to this site, we are unable to comment on inter-annual differences in bird abundance or reproductive success.

Among avian predators, only Long-tailed and Arctic Skuas and Glaucous Gull were common and several nests were located near our base camp. Pomarine Skua and Short-eared Owl were observed daily until 13 June, after which they were no longer observed. Roughlegged Buzzard, Northern Harrier, and Common Raven were seen infrequently throughout our stay. We observed Bald Eagle, Merlin, and Peregrine Falcon on single occasions during the last week of June and first week of July. We recorded a total of 44 bird species representing 9 orders and 14 families. Of the 12 waders recorded, the most common were Pectoral Sandpiper, Red-necked Phalarope, Semipalmated Sandpiper, Stilt Sandpiper *Micropalama himantopus*, and American Golden Plover.

One component of our study focused on locating and monitoring nests of all waders occurring within 7 16-ha plots (1 in riparian habitat, 2 in flooded, 3 in very wet, and 1 in upland) within 5 km of our camp. We found 24 nests of five species. Clutches were initiated first by Semipalmated Plover (6 June), followed by Long-billed Dowitcher (10 June), Pectoral Sandpiper (mean= 11 June), Red-necked Phalarope (mean= 14 June), and Semipalmated Sandpiper (mean= 16 June).

We found between zero (plot with predominately tussock tundra) and 8 (plot with predominately low centered polygons) (mean= 3.3) nests per plot. Hatching success was 100% for Semipalmated Plover (n=1), Semipalmated Sandpiper (n=2), and Long-billed Dowitcher (n=1), 80% for Red-necked Phalarope (n=10), and 50% for Pectoral Sandpiper (n=10). Nest failure was primarily attributed to predation by Longtailed and Arctic Skuas (we observed a Long-tailed Skua depredate an American Golden-Plover nest). Additionally, a single complete Buff-breasted Sandpiper nest located outside our plots, was probably abandoned as a result of human disturbance.

Low predation pressure on shorebirds could be explained by very low densities of the latter in the study area. Predators may have focused more on waterfowl as a reliable or energy efficient food source.

J.A. Johnson

#### 78. Daring Lake, Canada (64°52'N, 111°35'W)

Based on standard catches by snap-traps, the abundance of small mammals was evaluated as moderate, which means a decline after their high abundance in 2003.

S. Carriere, S. Matthews, K. Klark

#### <u>79. Cambridge Bay, Victoria Island, Canada (69°07'N,</u> 105°03'W)

Overall numbers of birds present at the end of June were down by at least 60%. Of those, only a small percentage were actually nesting. In past years species such as Semipalmated Sandpipers were usually found at a rate of 4-6 nests per day with normal walking. This year I found one nest in 16 days!

The period from 27 June – 17 July was very cold, very wet and very windy.

J. Richards. In: Pittaway, R. 2004. Few Juvenile Shorebirds - Failed Arctic Breeders. Archives of BIRDWG01@LISTSERV.ARIZONA.EDU. http://listserv.arizona.edu/cgibin/wa?A2=ind0408B&L=birdwg01&P=R320&D=0&H=0&I =-3&O=T&T=0. Accessed 11.11.2004.

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

The spring snowmelt/runoff was a little late in arriving to the Queen Maud Gulf this year (5-10 days late) and resulted in the arrival and nest initiation dates of the

## **ARCTIC BREEDING CONDITIONS**

Snow and Ross' *Anser rossii* geese being about 5 days later than the mean over the past 15 years. Weather conditions were predominantly cool throughout the summer, with a considerable amount of precipitation in the form of snow and rain, particularly during the incubation period. Snowmelt was slow and ice remained on many lakes well into July. Weather during the brood rearing period was cool but with little precipitation, punctuated by a few days of air temperatures in the high teens or low twenties (Celsius) whenever the persistent northerly flow was interrupted by a southerly one. In summary, runoff was later than normal, the summer was cooler than average.

Small mammal abundance was relatively low in 2004 with 1.0 captures per 100 trap-nights. Most captures were Red-backed Voles even though we captured some Greenland Lemmings as well. Brown Lemmings have been low since we started to monitor small mammal abundance in 1994 and we did not capture any Brown Lemmings in 2004.

Abundance of Arctic Foxes varied among years and was 1.0, 2.3, 1.5, 1.8, and 0.67 foxes per 30 km travelled in 2000 to 2004, respectively. Fox abundance was twice as high in goose-nesting areas than in areas outside the influence of nesting geese in these years. The density of fox dens that had pups was closely related to small mammal abundance and was 1.5, 0.75, 0, 1, and 0.75 dens with pups per 25 km<sup>2</sup> in 2000 to 2004, respectively.

Nest success of both species of geese was among the lowest observed during the 15 years of study at Karrrak Lake, and this coupled with smaller than average clutch sizes contributed to poor production of young in the summer of 2004. A similar lack of success was observed in the Long-tailed and King Eider ducks nesting at Karrak Lake despite a fairly high nesting effort. Herring and Glaucous gull nesting effort and success appeared to be quite high, perhaps contributing to the poor production of Long-tailed Ducks and King Eiders. Nesting success of most birds was among the poorest observed during research activities at Karrak Lake over the past 10-15 years.

G. Samelius, F. Moore

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

The spring of 2004 was characterized by a normal snowmelt despite cool temperatures. Although temperature was relatively warm in early and mid May, air temperature averaged -0.67°C between 20 May and 20 June (0.53°C below normal) and only 0.05°C during 1-15 June (1.34°C below normal). However, snow depth on 2 June was only 22 cm compared to a long-term average of 31 cm. The thin snow pack at arrival explains the near normal date of snowmelt despite the cool spring temperature and some light snowfall in mid June. July and August were also relatively cool compared to recent summers. Precipitation was low in June (13 mm of rain) but very high in July (69 mm) and August (60 mm up to 21 August). However, whereas precipitation was frequent in August (12 days out of 21), rainy days were scarcer in July (11 days out of 31) but 65% of the

month's precipitation fell in only 2 days (13 and 30 July). These torrential rains resulted again in flooding of the lowlands in August, especially polygon tundra which was covered by several cm of water.

During our survey using snap traps, we accumulated 1047 trap-nights in the Base-camp Valley at our 2 trapping sites from 22 July to 3 August, and 500 trap-nights at the Camp-2 from 7 to 17 July. In the Base-camp sites, we caught 8 Brown Lemmings in the wet meadow site and none in the mesic site for a combined index of abundance of 0.78 lemmings/100 trap-nights. In the Camp-2 site, 2 lemmings were caught, 1 Brown and 1 Greenland Lemming for an index of 0.41 lemmings/100 trap-nights.

After 2 to 3 years of very low numbers, we expected that 2004 would be a peak in the lemming cycle. Although lemmings increased over last year, their abundance, as indicated by our trapping index, appeared much lower than in previous peak years (e.g. 1996 and 2000). We captured 36 Brown Lemmings and 27 Greenland Lemmings in the mesic habitat, and 117 Brown and no Greenland ones in the wet habitat.

It is possible that 2004 was a genuine lemming peak and that our trapping underestimated its amplitude due to 1) a period with several days of heavy rain coinciding with the trapping in the Base-Camp Valley, and 2) rapid decline of lemming populations by late July, also caused by heavy predation.

The breeding activity of foxes was high as we found 16 litters (15% of known denning sites with a different litter), 15 of Arctic Foxes and 1 of Red Foxes. This level of use is much higher than last year (only 4% of the dens were used) and typical of the proportion of fox dens used in previous years of peak lemming abundance (17%). Minimum litter size varied between 1 and 10 pups for Arctic Foxes (5.5 pups on average) and was 6 for the single Red Fox.

