would seem advantageous, yet most females mature at age 2+ and therefore probably reproduce only once. Case (1970) found that toxin injected directly from the pectoral spines of live *Noturus gyrinus* into the lateral musculature of a sauger, *Stizostedion canadense*, a northern pike, *Esox lucius*, and a rainbow trout (fry), *Salmo gairdneri*, produced varying degrees of immobilization almost immediately. *Esox lucius* (30 cm) was most severely affected, turning belly up after 15 min. The manufacture of a toxin could serve as a substitute for increased size (Hairston et al. 1970) enabling *Noturus gyrinus* to defend its nest effectively against large predators either actively or as the result of learned avoidance on the part of the predator, and at the same time retain the small size needed for exploitation of its accustomed habitat.

Acknowledgments

I am grateful to Michael Chadwick and Judy Peat for their assistance in the field. David Noakes criticized the original manuscript, and Jan Hines offered valuable advice on the statistical treatments. The study was supported by a National Research Council of Canada operating grant to Eugene Balon, University of Guelph.

Literature Cited

Bailey, R M. 1938. The fishes of the Merrimack watershed. *In* Biological survey of the Merrimack watershed. New Hampshire Fish and Game Department Survey Report 3. pp. 149–185.

Balon, E. K. 1972. Possible fish stock size assessment and available production survey as developed on Lake Kariba. African Journal of Tropical Hydrobiology and Fisheries 2: 45–73.

Carlander, K. D. 1969. Handbook of freshwater fishery biology. Volume 1. Life history data on freshwater fishes of the United States and Canada, exclusive of the Perciformes. Iowa State University Press, Ames, Iowa.

Case, B. E. 1970. An ecological study of the tadpole madtom, *Noturus gyrinus*, (Mitchell): with special reference to movements and population fluctuations. M.Sc. thesis, University of Manitoba, Winnipeg, Manitoba.

Everman, B. W. and **H. W. Clark.** 1920. Lake Maxinkuckee: a physical and biological survey. Indiana Department of Conservation Publication 1: 1–660.

Hairston, N. G., D. W. Tinkle, and **H. M. Wilbur.** 1970. Natural selection and the parameters of population growth. Journal of Wildlife Management 34: 681–690.

Hankinson, T. L. 1908. A biological survey of Walnut Lake, Michigan. Report of the State Biological Survey of Michigan 1907: 153–288.

Hooper, F. F. 1949. Age analysis of a population of the ameiurid fish, *Schilbeodes mollis* (Hermann). Copeia 1949: 34–38.

Mahon, R. and **E. K. Balon.** 1977. Fish community structure in lakeshore lagoons on Long Point, Lake Erie, Canada. Environmental Biology of Fishes 2. *(In press.)*

Scott, D. P. 1962. Effect of food quantity on fecundity of rainbow trout, *Salmo gairdneri*. Journal of the Fisheries Research Board of Canada 19: 715–730.

Scott, W. B. and **E. J. Crossman.** 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada Bulletin 184.

Received 4 October 1976
Accepted 11 May 1977

The Little Gull *(Larus minutus)* in Arctic North America

STEPHEN R. JOHNSON and WILLIAM J. ADAMS

LGL Limited, Environmental Research Associates, 10110 124th Street, Edmonton, Alberta T5N 1P6

Johnson, Stephen R. and William J. Adams. 1977. The Little Gull (*Larus minutus*) in Arctic North America. Canadian Field-Naturalist 91(3): 294–296.

On 16 June 1975, at approximately 1830 hours Yukon Standard Time (YST), we observed a Little Gull *(Larus minutus)* in association with approximately 30 Arctic Terns *(Sterna paradisaea)* manoeuvering over a flooded tundra marsh approximately 1 km southwest of the Komakuk Beach DEW Station, Yukon Territory (69°36′ N, 140°11′ W). WJA first watched the gull from a distance of 20–30 m for approximately 10–15 min with the aid of 8 × 35 binoculars and made his tentative identification from a field guide (Robbins et al. 1966) that he carried with him. Approximately 10 min later, we both observed a Little Gull at approximately the same location; we again compared the bird under scrutiny with the painting and description in the field guide. Neither of us had seen a Little Gull previously.

Although the bird was silent, we recorded the details of its behavior and appearance. The gull was hooded and was obviously smaller than the terns with which it was associated. The undersides of its wings were slatey-black and the uppersides of the wings were dark gray; we noted no other markings on the wings except their white posterior and distal margins. The gull had red legs and a red bill. We saw Sabine's

Gulls *(Xema sabini)* in the Komakuk area previous to this sighting of the Little Gull, and we were careful to look for characteristics that distinguished this new gull from a Sabine's Gull.

