

Low Body Mass of Juvenile Ross's Gulls *Rhodostethia rosea* in the Laptev Sea

ÅKE LINDSTRÖM,¹ STAFFAN BENSCH¹ and PAUL ERIC JÖNSSON¹

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ABSTRACT. Four juvenile Ross's gulls *Rhodostethia rosea* were trapped on the New Siberian Islands in the Laptev Sea in early August 1994, allowing data collection on body mass and morphometrics from a poorly known part of the species' annual cycle. The wings of juvenile birds were shorter than those previously reported for adults, but their bill length and tarsus length were similar. Their average body mass (128 g) was very low, suggesting that some juvenile Ross's gulls have only very small energy reserves left after post-breeding dispersal, which in this case was at least 300 km.

Key words: Ross's gull, *Rhodostethia rosea*, body mass, morphometrics, post-breeding dispersal, New Siberian Islands, Laptev Sea

RÉSUMÉ. Au début d'août 1994, la capture de quatre mouettes rosées (*Rhodostethia rosea*) juvéniles dans l'archipel de Nouvelle-Sibérie situé dans la mer des Laptev, a permis de recueillir des données morphométriques ainsi que des données sur la masse corporelle d'une partie mal connue du cycle annuel de l'espèce. Les ailes des oiseaux juvéniles étaient plus courtes que celles des adultes mesurées précédemment, mais la longueur de leur bec et de leur tarse étaient identiques. La moyenne peu élevée (128 g) de la masse corporelle suggère que certaines des mouettes rosées juvéniles ne possèdent que de très faibles réserves d'énergie juste après la dispersion qui suit la saison des nids, dispersion qui dans ce cas était d'au moins 300 km.

Mots clés: mouette rosée, *Rhodostethia rosea*, masse corporelle, morphométrie, dispersion après la saison des nids, archipel de Nouvelle-Sibérie, mer des Laptev

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The Ross's gull *Rhodostethia rosea* has its main breeding distribution in northeastern Siberia, but breeding has been recorded occasionally at many more sites, from the Subarctic to the High Arctic (Hjort, 1982; Cramp and Simmons, 1983; Zubakin et al., 1990). Much of the ecology and geographical distribution of this scarce bird is still poorly known, and there is a particular lack of information about juveniles during early autumn. In this note, we present data on mass and morphometrics of four juvenile Ross's gulls that we trapped in late summer on the New Siberian Islands, Russian Federation.

During the Swedish-Russian "Tundra Ecology - 94" expedition with the research vessel R/V *Akademik Fedorov* (Grönlund and Melander, 1995), we visited the southwest coast of Kotelnny Island (75°01'N, 137°45'E) between 31 July and 2 August 1994. In the night between 1 and 2 August, we discovered seven juvenile (first-year) Ross's gulls, feeding in small, shallow, sandy pools near a small river, 2 km from the coast. The birds formed a loosely coherent flock and foraged on the water surface by walking or swimming. Since they allowed us to get very close, we could trap them by simply placing a mistnet, mounted between two sticks, on top of them.

Four birds were trapped around 0300 local time on 2 August. They were all banded, with a yellow plastic ring above the metal ring (from the Riksmuseum, Stockholm).

Immediately after capture, they were weighed to the nearest 1 g with a Pesola spring balance (300 g). The following measurements were taken using a vernier caliper: *bill* (to nearest 0.1 mm), from tip to farthest point of exposed, non-feathered culmen ridge; *total head length* (to nearest 1 mm), from bill tip to back of skull (Green, 1980); and *tarsus* (to nearest 0.1 mm), with foot and tibiotarsus held perpendicular to tarsometatarsus, measuring the distance between the extreme bending points (Alatalo and Lundberg, 1986). The following measurements were taken using a stopped ruler: *wing* (to nearest 1 mm), maximum flattened chord from carpal joint to tip of wing; and *foot* (to nearest 1 mm), from the back of the tarsal joint to tip of longest toe (Piersma, 1984). We also measured the wingspan and wing area of one bird (following Pennycuik, 1989; see also Hedenström, 1998). The birds were released after the processing.

Since breeding has not been confirmed on the New Siberian Islands (Zubakin et al., 1990; Hjort et al., 1995), it is likely that the juvenile Ross's gulls we trapped had just arrived from the Siberian mainland, some 300 km or more to the south. Andreev and Kondratiev (1981) reported that juvenile Ross's gulls left the breeding grounds at the Kolyma River in early August. Just like the breeding adults, which leave a week earlier, they move northwards and regularly occur on the New Siberian Islands in early August (Zubakin et al., 1990).

¹ Department of Ecology, Animal Ecology, Lund University, Ecology Building, S-223 62 Lund, Sweden;

Ake.Lindstrom@Zooekol.lu.se

TABLE 1. Body mass and morphometrics of four juvenile (first-year) Ross's gulls trapped at Kotelny Island, New Siberian Islands, Russia (75°01'N, 137°45'E) on 2 August 1994.

Bird #	Wing length (mm)	Bill (mm)	Head length (mm)	Tarsus (mm)	Foot (mm)	Body mass (g)
1 ¹	246	18.2	60.2	33.0	66	136
2	223	17.9	60.2	32.1	65	125
3	235	17.7	58.6	34.8	65	132
4	238	17.8	58.2	29.9	63	119
Average	235.5	17.9	59.3	32.4	64.8	128.0
± SD	9.5	0.2	1.0	2.0	1.3	7.5

¹ The wingspan of #1 was measured at 74 cm, and the wing area was 0.0621 m².