After 3 years of nesting absence, we found 9 Snowy Owl nests in the Camp-2 area and 13 in the Base-camp Valley, a record high. In previous lemming peaks, the number of owl nests ranged from 7 to 13 in the Basecamp Valley and only 1 to 2 in the Camp-2 area. The average egg-laying date for the first egg was 18 May (range: 10 to 28 May) and average clutch size was 7.1 eggs (range: 4 to 10). All nests but one were successful in fledging at least one young. We also found 5 nests of Glaucous Gull, more than 20 nests of Long-tailed Skuas and 27 nests of Lapland Buntings.

Arrival dates of Snow Geese on Bylot Island were similar to previous years. However the number of geese counted on the hills surrounding the Base-camp Valley (the first area used by geese upon arrival) was very low this year. Such low numbers are usually typical of years where goose arrival is considerably delayed (e.g. 2002). Pair counts at arrival nonetheless suggest a reduced number of geese on Bylot Island this year.

The distribution of goose nests was highly unusual this year, probably due to record nesting activity of Snowy Owls. For the first time in 12 years, most geese at the main colony (Camp-2) nested around owl nests, with a

low density of nests in between, even in the central part of the colony. This rendered difficult the estimation of nesting density in the main colony but, overall, the patchy distribution of goose nests indicates a reduced nesting effort this year. Several geese nested in the Base-camp Valley (mostly a brood-rearing area) this year, also in close association with Snowy Owls. Overall, median egg-laying date was 11 June, which is very close to the long-term average. However, there was an usually high spatial variation in laying dates as geese nesting in association with owls started laying on average on 10 June (n=511) whereas those nesting away from owls (including the usual central portion of the colony) started laying around 16 June (n=132). There was thus a bi-modal distribution of laying dates this year, with a smaller late peak. It is noteworthy that fresh snowfall occurred during the period in between the 2 peaks. Overall, mean clutch size was 3.65, which is again very close to the long-term average. As expected, clutch size was higher in nests located near owls (3.74, n=490) than far away (3.30, n=125).

Nesting success (proportion of nests hatching at least one egg) in 2004 was similar to last year and fairly good (78% for all nests, a value above the long-term average, 64%). Nesting success was higher in the Base-camp Valley (92%, n=158) than at Camp-2 (colony, 74%, n=480). At the colony, nesting success also tended to be slightly higher away from owls nests (82%, n=121) than near them (72%, n=353). Activity of predators at goose nests, especially Arctic Foxes, was low in the Basecamp Valley and moderate at the colony but slightly higher than in 2003. Peak hatch was on 7 July, also close to the long-term average.

The production of young on Bylot Island was relatively low in 2004, which is somewhat surprising given the normal nesting dates and clutch size, and the high nesting success. This can be explained by 1) continuing spring harvest in Quebec, negatively impacting body condition of arriving geese; 2) severe climatic conditions during spring migration; and 3) cold temperatures throughout June despite a normal snow-melt due to a thin snow-pack.

Gauthier, G., Reed A., Giroux, J.-F., Berteaux, D., Cadieux, M.-C. 2004. Population Study of Greater Snow Geese on Bylot Island (Nunavut) in 2004: a Progress Report. 1 November 2004.

#### 82. Southampton Island, Canada (63°22'N, 84°56'W)

Compared with previous years, there was a lot of snow lying when we arrived in late June and we had more snow the day before we left on 3 July. We saw no lemmings (we saw none in 2002 or 2003 either). Each year we saw Arctic Foxes and Long-tailed Skuas, but no Snowy Owls were recorded in 2004. We dragged ropes round the study area of 9.15 km<sup>2</sup> and found 5 Red Knot nests and 9 American Golden Plover nests. Some of the Knot clutches were incomplete when found suggesting a late start to laying. Moreover most were on high ground (e.g. on top of an esker) indicating that little bare ground was exposed when nesting started.

H.P. Sitters, A. Dey, L. Niles, M. Peck

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

The spring season in 2004 was exceptionally late. Heavy snow falls occurred in May, and the subsequent low air temperatures at or just above freezing point delayed melt. Throughout much of June, the marshes were snow-covered and some snow and ice persisted in coastal marshes until early July. Because of the high amounts of accumulated snow during winter and in spring, when the snow finally melted it resulted in unusually extensive flooding in the coastal zone of the Cape Churchill Peninsula. Goose nesting and reproduction was severely restricted and adversely affected. The growth of flowering plants and the flowering times of the spring flora were delayed and in early July, purple mountain saxifrage Saxifraga oppositifolia flowered at the same time as tundra avens Dryas integrifolia. This telescoping of flowering times into a short summer season marked the overall pattern of plant phenology. Entomologists at the Churchill Northern Studies Centre also reported that the timing of the emergence of different insect species was also telescoped and large numbers of biting insects persisted well into August. Even in the second half of the summer, temperatures rarely reached the high 20s (°C). The summer of 2004 in the Churchill region was characterized as a period of low biological productivity.

Approximately 1500 pairs of Ross's Geese nested at La Perouse Bay in 2004, produced a median clutch of 4 eggs and suffered at least 85% nest failure. The high failure was related to the lateness of the season and associated intense predation pressure. The failure to find any duck nests at Skidmore Lake in 2004 is likely to be related to the extreme lateness of the season and the fact that few ducks nested anywhere in this portion of the Hudson Bay Lowland this year (D. Caswell, pers. comm.).

D. Larsen. In: Hudson Bay Project. 2004. The Hudson Bay Project: 2004 Annual Progress Report. 37 pp.

#### 84. Pen Islands, Canada (57°00'N, 88°42'W)

When we arrived at the Pen Islands (Ontario/Manitoba border of Hudson Bay) on 23 June, things really hadn't started yet. There was still substantial ice on many of the larger lakes, large snowdrifts in the lee of ridges and spruce copses, hardly a hint of plant growth anywhere, and several inches of water on the wet tundra.

Many of the local species including the common shorebird species (Stilt Sandpiper, Dunlin, Least Sandpiper *Calidris minutilla*, Wilson's Snipe, Short-billed Dowitcher *Limnodromus griseus*, Hudsonian Godwit *Limosa haemastica*, Whimbrel, Red-necked Phalarope, American Golden-Plover) were displaying on our arrival on 23 June, but weren't behaving as though they had initiated nests. After a few days we started flushing more birds from scrapes and partial clutches and by the time we departed on July 7th there were even some clutches starting to hatch (e.g., Least and Stilt sandpipers). More telling though were the large flocks of shorebirds present throughout the period. These were either failed breeders or birds, which had just opted not to try. Among these were substantial mixed flocks of Hudsonian Godwits and Short-billed Dowitchers (which breed more commonly in the taiga-tundra transition) and large mixed species aggregations including large numbers of Stilt Sandpipers (150 in one flock). Many of these flocks were concentrated in ponds along the coast, but were also present six or more kilometres inland. Also of interest was the near absence of both Semipalmated Plover Charadrius semipalmatus and Semipalmated Sandpiper. These should have been present and not uncommon (as they have been in other years) on the gravel ridges bordering wet tundra near the coast, but we saw very few of either and found no nests. Other species, which typically breed further inland (e.g., both yellowlegs and Bonaparte's Gulls Larus philadelphia), were also loafing in ponds near the coast. Waterfowl also had a poor time of it. Large numbers of scaup of both species were just hanging around and there was no evidence of breeding even by Long-tailed Ducks, which were just sitting in pairs on ponds. There was a total failure of the Snow Goose colony and near total failure of locally breeding Canada Geese. This phenomenon was not restricted to the Ontario coast as Churchill apparently was affected as were other places in the eastern Canadian Arctic. My guess is that there was widespread nest failure of shorebirds and many other arctic-subarctic bird species in eastern Canada.