We continued surveying the area near this marsh during the evening of 16 June and at approximately 2000 hours YST we found two Little Gulls there, also associated with Arctic Terns. In the afternoon of 17 June, we saw two Little Gulls flying northwest over a portion of the still frozen Beaufort Sea approximately 300 m from the beach at Komakuk. Both of these birds were heard giving their "kek-kek-kek" call; they were not associated with any other species.

The first North American specimen of a Little Gull was collected during the first Franklin Expedition sometime between 1819 and 1822, apparently in the area between the Coppermine River, Northwest Territories, Canada and York Factory, Manitoba, Canada (Baillie 1963, pp. 95–97). Baillie (1963) recorded the apparent invasion of eastern North America by the Little Gull; he documented several Little Gull specimens taken in eastern North America since 1887 and the discovery reported by Scott (1963) of the species' first nest and eggs in the New World on 1 June 1962 near Oshawa, Ontario. Tozer and Richards (1974, pp. 342–346) described subsequent nesting activities in the Oshawa area and near Rondeau Park and Cranberry Marsh, Ontario. Erdman and Steffen (*in* Tessen 1975) reported Little Gulls nesting in north-central Wisconsin during the summer of 1975, the first nesting record of this species in the United States. The Little Gull is now regularly sighted and is fairly common in these portions of the Great Lakes region.

The first recorded appearance of the Little Gull along the west coast of North America was on 16 November 1968 near Riverside, California (McCaskie 1969) and during recent years Little Gulls have appeared regularly along the southwestern coast of British Columbia (Tatum 1973; Campbell et al. 1974; M. G. Shepard, personal communication).

McNicholl (1974) recently reported a possible sighting of a Little Gull in southern Manitoba, and Switzer (1974) reported a recent observation of one in Regina, Saskatchewan. Green (1974) reported Little Gulls associated with Arctic Terns in Duluth, Minnesota.

In the north, the only comparatively recent New World specimen of a Little Gull was a male collected by Nero (1963) on 26 June 1963, 11 km (7 mi) south of Beaver Point (59° 2′ N, 109° W) on the south side of Lake Athabasca, Saskatchewan. More recently, Pittaway and Nero (1971) reported a sighting of this species at Churchill, Manitoba.

Baillie (1969) mentioned that in recent times the Little Gull has been a rare but regular visitor in eastern North America and that this species is frequently seen during winter, fall, and spring in company with Bonaparte's Gulls *(Larus philadelphia)*. Baillie (1951) hypothesized that Little Gulls "colonized" North America from Siberia. According to this hypothesis Little Gulls may have migrated southeast from their Siberian nesting area to the Bering Sea where they may have encountered breeding Bonaparte's Gulls (Baillie 1951). After this encounter, according to Baillie, both species then presumably continued southeast to the eastern wintering grounds of Bonaparte's Gull along the North American east coast.

Our coastal Yukon observations, viewed in light of the specimen from Lake Athabasca and the initial Franklin Expedition specimen, lend superficial credence to Baillie's hypothesis. Neither Dement'ev et al. (1951) nor Vaurie (1965), however, describe nesting areas of the Little Gull in far eastern Siberia or in the vicinity of the Bering Sea, although Dement'ev et al. (1951) do mention the possibility of Little Gulls wintering in the Sea of Okhotsk. Further, Bonaparte's Gulls nest in only a few isolated places near the Bering Sea coast in western Alaska and there are no records of Little Gull specimens or sightings in Alaska (Gabrielson and Lincoln 1951; D. D. Gibson, personal communication). The probability seems low that an encounter between these two species would occur in the Bering Sea area.

In the Old World, Little Gulls commonly winter in large numbers along the coast of Great Britain and along the Iberian and Mediterranean coasts (Vaurie 1965; Brunn 1970). Thus it seems more probable that Little Gulls originally "colonized" eastern North America from their wintering grounds in Europe. Subsequently, through their association with Bonaparte's Gulls, as suggested by Baillie (1951) and as indicated by more recent sightings (Pittaway and Nero 1971; McNicholl 1974; and others), Little Gulls may have wandered to the Canadian Arctic from their wintering grounds in eastern North America.

Acknowledgments

We thank W. W. H. Gunn, W. J. Richardson, R. A. Davis, J. G. Ward, D. V. Weseloh, and M. K. McNicholl for their comments on this paper. G. F. Searing, D. D. Gibson, C. E. Tull, and W. E. Renaud read an earlier draft and made helpful comments. O. L. Austin, Jr., also made helpful suggestions.

The Canadian Wildlife Service provided funds (through the Canadian Beaufort Sea Project) that enabled us to study sea birds along the Beaufort Sea coast. We thank the Canadian Wildlife Service for permitting us to publish our observations.

Literature Cited

Baillie, J. L. 1951. Ontario–western New York Region. Audubon Field Notes 5(5): 286–287.