The mass and morphometrics of the trapped birds are presented in Table 1. We have found no comparable data on newly fledged but independent juvenile Ross's gulls in the literature, but comparisons can be made with data on nestlings and adult birds. Whereas bill and tarsus length were well in accordance with those of adult birds (Hjort, 1982; Cramp and Simmons, 1983; Zubakin et al., 1990), wing lengths were much shorter. The average of 235.5 mm is shorter than even the shortest wing reported for an adult bird (240 mm, Zubakin et al., 1990). The method of measuring wing length has not normally been reported in the literature. However, since we used a method building on maximum length, any discrepancies in techniques are likely to underestimate the difference. Since the juveniles we trapped all had fully grown outer primaries, it seems that juvenile Ross's gulls have shorter wings than the adults.

The juvenile Ross's gulls were light and gave a very delicate and fragile impression in hand (Fig. 1). The average body mass of 128 g is much lower than the c. 170 g reported for nestlings, which reach their peak body mass at an age of 15 days (Andreev and Kondratiev, 1981). Our juvenile birds were also much lighter than the birds that pass Point Barrow, Alaska, later during autumn migration (average 187.5 g, age not reported; Densley, 1979). A subset of those migrants, of which at least one was a juvenile bird, ranged from 148 to 170 g and were supposed

to be new arrivals (Densley, 1979). The body masses of the New Siberian Island birds came close to the 113–120 g that Hjort (1982) reported as "Hungergewichte." The reason for the low body mass may simply be the energy cost for a post-breeding dispersal of at least 300 km for these newly fledged and inexperienced juveniles. Another possibility is that a low body mass is adaptive during this time of the year: that is, large fat stores are not necessary and are therefore avoided. Whatever the reason, and unless the birds we trapped were aberrant, the period between nest-leaving and the real autumn migration in September may involve a period with very low body mass. In the black-headed gull *Larus ridibundus*, data from the Netherlands show that juveniles are much lighter than adults in August–September (226 vs. 264 g; Cramp and Simmons, 1983). In the Arctic, low body masses close to the beginning of autumn migration have been noted for juvenile little stints *Calidris minuta* (Lindström, 1998).

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REFERENCES

- ALATALO, R.V., and LUNDBERG, A. 1986. Heritability and selection on tarsus length in the pied flycatcher (*Ficedula hypoleuca*). *Evolution* 40:574–583.
- ANDREEV, A.V., and KONDRATIEV, A.J. 1981. New data on biology of the Ross's gull (*Rhodostethia rosea*). *Zoologiceskij Zhurnal* 60:418–425. (In Russian with short English summary.)
- CRAMP, S., and SIMMONS, K.E.L., eds. 1983. *Handbook of the birds of Europe, the Middle East and North Africa*, Vol. 3. Oxford: Oxford University Press.
- DENSLEY, M. 1979. Ross's gulls in Alaska. *British Birds* 72:23–28.



Fig. 1. Juvenile Ross's gull on the New Siberian Islands, 2 August 1995. Photo by Åke Lindström.

- GREEN, G.H. 1980. Total head length. Wader Study Group Bulletin 29:18.
- GRÖNLUND, E., and MELANDER, O., eds. 1995. Swedish-Russian Tundra Ecology-Expedition 1994: A cruise report. Stockholm: Swedish Polar Research Secretariat.
- HEDENSTRÖM, A. Flight speed of Ross's gull *Rhodostethia rosea* and Sabine's gull *Larus sabini*. Arctic 51(3):
- HJORT, C. 1982. *Rhodostethia rosea* (MacGillivray 1824)–Rosenmöwe. In: Glutz von Blotzheim, U.N., and Bauer, K.M., eds. 1982. Handbuch der Vögel Mitteleuropas. Band 8/I Charadriiformes. Wiesbaden: Akademische Verlagsgesellschaft. 180–196.
- HJORT, C., HEDENSTRÖM, A., and KJELLÉN, N. 1995. The Ross's gull project. In: Grönlund, E., and Melander, O., eds. Swedish-Russian Tundra Ecology-Expedition 1994: A cruise report. Stockholm: Swedish Polar Research Secretariat. 279–283.
- LINDSTRÖM, Å. 1998. Mass and morphometrics of little stints *Calidris minuta* on autumn migration along the Arctic coast of Eurasia. Ibis 140:171–174.
- PENNYCUICK, C.J. 1989. Bird flight performance: A practical calculation manual. Oxford: Oxford University Press.
- PIERSMA, T. 1984. International wader migration studies along the East Atlantic Flyway during spring 1985. Wader Study Group Bulletin 42:5–9.
- ZUBAKIN, V.A., KISCHINSKI, A.A., FLINT, V.E., and AVDANIN, V.O. 1990. *Rhodostethia rosea* Rosenmöwe. In: Ilichev, V.D., and Zubakin, V.A., eds. Handbuch der Vögel der Sowjetunion. 6. Wittenberg: A. Ziemsen Verlag. 211–222.