> D. Sutherland. In: Pittaway, R. 2004. Few Juvenile Shorebirds - Failed Arctic Breeders. Archives of BIRDWG01@LISTSERV.ARIZONA.EDU. http://listserv.arizona.edu/

cgi-bin/wa?A2=ind0408B&L=birdwg01&P=R320&D= 0&H=0&I=-3&O=T&T=0. Accessed 11.11.2004.

#### 85. James Bay, Canada (53°00'N, 82°00'W)

My student Linh Nguyen had a fair number of Semipalmated Plover nests this year, but a ragged nesting season with very high egg predation, really asynchronous timing and changes in nest density among areas, compared to his two previous summers. While banding 12-23 July we witnessed increasing numbers of Pectoral Sandpipers, a few Ruddy Turnstones, hundreds of both species of yellowlegs and a very early massing of Marbled Godwits *Limosa fedoa* (in my experience). We had Marbled Godwits in flocks alone and mixed with Hudsonian Godwits at several locations from the extreme south end of James Bay (Hannah Bay) up to Lake River and including Akimiski Island (largest island in James Bay). I suspect that Marbled Godwit, in particular, had a poor year, but possibly so did Hudsonian Godwit.

There were strong indications that the extremely late spring (May/June) and cold/wet summer (June-July) made 2004 a poor year for breeding shorebirds.

K. Abraham. In: Pittaway, R. 2004. Few Juvenile Shorebirds - Failed Arctic Breeders. Archives of BIRDWG01@LISTSERV.ARIZONA.EDU.

http://listserv.arizona.edu/

cgi-bin/wa?A2=ind0408B&L=birdwg01&P=R320&D= 0&H=0&I=-3&O=T&T=0. Accessed 11.11.2004.

#### 86. Polemond River, Ungava Peninsula, Canada (59°31'N, 77°36'W)

The laying season of Canada Geese began approximately 20 days later (June 10 to 15 in 2004) than the average starting date in past years. Apparent nesting success at the Ungava Bay sites was very low in 2004. Only 14% to 27% of the eggs were full term, compared with 38% to 70% in 2003. Nesting success at the sites located along Hudson's Bay was similar to that observed in previous years, i.e., approximately 75% to 85%.

Poor weather conditions, heavy rainfall and, in some areas, fairly heavy predation point to an average year for waterfowl breeding in Quebec in 2004, despite above average survey results for most game bird species.

Canadian Wildlife Service. In: The Green LaneTM, Environment Canada's Internet site. 2004. 2004 an average year for waterfowl breeding. http://www.qc.ec.gc.ca/faune/sauvagine/sauvagine.html. Last upd.: 2004-10-18.

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

The date of 50% snow cover was 15 June, total clearance -27 June. In general there was fine weather through June and most of July, cold and rainy last week of July, average in August.

Lemmings were seen regularly early and rarely late in the season.

2004 was another early season in Zackenbergdalen. Laying was initiated in most wader nests before 20 June and medians of the first egg dates were before 10 June in three out of five species.

Nest success was exceptionally high in 2004. With 1997 as the only exception showing a somewhat higher nest success, the nest predation in all wader nests combined was at approximately 55-65% in 1996-2003, while the predation level was at less than a quarter of that in 2004. Only 3 or 4 of 55 found nests were depredated. At three nests, shell fragments were found that indicated predation by a bird, most likely a skua or Glaucous Gull. In all previous breeding seasons, the nest success has been substantially higher in Dunlin than in the other two species with a fair amount of data, Sanderling and Ruddy Turnstone, and this pattern was retained in 2004, although at a much higher level. Also the chick survival was very high.

Waders experienced a high breeding success irrespective of a record high number of Arctic Fox dens with pups and a high number of fox encounters within the bird census area. This is the first observation in Zackenberg of a simultaneous occurrence of high numbers of lemmings and foxes and good nesting success. Also Long-tailed Skua had a very high breeding success, as 21 pairs fledged 22 juveniles.

The numbers of breeding pairs in Zackenbergdalen were within the fluctuations of the previous seasons. However, the number of Snow Bunting territories was well above average.

O. Thorup, H. Meltofte

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

Snow melt was completed earlier than on average, since less than 1% of the tundra area was still covered with snow on 25 June. Similarly, sea ice disappeared early, the fjord becoming cleared around 10 July.

The routine lemming monitoring of the winter nests revealed a recovery of the population over winter (892 winter nests in 2004 against 56 in 2003!), this figure being also in line with the trapping surveys (11 lemmings caught at the end of June for 500 lemming burrows checked). These figures (suggesting lemming densities close to 2 animals/hectare) testify of an intermediate situation and ranked eighth in a time series of 17 years. Reproductive activity in the winter nests was reflected both by the high proportion of nests including pellets from young (nearly 50% of all nests!) as well as the commonness of nest aggregations of at least three nests, even if aggregations numbering more than 7, common in peak years, where not observed.

This recovery of the lemming population after 2003 and the levels and trends exhibited in this summer have resulted in patterns shown by predators being fully in conformity with what was expected on the basis of earlier long-term observations. These included: 10 breeding pairs of Long-tailed Skuas (but only 3 fledged young in August); breeding of a Snowy Owl pair (only one chick fledged in August out of 6 eggs); at least 4 fox dens in the valley with litters of several pups observed in early July.

For Stoats, broad agreement is also shown by the observations on winter nests since the level of nest predation (5 out of 892) was regarded as insufficient to stop the recovery. Moreover, it appears that Stoats entered the area only in late winter as their presence was mainly recorded in nest aggregations. Just one adult was caught in the traps, providing no indication of any litters being produced this year in the restricted study area.

Apart from Turnstones, whose breeding numbers were noticeably lower than on average (only two breeding pairs in the restricted study area), other waders (Dunlin, Sanderling, Knot, Ringed Plover) were breeding in usual numbers, but assessment of their breeding success was uncertain.

Failure to record any ptarmigan during the whole season deserves attention, suggesting a prolongation of their low phase. In this regard, it would be of interest to learn whether such trends are also documented in other High Arctic sites.

B. Sittler

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

## BIRD BREEDING CONDITIONS IN THE ARCTIC IN 2004

## Pavel S. Tomkovich & Mikhail Y. Soloviev

Contributors to the Arctic Birds Breeding Conditions Survey provided reports on breeding conditions in 2004 from 76 localities in the circumpolar area, while information on the situation at another 12 sites was obtained from the Internet. The total number of data points for analysis (88) represented a considerable improvement over the 73 localities in 2003 and equalled the number in the record year 2002. Among the sources of data, the number of completed questionnaires was highest in 2004, which greatly aided interpretation of information and so reduced uncertainty. It is noteworthy that assessments of breeding success were, again, available for relatively few localities (Fig. 4 on page 52), which reflects the paucity of surveys using direct quantitative data to evaluate this parameter, while other researchers had to use implied indicators of reproductive performance. Interpretation of the latter data was often ambiguous, and one approach that could be used to address this situation is to modify the survey questionnaire by including additional item(s) reflecting breeding performance.

#### Weather and other abiotic factors

The role of weather as an important factor determining breeding success and mortality of birds on the breeding grounds was emphasized in several contributions from 2004.

Maps of air temperature deviations from long-term averages show generally similar geographical pattern of this parameter in June and July 2004 (Fig. 1 and 2 on page 51), which makes a considerable difference compared with previous years. Two extensive regions in the circumpolar area with very cold conditions in June and July 2004 were the central part of northern Asia and almost the whole of the Canadian Arctic, while two even more extensive regions with warmer summer months than normal were the areas adjacent to the Pacific and Atlantic oceans. A deviation from this pattern was represented by slightly below average temperatures in June in the north of Fennoscandia and the area to the north of the Barents Sea.