Baillie, J. L. 1963. Three bird immigrants from the Old World. Transactions of the Royal Canadian Institute (Part 2) 34: 95–105.

Baillie, J. L. 1969. Birds in Ontario—western invaders. Ontario Naturalist 7(1): 28–30.

Brunn, B. 1970. Birds of Europe. McGraw-Hill Book Company, New York. 319 pp.

Campbell, R. W., M. G. Shepard, B. A. MacDonald, and **W. C. Weber.** 1974. Vancouver birds in 1972. Vancouver Natural History Society, Vancouver, British Columbia. 96 pp.

Dement'ev, G. P., N. A. Gladkov, and **E. P. Spangenberg.** 1951. Birds of the Soviet Union. Volume III. *Edited by* G. P. Dement'ev and N. A. Gladkov. Gosudorstuennoe Izdolel'stvo "Sovietskaya nauka," Moskva. (Translated from Russian by Israel Programs for Scientific Translations, Jerusaleum, 1969.) 1121 pp.

Gabrielson, I. N. and **F. C. Lincoln.** 1951. The birds of Alaska. Stockpole Company, Harrisburg, Pennsylvania and Wildlife Management Institute, Washington, D.C. 922 pp.

Green, J. C. 1974. Arctic Tern and Little Gull as migrants in Duluth. Loon 46 (2): 52–57.

McCaskie, G. 1969. Fall migration, August 16, 1968 – November 30, 1968. Regional Report of the Southern Pacific Coast Region. Audubon Field Notes 23(1): 106–112.

McNicholl, M. K. 1974. A probable Little Gull record for southern Manitoba. Blue Jay 32(4): 229–230.

Nero, R. W. 1963. Birds of the Lake Athabasca Region, Saskatchewan. Saskatchewan Natural History Society, Special Publication 5. 143 pp.

Pittaway, R. and **R. W. Nero.** 1971. Recent bird notes of interest for Churchill, Manitoba. Blue Jay 29(2): 60–63.

Robbins, C. S., B. Brunn, and **H. S. Zim.** 1966. A guide to field identification—Birds of North America. Golden Press, New York. 240 pp.

Scott, G. A. 1963. First nesting of the Little Gull *(Larus minutus)* in Ontario and in the New World. Auk 80(4): 548–549.

Switzer, F. 1974. Little Gull visits Regina. Blue Jay 32(1): 46–48.

Tatum, J. B. 1973. Annual bird report for Southern Vancouver Island — 1972. Victoria Natural History Society, Victoria, British Columbia. 80 pp.

Tessen, D. D. 1975. The nesting season: June 1–July 31, 1975. Western Great Lakes Region. American Birds 29(5): 974–978.

Tozer, R. G. and **J. M. Richards.** 1974. Birds of the Oshawa–Lake Scugog Region, Ontario. Tozer and Richards, Oshawa, Ontario. 384 pp.

Vaurie, C. 1965. Birds of the Palearctic Fauna. Volume II, Nonpasseriformes. H. F. and G. Witherby Ltd., London. 763 pp.

Received 5 October 1976
Accepted 21 February 1977

Summer Food Habits of Golden Eagles in Southwestern Alberta

D. A. BOAG

Department of Zoology, University of Alberta, Edmonton, Alberta T6G 2E9

Boag, D. A. 1977. Summer food habits of Golden Eagles in southwestern Alberta. Canadian Field-Naturalist 91(3): 296–298.

Olendorff (1976), in reviewing the literature on the food habits of Golden Eagles *(Aquila chrysaetos)* in North America, requested that "others . . . report their findings to give us a still better assessment of the economic impact of Golden Eagles." This note records the food habits of a pair of Golden Eagles during the summers of 1955 and 1958 at a nest site in southwestern Alberta. At that time the eagles occupied a nest on a cliff face of Missing Link Mountain (114°38′ W, 50°39′ N), 30 km west of Turner Valley, Alberta.

Periodic visits to the nest site spanned a period of 106 days in 1955 (5 May to 18 August when the single eaglet fledged) but only 58 days in 1958 (2 June to 29 July during the nestling period of the single eaglet). I was able to record only the unconsumed remains of prey present in the nest on each visit. Nearly all bird and mammal remains had at least one limb intact, enabling me to mark them by removing the toes; thus, I could leave them at the nest site as potential food, yet avoid recording them more than once. In each instance I was able to identify the species of prey and, in most cases, to determine their sex and age.

The nest site was visited on 79 days in 1955 (18 in May and 3 in June during incubation, and 21 days in June, 25 in July, and 12 in August during the nestling period) and on 11 days in 1958 (5 in June and 6 in July during the nestling period).

The prey items are recorded in Table 1. In both years, mammals made up more than 80% of the diet; the primary prey species was the Columbian ground squirrel *(Spermophilus columbianus)*. This