Reports from researchers on phenology and weather in spring and summer were often in agreement with generalised air temperature data, i.e. indications of late or early spring and cold or warm summer corresponded to areas with temperatures below or above average in June and July, respectively. Disagreement of spring phenology with June air temperatures was most typical in areas where spring starts early, in May (Fennoscandia, lower Ob' River, southern and western Alaska). In other cases, e.g. on western Taimyr, late spring and cold early June were followed by a rapid rise in temperature resulting in mean monthly values above average. The source of inconsistency of reports of a cold summer from some localities in Fennoscandia, Wrangel Island and southern Chukotsky Peninsula with mean monthly values is currently unclear, perhaps reflecting personal impressions of observers based, e.g. on short visits.

A cold June resulted in considerable delay to bird reproduction, decrease in breeding effort, occurrence of large flocks during the nesting period (Canada), and perishing of birds due to the return of cold weather after their arrival on the breeding grounds (two localities in northern Yakutia). Respondents also mentioned impacts on bird reproduction of other weather-connected abiotic factors, such as low, high or prolonged flood, flooding during summer, drying out of bogs due to low precipitation, and tundra fires. However, these factors in most cases were limited in distribution to local or restricted regional scales, and occasionally had contrasting characteristics in neighbouring areas, e.g. flood was low in the lower Ob' area and high in the Tas River basin in the north of the West-Siberian Plain. Widespread adverse impacts of drought on species heavily dependent on wet habitats could be expected in the regions with a warm dry summer. However, the only indicators of this situation in the available data were low abundance of Common Snipe broods and the absence of Jacksnipe broods in the Bolshezemelskaya Tundra, where other waders bred successfully. Long-lasting drops of temperature or periods of snowfalls with catastrophic consequences for birds were not reported for the summer period in 2004.

#### **Rodents abundance**

Rodent abundance has a direct influence on the numbers and breeding effort of avian and mammalian rodentspecialists. However, the dependence of nest and chick survival in other land-nesting birds in the Arctic on Microtine rodents as alternative prey for such predators as Arctic Foxes and skuas is also widely recognized.

While low rodent abundance prevailed in 2004, as in the previous year, both the distribution of specific values across regions and the general situation changed notably (Fig. 3 on page 52). Rodents were at a low across most of Fennoscandia, with the exception of the Kola Peninsula, where their numbers were average in the east and in the south. Also Grey-sided Voles Clethrionomys rufocannus were abundant in the Laplandsky Nature Reserve for the third year in a row, and Wood Lemmings Myopus schisticolor occurred in high numbers and perished en masse as in 2003 on the northern coast of the Kandalaksha Bay, the White Sea. Rodent abundance increased in the north-east of Europe, on the Polar Urals and Yamal Peninsula, where average and high estimated values predominated. As in 2003, low numbers were generally reported from Taimyr, but an outbreak of lemmings was observed in the extreme northwest of the peninsula. Similarly, high lemming numbers were observed to the east of Taimyr, in the lower Lena River, although they probably did not spread over the whole delta. Voles were rather abundant in the Yana River delta and possibly along the lover Indigirka River. Lemming numbers have increased on Bolshoy Lyakhovsky Island, New Siberian archipelago. The abundance of small rodents differed between areas in Chukotka: vole numbers started to increase in the south,

rodents were at a low in Anadyr Lowland, while numbers were average in the northwest of the region, in the Chaun Bay area, with a probable outbreak on the Kyttyk Peninsula and near Lavrentia settlement. Lemming numbers continued to decrease from their already low values in 2003 on Wrangel Island, although their abundance remained average locally. As in the previous years, voles were numerous on Saint Lawrence Island in the Bering Strait.

Low rodent numbers were reported from Alaska, with an exception of one locality in the north, where voles were common. Thus, abundance of rodents decreased in the north of Alaska. Insufficient data do not permit any general conclusions for the Canadian Arctic. Lemming numbers increased on Bylot Island in the Canadian Arctic Archipelago, while vole numbers on Karrak Lake dropped from average in 2003 to low in 2004, and at Daring Lake from high to average, respectively. Abundance of the Greenland Lemming *Dicrostonyx groenlandicus* started to increase from the low phase in north-eastern Greenland.

It is noteworthy that tundra lemmings (genera *Lemmus* and *Dicrostonyx*) showed only local outbreaks and only in Eurasia, namely in Bolshezemelskaya Tundra, central Yamal, Bely Island, north-western Taimyr, Lena Delta, and, probably, a couple of sites in northern Chukotka. These apparently increasing populations can be expected to spread more widely across Eurasia in 2005.

#### Predators

Increasing rodent abundance in the central part of the Canadian Arctic Archipelago, north-eastern Greenland and most of the north of Eurasia resulted in some increased breeding effort by <u>Arctic Foxes</u> in 2004 compared with 2003 (Fig. 1 on page 39). This manifest itself mainly in increasing numbers of breeding animals, high scores were reported only from Saint Lawrence Island in 2003 and 5 localities in 2004. The breeding performance of Arctic Foxes seemed to stay at its previous level in Alaska, and as before they were virtually absent in the north of Fennoscandia. Shortage of summer food and mortality of Arctic Fox cubs was reported by researchers from Wrangel Island.

The Red rather than Arctic Foxes were common terrestrial predators in several regions, particularly where woody vegetation was present. Red Foxes were reported from 13 localities, although they apparently had a much wider distribution in the north. Noteworthy are the observations of Red Foxes in the High Arctic (Wrangel and Bylot Islands), which probably indicated a northward extension of this species' range. Predation by the Ermine can result in considerable loss of clutches in small tundra birds in some areas. Ermines were reported from 9 localities in 2004, including observations of high numbers in the Laplandsky Nature Reserve and the Lena Delta, moderate numbers in the Yana River delta and increasing numbers in 2 other localities. Considerable numbers and significant impact of the American Mink on nesting birds was recorded only in the Yukon River delta. Wolf was observed at 9 sites, and the Brown Bear at 7, including the site in southern Chukotka where bears were numerous and had a notable impact on nesting success in waterfowl.

The total number of localities where the lemming-specialist predator, the <u>Snowy Owl</u>, bred changed little in 2004 compared with 2003 (6 and 5, respectively), despite the expansion of areas with increasing numbers of rodents. Snowy Owls bred in high numbers in a single locality, Bylot Island in Canada (Fig. 2 on page 39), and, oddly, they did not respond by breeding to an outbreak of lemmings on Bely Island, to the north of the Yamal Peninsula.

<u>Short-eared Owls</u> have a more southerly distribution compared with Snowy Owls, although both species were found breeding in one locality in the north-west of Chukotka. Short-eared Owls were reported slightly more often than Snowy Owls (24 and 20 localities, respectively). However, breeding site reports were scarce for both species (6 and 7 localities, respectively). The frequency of breeding records for Short-eared Owls did not change much since 2003 when breeding was indicated at 4 sites.

Among skuas, breeding status and abundance of <u>Pomarine Skua</u>, a lemming-specialist, in the nesting period is of particular interest (Fig. 3 on page 40). This species bred in 6 localities in 2004 compared with an almost complete absence of breeding in 2003, when nesting was alleged for a single locality on Taimyr. Numbers of breeding Pomarine Skuas were high and average in three localities with abundant lemmings, on Bely Island, in the Meduza Bay area on Taimyr and the Lena Delta. Information about species status was not available from Kyttyk Peninsula on Chukotka where there were locally high lemming numbers.

Among rodent-specialists Rough-legged Buzzards are capable of breeding successfully when there are average and occasionally even lower rodent numbers, feeding their chicks with ground squirrels, grouse chicks and other alternative prey. Accordingly, Rough-legged Buzzards can indicate moderate rodent abundance in many regions, with an exception of High Arctic areas, which are often avoided by these birds. Figure 4 on page 40 shows that breeding buzzards in 2004 were rare in the north of Fennoscandia and more common in the east of the Kola Peninsula, which agrees with the reported distribution and abundance of rodents in the region. Rough-legged Buzzards nested in most localities across the north of Eastern Europe and Siberia, reaching maximum abundance on Central Yamal and north-western Taimyr, where lemming outbreaks were recorded. They also nested at a high density in the areas of alleged rodent outbreaks in the Yana River delta (Yakutia) and in the north-west of Chukotka, while elsewhere on the peninsula their abundance was typically low for the region. As in previous years, Rough-legged Buzzards were rare, if recorded at all, in the Western Hemisphere Arctic, although, breeding was reported from the south of Alaska. Abandonment of nests with clutches was observed in areas with low rodent abundance, in Finnish Lapland and north-east Yakutia, and apparently was caused by insufficient food supply.



Figure 1. Abundance of Arctic Foxes in the Arctic in 2004



Figure 2. Abundance of owls in the Arctic in 2004



Figure 3. Abundance of Pomarine Skuas in the Arctic in 2004



Figure 4. Abundance of Rough-legged Buzzards in the Arctic in 2004

Besides skuas and birds of prey, a variety of avian predators capable of destroying nests, catching chicks or even adult birds also included gulls, the Raven and even the Sandhill Crane. However, numbers and predation pressure of all these species on tundra birds, probably, depends to a relatively small degree on rodent numbers. The impact of non-specialist predators on tundra birds can be considerably accelerated by disturbance. This was illustrated in 2004 by the mass destruction of nests in a Snow Goose colony on Wrangel Island by Glaucous Gulls, which were following a couple of muskoxen wandering in the colony and flushing geese from nests.

Spring hunting and egging by humans continued to impact adversely on reproduction by tundra birds both in the north of Russia and in Alaska.

#### Distribution and numbers of tundra birds

Extensive regions with late and cold spring weather in 2004 (Canada and Yakutia) were characterized not only by delayed reproduction by birds, but also by an apparent reduction in breeding numbers. Similar effects at a local scale were noted in the areas where bird habitats had been flooded for a long time, e.g. in the south of Chukotka.

As the Willow Grouse and Rock Ptarmigan are conspicuous birds with pronounced long-term population dynamics, their abundances were most often reported by respondents. Numbers of the Willow Grouse remained at a high level in 2004 in Fennoscandia, Malozamelskaya Tundra and the Pechora Delta. These birds occurred in high numbers on Yamal, and in average numbers in eastern Yakutia and one locality in north-eastern Alaska, while abundance in the south of Chukotka dropped to a low level. The Rock Ptarmigan was reported as numerous at a single locality on the Kola Peninsula, and as common from a site in northern Norway, central Taimyr and several localities in northern Alaska. Rock Ptarmigans were not recorded by observers in north-eastern Greenland, which indicates very low numbers.

Numbers and presumably breeding range of the Grey Phalarope are subject to considerable annual variations. In recent years, including 2004, this species was reported in dramatically reduced numbers in the Yukon-Kuskokwim Delta, Alaska, compared with the early 1970s. A two-fold decrease of nesting density was noted in 3 localities in north Alaska. Numbers of breeding phalaropes and other waders were at a low in northeastern Yakutia due to an unusually late and cold spring. In contrast, Grey Phalaropes were numerous in central Taimyr, nested in an area of irregular breeding in northwestern Taimyr, and the species' nesting record was reported from the Malozemelskaya Tundra in northern Europe, at least 300 km from the known western limit of distribution. Given the low degree of site tenacity in this species, we have got an impression that early snow-melt in south-west Alaska and then heavy snow-cover in Yakutia stimulated birds to by-pass these areas during spring migration and move further westwards to atypical areas, such as north-western Taimyr and eastern Europe.

Interannual fluctuations of distribution were also found in other species, including a notable number of unusual records of birds. For example, the Canada Goose, Common Shelduck and a flock of Barnacle Geese were seen in the central, northern and north-western Kola Peninsula, respectively. Vagrant Greyleg Geese were reported from north-western Taimyr, and a lek of Great Snipes was recorded to the east of the known species' range in the central part of western Taimyr. Several boreal passerine species were recorded in the tundra of the Lena River delta.

#### **Breeding success**

Researchers provided quantitative evaluations of nesting success in certain groups of birds or particular species from 21 localities, while another 9 sites yielded estimates of breeding performance based on the general impressions of observers. Conclusions for 7 of these sites were drawn by the bulletin compilers. Breeding success was evaluated as high in 11, average/moderate in 11 and low in 8 sites from the total of 30 localities for which estimates were available (Fig. 4 on page 52). Corresponding numbers in 2003 were 9, 5 and 15, respectively, from the total of 29 sites. This indicates an apparent shift of nesting success from lower to higher values in 2004 compared with 2003.

Fig. 4 on page 52 shows clear regional differences in the nesting success of birds. They bred successfully in north-eastern Greenland and northern Europe, although few performance estimates were available from the latter region. Nesting success was evaluated as average from all Taimyr sites, while more diverse estimates from the Far East of Russia and northern Alaska still had almost no low values. Regions with low breeding performance by birds included Yukon-Kuskokwim River delta in Alaska and a large expanse of the Canadian Arctic that includes Hudson Bay and Karrak Lake area. Supposedly, reproduction was adversely affected by cold weather in north-central Yakutia. Low breeding output in the latter two cold regions also could have been caused by increased predation pressure due to low rodent populations, but data are insufficient to confirm this.

#### Comparison with predictions for 2004

Predictions of bird breeding performance in the Arctic for 2004 were made in "Arctic Birds" No. 6 (page 32) based on implied regularity of variation in rodent populations, and a corresponding variation in predation pressure on eggs and clutches of land-nesting birds. Positive correlation of breeding success of tundra birds with rodent abundance was shown in "Arctic Birds" No. 5 (page 39), although this dependency can be heavily modified by weather effects. Current knowledge of the situation in 2004 now can be used to verify the predictions.

Bird reproductive performance on the Kola Peninsula in 2004 could have developed by two different scenarios depending on the timing of the decline in rodent abundance. Unfortunately, estimates of breeding output from this region were not sufficient for a real understanding

of the situation, although several estimates from Fennoscandia were high. Average rodent numbers in some parts of the Kola Peninsula and high abundance of voles in the Laplandsky Nature Reserve implied the realization of the scenario of prolonged decline in rodent abundance and successful reproduction by birds, respectively.

Average reproductive success by birds was expected in West and central Siberia, which happened despite deviations from expected rodent abundance in some parts of the region. Lemming populations were expected to be at a low in north-western Taimyr, but the decline was delayed in 2004 there and lemmings were still abundant in spring in the Meduza Bay area, allowing breeding of rodent-specialists like Snowy Owl and Pomarine Skua. High lemming numbers did not spread from western to eastern Taimyr, although predicted increases in rodent abundance actually took place in many parts of West and central Siberia.

Outbreak was expected in lemming populations in the Lena River delta, and it occurred, although only in the eastern part of the delta. Bird breeding effort was low in the delta due to the late cold spring, although predation pressure on birds that started nesting was not high.

Contrary to pessimistic expectations, breeding success was average on Wrangel Island, due to the generally favourable weather and delayed decline in lemmings, which occurred in average numbers locally even in the north of the island. The predicted rapid increase in rodent numbers in some parts of Chukotka was satisfactorily confirmed by the available information. Vole numbers have started to increase in southern Chukotka, while voles and lemmings probably reached peak numbers in the parts of north of the region, on the Kattyk Peninsula and near Lavrentia settlement. Rodents remained at a low in Anadyr Lowland. As expected, birds bred successfully on Chukotka.

Rodent numbers were predicted to increase in west and north Alaska, leading to high breeding output by birds. While nest success in some localities in northern Alaska was actually high, other expectations did not conform to reality. Rodent populations dropped to a low level almost everywhere. The decline in the Yukon-Kuskokwim Delta presumably was due to the flooding of the lowlands during autumn storms and consequent perishing of rodents. The high activity of predators in the Delta resulted in poor breeding performance by birds, but the latter was probably restricted to a relatively small area, given the reports of very successful reproduction by Alaskan Bar-tailed Godwits in 2004 (see paper by Minton et al. on pp. 46-50).

Increasing rodent numbers and good bird reproduction was expected in Canada to the north of the Polar Circle, while both parameters were expected to be low in the Hudson Bay area. Widespread breeding failure fully confirmed the predictions for the latter area, although primarily it was due to very unfavourable weather in spring and summer. Information from the Churchill Peninsula and James Bay indicated considerable predation pressure, but the state of rodent populations in these areas remained unknown. Predictions of increasing rodent abundance and successful breeding by birds on Bylot Island and in north-eastern Greenland were fully confirmed. However, rodent numbers declined instead of increasing in the Karrak Lake area in Canada, resulting in poor reproduction by birds, as in the Hudson Bay area.

Generally, the above review shows that predictions of rodent abundance, predation pressure and reproductive success of tundra birds were confirmed to a considerable degree, justifying continuation of such analyses in future. Reliability of predictions can be improved by extension of the data collection network and by deeper understanding of variation and interdependence of certain parameters (e.g. interactions in the rodents-predators system). While the former task belongs to the spectrum of the Arctic Birds Breeding Conditions Survey activities, progress in the latter depends mostly on the development of focused, in particular monitoring, studies of Arctic ecosystems.

#### **Predictions for summer 2005**

Information accumulated during recent years, 2004 in particular, on patterns of rodent dynamics in various regions of the Arctic allows the extrapolation of rodent numbers and related breeding success for tundra birds in 2005, with a reservation about the effects of unpredictably changing weather conditions.

Given low numbers of rodents across most of Fennoscandia, with increased abundance locally on the Kola Peninsula, a mosaic of rodent abundance is likely to develop in summer 2005. Rodent numbers can be expected to increase in western parts of the region, and to drop in areas on the Kola Peninsula where numbers increased in 2004. Generally, birds can be expected to breed successfully in 2005 in the region, given the absence of Arctic Foxes, low abundance of the Long-tailed Skua and low likelihood of a large impact by other predators.

Rodent numbers have started to increase and reached high values locally in 2004 in an extensive area from the White Sea to eastern Taimyr in Eurasia. While abundance may decline in summer 2005 in the sites where there was an out-break in 2004, it is still expected to be high across most of the north of Eastern Europe, and West and central Siberia, implying good reproductive performance by birds.

Variable and insufficient information from Yakutia makes it difficult to make legitimate predictions for this important part of Siberia. Still, mostly low rodent numbers are expected to prevail in sub-arctic Yakutia where voles were abundant in autumn 2004, with associated strong predation pressure and low breeding success by birds. However, rodent populations may increase in the eastern and western extremities of Yakutia as well as on the southern New Siberian Archipelago, leading to good breeding success in birds. Rodent numbers should start increasing in Anadyr Lowland, and become high in several areas in the south and north Chukotka, providing for mostly high bird reproductive performance. Allowing for some local variations, lemming abundance will probably remain low on Wrangel Island. Availability of Arctic Foxes' winter food (e.g. bodies of reindeers or walruses) can result in their increased survival, heavier predation on birds in the coming summer and consequently low reproductive performance of the latter. Generally, a complexity of ecosystems on Wrangel Island allows for the development of different scenarios in 2005.

Low numbers of rodents almost everywhere in Alaska are expected to be replaced in 2005 by the increasing phase of their populations. Assuming low numbers of predators after the difficult season of 2004 this would imply low predation pressure on nests and successful reproduction of both predators and tundra birds. However, if numbers of predators stay relatively high, still uncommon rodents will not satisfy their demand for food, and the impact on birds will be considerable.

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## **ARCTIC BREEDING CONDITIONS**

Extremely poor reproduction by birds and presumed low abundance of rodents across most of the southern Canadian Arctic should have adversely affected predators. Populations of rodents will either stay at a low there, or start to increase in summer 2005, but low predation pressure will provide for successful reproduction by birds. Not much can be said about the situation in High Arctic Canada, with the exception of Bylot Island, where rodents potentially may reach peak numbers and provide for another year of moderate or excellent breeding performance by birds. The same applies to north-eastern Greenland. However, rodent numbers may start to decrease before reaching their out-break phase, in which case the whole system "rodents–predators– birds" will differ from the predicted scenario.

Summarizing the above regional predictions, we can point to the prerequisites having emerged of moderate to good breeding success of birds across most of the circumpolar Arctic in 2005. Realization of this potential would result in a rare case of widespread successful reproduction in most species of Arctic birds, which last occurred in Russia in 1993. The actual picture will hopefully become clearer in the near future.

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## ARCTIC BREEDING SUCCESS IN 2004, BASED ON JUVENILE RATIOS IN WADERS IN AUSTRALIA IN THE 2004/2005 AUSTRAL SUMMER

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Increased emphasis worldwide is now being placed on the demographics of waders. Long-term count data is showing major changes or trends in the populations of various species. The causes of these population changes can only be fully explained if there is a parallel knowledge of the factors which control the population, i.e. the recruitment rate of new birds into the population (strongly dependent on annual breeding success) and survival rates (or, conversely, mortality rates). Longterm data sets are necessary and consistency in the methods of gathering data, and analysing it, are prerequisites.

This is the sixth successive year in which the results of annually monitoring the percentage of juveniles in catches of waders made during the non-breeding season in South-East Australia (SEA) and North-West Australia (NWA) have been published in the "*Arctic Birds*" newsletter (see "*Arctic Birds*" No. 2-6). In this note the results for 2004/2005 austral summer are detailed and are used as an indication of breeding success for the Arctic summer of 2004.

#### Objectives

Australia is the terminus of the southward migration of many wader species and is ideally located to monitor the demographics of birds using the East Asian-Australasian Flyway. Thus the fieldwork banding programmes of the Australasian Wader Studies Group (AWSG) in NWA and the Victorian Wader Study Group (VWSG) in SEA are strongly oriented, in the period of November to March each year, towards catching adequate-sized samples of as a wide variety of species as possible. The objective is to obtain annual measures of breeding success and survival. This note concentrates on the breeding success results.

#### Methods

The majority of waders are caught by cannon-netting at daytime high-tide roosts. Because mist-netting worldwide has been shown to generally catch a greater proportion of juveniles than cannon-netting, the mist-netting data (only available for NWA) is tabulated separately. Most emphasis in this note is placed on data derived from cannon-netting.

Only catches in periods where banding and counting results have shown populations to be relatively stable are included. For NWA, this period is November 1<sup>st</sup> (by which time most juveniles have arrived) to mid-March (when adults start departing). The corresponding dates for SEA are mid-November to the third week in March (but end of February for Sharp-tailed Sandpiper<sup>\*</sup> and Curlew Sandpiper).

As usual, the number of catches that make up the sample for each species is shown, broken down into large (>50) and small (<50) categories. Recent analyses have shown that there is no general tendency for a consistent relationship between the catch size and the proportion of juveniles, and therefore both "large" and "small" catches are combined in the analysis.

This year, for the first time, standard errors are also included for the cannon-netted samples. The high standard errors associated with small catches (see Tables 1-3) clearly show the justification for the relatively arbitrary exclusion in the past of total catch samples of less than 30 birds from the more detailed analyses of percentage juvenile figures.

There is accumulating evidence to show that the age distribution of waders may vary on a macro- and on a micro-scale. Clearly the more catch samples that are available, and the larger the catch total is for a species in relation to its population, the more accurate the percentage juvenile figure is likely to be. But, at best, it is only an estimate of the proportion of juveniles in the population, and as such it is perhaps better considered as an index of annual breeding success. The sources of potential bias and the measures taken to minimise these have been discussed in more detail in previous annual reports, in "Arctic Birds" No. 2-6.

#### Results

Catch details and percentage juvenile data for the seven species monitored annually in SEA are shown in Table 1. Adequate samples of all species were obtained. The total of 6,051 Red-necked Stints was the secondhighest total in the monitoring period of 27 years for which data is available. Similarly, the 554 Sharp-tailed Sandpipers caught was the third highest sampling total in 24 years. In contrast, considerable difficulty was experienced in obtaining an adequate sample size for Curlew Sandpipers - it took 13 catches to obtain an accumulated total of only 156, with only one catch containing more than 50 Curlew Sandpipers. This difficulty is mainly a reflection of the overall low levels of the Curlew Sandpiper population at present compared with 15 or more years ago. The repeated attempts to catch Curlew Sandpipers is also the main reason for the high Red-necked Stint total, with 29 catches altogether, compared with 19 in the previous year. The Sanderling sample of 512 was also the largest ever (in 14 years of data).

<sup>\*</sup> see tables for scientific names of birds

Similar data from NWA is shown in Table 2 for the seven Arctic-breeding species and the six non-Arctic breeding species for which the sample size in the 2004/2005 non-breeding season was at least 10. All this data was obtained during a special AWSG expedition to NWA, between February 13 and March 5, for which a principal objective was to obtain this annual percentage juvenile monitoring data. As usual, the largest sample size (1,037) was for Great Knot. They fill a similar role to Red-necked Stints in SEA, occurring in almost every catch and making it difficult sometimes to obtain adequate samples of other targeted species. This is exacerbated by the extremely hot and humid conditions encountered in the tropical environment of NWA in the November to mid-March sampling period making it necessary to limit the size of catches. In spite of these problems, good samples of eight different species were obtained, and modest samples of five others. As in SEA, Curlew Sandpipers were a problem and it took 11 separate samples of these to reach a catch total of 150 birds.

The full results for all seven species of migratory waders which were sampled by mist-netting in NWA are shown in Table 3. Catch totals were of an adequate size for analysis for only three species.

Tables 4 and 5 show how the percentage juvenile figures in the 2004/2005 season compare with the figures obtained in each of the previous six years. The average of the percentage juvenile figures for these seven seasons is calculated as a benchmark of average breeding success in recent years. Only those species in which the majority of years have been adequately sampled are included in these tables.

#### Discussion

#### South-East Australia

For the second year in succession, there was a marked variability between species in their apparent breeding success. Overall however, the percentage juvenile figures for most species were rather higher in 2004/2005 than in 2003/2004. Nevertheless, the 2004 Arctic breeding season would only be classed as moderate based on the figures from SEA.

The highlight in 2004/2005 was the second successive year of high breeding productivity by Sharp-tailed Sandpipers. The 42.2% juvenile figure has only been bettered once in the 24 years for which data are available. It is twice the average level of 21% for the last seven years and that figure includes the exceptionally high percentage juvenile figures for both last year and this year. It is very noticeable that Sharp-tailed Sandpipers have been much more numerous and widespread throughout SEA during the past two non-breeding seasons, but especially during 2004/2005. After a long period of decline in numbers, these two successive years of good reproductive success will hopefully reverse the previous downwards trend in population.

Bar-tailed Godwits also had a brilliant breeding year in 2004. Banding and flagging has shown that all the Bartailed Godwits which visit SEA are from the Alaskan, not the Siberian, breeding grounds. The 37.6% juvenile figure was the second highest in 16 years of available data, and was more than twice the average of the last seven years. With three of the past four years' results indicating very poor breeding success, the good performance in 2004 was timely.

Curlew Sandpipers which visit SEA had a better than average breeding success outcome. Although the figure of 21.8% juveniles appears modest, it has only been bettered three times in the 26 years for which data are available. Sanderling and Ruddy Turnstone appear to have had only moderate breeding success in 2004, with percentage juvenile figures being close to the average of recent years.

The bad news relating to 2004 breeding success concerns Red-necked Stint and Red Knot. The 9.8% juveniles for Red-necked Stint is less than half the figure for the last seven years. This average figure is boosted by four exceptionally good years for breeding success by the Red-necked Stint in the six years between 1998 and 2003. Thus on a long-term basis, the Red-necked Stint outcome for 2004 does not appear quite so poor with eight years having lower percentage juvenile outcomes in the 27 years for which data are available. However it is the second-lowest figure for Red-necked Stints in the last 12 years. In the early part of the 2004/2005 sampling period, it was feared that the data would show it to be a disastrous breeding year in 2004 for this species, comparable with the renowned universal worst-ever Arctic-breeding success year of 1992. The first major sample, two catches totalling 1,732 Red-necked Stints at one of the main monitoring locations, contained only 6.6% juveniles, the same figure as obtained at that location after the 1992 breeding season. These were the equal-lowest figures in 20 years of sampling at this site. It was of particular concern also because this site normally holds a higher percentage of juveniles than other sampling locations in SEA. It is fortunate that later sampling at the other regular monitoring locations did not show quite such a poor breeding outcome for the Red-necked Stint.

The proportion of juvenile Red Knot in catches was the fourth lowest in 14 years of sampling. Again, the figure was only a little over half the average for the recent years where adequate samples have been available. The apparent high absolute figure of 29.5% for 2004/2005 needs to be looked at in context because the SEA population of juvenile Red Knots is greatly augmented each year by many of the juveniles which will ultimately spend their non-breeding season in future years in New Zealand. These juveniles remain in SEA in their first austral summer but revert to non-breeding areas in New Zealand in subsequent years. Percentage juvenile figures for Red Knot thus fluctuate more widely, and about a much higher mean, than for any other species.

#### North-West Australia

For waders spending the non-breeding season in NWA, the 2004 northern breeding season seems to have been a poor one. Only one species, Curlew Sandpiper, had a

higher percentage juvenile figure in 2004/05 than in 2003/04. In all but one of the seven species where adequate data are available in 2004/05 the percentage juvenile figure in that year was lower than the seven-year average.

No species sampled showed a percentage juvenile figure which would be classed as very good. Curlew Sandpiper had the best breeding outcome with 21.3% juveniles being the second best result in the last seven years. This is markedly better than the poor outcome in 2003/04 and significantly above the seven-year average of 15%. It is also of interest that the Curlew Sandpiper figure in NWA was similar to that in SEA (21.8%), a closer correlation than observed in most years.

Greater Sand Plover and Terek Sandpiper had breeding outcomes close to the seven-year average. The percentage juvenile figure for Bar-tailed Godwit was quite low, suggesting a poor breeding season for eastern Northern Siberian breeding Bar-tailed Godwit especially in comparison with the excellent breeding success of those in Alaska. Grey-tailed Tattler also had a poor breeding outcome.

The worst apparent breeding performances in the 2004 Arctic summer were however for Great Knot and, as in SEA, Red-necked Stint. The 3.2% figure for Great Knot is the lowest for six years and is only at a level equivalent to a third of the annual average percentage juvenile figure. Red-necked Stints were not quite as bad, with a percentage juvenile figure just under half of the sevenyear average. The 13.2% figure for 2004/05 was marginally higher than the 9.8% figure for SEA.

The mist-netted samples are currently mostly too small, and the data series too short, for any significant conclusions to be drawn from percentage juvenile figures at this stage. Hopefully in future years data will continue to accumulate on species that are mainly caught by this technique so that valid annual comparisons can be made.

In summary, fieldwork programs for the 2005/2006 season have already been drawn up for SEA and NWA. This should facilitate the continuing extension of the percentage juvenile monitoring data and their use to indicate breeding success for each species. The NWA sampling next season will mainly take place much earlier, during the period Nov. 12<sup>th</sup> to Dec. 3<sup>rd</sup> when the next "expedition" to the area takes place. A consequence of this is that the main fieldwork in SEA will be rather later in the overall sampling period next year.

#### Acknowledgements

Great thanks are due to all those people who spent so much time and effort in 2004/2005 in the field trying to build up adequate catch samples for the target range of species being monitored. Their perseverance eventually paid off. Thanks are also due to the Australian Bird Banding Scheme and to the various state environment authorities that granted permits for the banding fieldwork. Finally, Ken Rogers is thanked for calculating the standard errors.



Species	No. of	catches	Total	Juv./1	S.E., %	
	Large (>50)	Small (<50)	caught	No.	%	
Red-necked Stint – Calidris ruficollis	13	16	6051	596	9.8	0.4
Sharp-tailed Sandpiper – C. acuminata	5	5	554	234	42.2	2.1
Sanderling – C. alba	3	2	512	83	16.2	1.6
Ruddy Turnstone – Arenaria interpres	0	11	244	30	12.3	2.1
Curlew Sandpiper – C. ferruginea	1	12	156	34	21.8	3.3
Red Knot – C. canutus	1	3	122	36	29.5	4.1
Bar-tailed Godwit – Limosa lapponica	0	4	85	32	37.6	5.3

#### Table 1. Percentage of juvenile/first year waders in cannon net catches in South-East Australia in 2004/2005

Also Great Knot *Calidris tenuirostris* (19 caught, 0 juveniles), Pacific Golden Plover *Pluvialis fulva* (16, 0), Grey Plover *P. squatarola* (7, 0) and Whimbrel *Numenius phaeopus* (3, 0). All birds cannon-netted in period 15 November 2004 to 28 February 2005 except for Red-necked Stint, Ruddy Turnstone and Sanderling, for which catches up to 23 March are included

Species	No. of	catches	Total	Juv./1	S.E., %	
	Large (>50)	Small (<50)	caught	No.	%	
Great Knot – Calidris tenuirostris	6	5	1037	33	3.2	0.5
Bar-tailed Godwit – Limosa lapponica	2	3	270	18	6.7	1.5
Red-necked Stint – Calidris ruficollis	1	6	152	20	13.2	2.7
Curlew Sandpiper – C. ferruginea	1	10	150	32	21.3	3.3
Ruddy Turnstone – Arenaria interpres	0	3	24	4	(16.7)	7.6
Red Knot – C. canutus	0	3	24	3	(12.5)	6.8
Broad-billed Sandpiper – Limicola	0	1	15	6	(40.0)	12.6
falcinellus						
	Non-Arctic	northern mi	grants			
Greater Sand Plover – Charadrius	3	5	351	74	21.1	2.2
leschenaultii						
Terek Sandpiper – Xenus cinereus	1	9	231	32	13.9	2.3
Grey-tailed Tattler – Heteroscelus	2	8	208	22	10.6	2.1
brevipes						
Black-tailed Godwit – Limosa limosa	1	1	52	2	3.8	2.7
Oriental Plover – Charadrius veredus	0	2	21	11	(52.4)	10.9
Little Curlew – Numenius minutus	0	3	10	4	(40.0)	15.5

Also Marsh Sandpiper *Tringa stagnatilis* (6 caught, 0 juveniles), Common Greenshank *T. nebularia* (5, 0), Lesser Sand Plover *Charadrius mongolus* (4, 2), Grey Plover (3, 0), Pacific Golden Plover (2, 0), Asian Dowitcher *Limnodromus semipalmatus* (1, 0), and Sanderling (1, 1). All birds cannon-netted in period 1 November 2004 to mid-March 2005 (actually all in period 13 February to 5 March 2005). Figures in brackets are from small samples

Species	No of	catches	Total	Juv./1st	% Juv./1st
	Large (>50)	Small (<50)	caught	year	year
Oriental Plover – Charadrius veredus	1	1	91	52	57.1
Sharp-tailed Sandpiper – C. acuminata	0	4	110	19	17.3
Marsh Sandpiper – Tringa stagnatilis	0	3	9	5	-
Wood Sandpiper – T. glareola	0	3	7	3	-
Long-toed Stint – Calidris subminuta	0	2	4	1	-
Oriental Pratincole – Glareola maldivarum	0	3	44	12	27.3
Pin-tailed Snipe – Gallinago stenura	0	1	1	0	-

All birds mist-netted near Broome (NW Australia) and at Anna Plains (near 80-Mile Beach) between 30 October 2004 and 26 February 2005

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	Average
Ruddy Turnstone – Arenaria interpres	6.2	29	10	9.3	17	6.7	12	13
Red-necked Stint – Calidris ruficollis	32	23	13	35	13	23	10	21
Curlew Sandpiper – C. ferruginea	4.1	20	6.8	27	15	15	22	16
Sharp-tailed Sandpiper – C. acuminata	11	10	16	7.9	20	39	42	21
Sanderling – C. alba	10	13	2.9	10	43	2.7	16	14
Red Knot – C. canutus	(2.8)	38	52	69	(92)	(86)	29	53
Bar-tailed Godwit – Limosa lapponica	41	19	3.6	1.4	16	2.3	38	17

#### Table 4. Percentage of first year birds in wader catches in South East Australia 1998/1999 to 2003/2004

All birds cannon-netted between late November and third week in March (except Sharp-tailed Sandpiper and Curlew Sandpiper to end February only). Averages exclude figures in brackets (small samples).

Table	5. Percentage	of first year	birds in wade	r catches in	North-West	Australia	1998/1999 to	2004/2005

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	Average
Red-necked Stint – Calidris ruficollis	26	46	15	17	41	10	13	24
Curlew Sandpiper – C. ferruginea	9.3	22	11	19	15	7.4	21	15
Great Knot – C. tenuirostris	2.4	4.8	18	5.2	17	16	3.2	9
Red Knot – C. canutus	3.3	14	9.6	5.4	32	3.2	(12)	11
Bar-tailed Godwit – Limosa lapponica	2.0	10	4.8	15	13	9.0	6.7	9
	Non-Arc	tic north	ern migra	nts				
Greater Sand Plover – Charadrius	25	33	22	13	32	24	21	24
leschenaultii								
Terek Sandpiper – Xenus cinereus	12	(0)	8.5	12	11	19	14	13
Grey-tailed Tattler – <i>Heteroscelus brevipes</i>	26	(44)	17	17	9.0	14	11	16
Little Curlew – Numenius minutus	57	33	-	36	30	-	(40)	39

All birds cannon-netted in the period 1 November to mid-March. Averages exclude figures in brackets (small samples).

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#### **MAP COLLECTION**

Four maps below are provided to illustrate various aspects of bird breeding conditions in the Arctic in 2004.

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 2004 from the mean June/July temperature averaged for the period 1994-2003. This deviation indicates whether the respective month in 2004 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. Temperature and phenological characteristics of spring in the Arctic in 2004. See text above for legend



Figure 2. Temperature and phenological characteristics of summer in the Arctic in 2004



Figure 3. Rodent abundance in the Arctic in 2004



Figure 4. Bird breeding success in the Arctic in 2004