GEOGRAPHICAL VARIATION IN THE LOON, *GAVIA IMMER* (BRUNNICH) [1]

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CURRENT TAXONOMIC TREATMENT is to recognize two subspecies of *Gavia immer,* a smaller one, *G.i. elasson* Bishop, and a larger one, *G.i. immer* (Brünnich). The recent accounts of the ranges of these two forms show considerable discrepencies: the 1931 A.O.U. Checklist, p. 2, gives *elasson* as occurring from Manitoba to British Columbia and southward; Peters (1931 Check-list of the Birds of the World, 1, p. 35) recognizes *elasson* as only from the Dakotas and perhaps adjacent states and provinces; while Taverner (1934, Birds of Canada, p. 38) gives the range of *elasson* as probably from Manitoba westward. In recent years various records of both subspecies have been made in central states, while Grinnell and Miller (1944, Pacific Coast Avifauna, No. 27, p. 35) are unable to satisfactorily allocate California specimens.

A recent survey of material in the National Museum of Canada, using summer-taken specimens presumably breeding, and measurements kindly furnished by Mr. H. B. Conover of the Field Museum, Chicago, and Mr. J. A. Munro of Okanagan Landing, B.C., allows the picture of geographical variation to be clarified somewhat.

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It is necessary first to consider the breeding range of the species, the southern edge of which is roughly from the northern part of the New England states to North Dakota and northern California; in the east the breeding range extends north to Iceland, Greenland and Baffin Island. West of Hudson Bay however, the northern edge of the normal breeding range seems to about coincide with the northern limit of trees, from about Northern Manitoba to the Mackenzie delta, and the species to be replaced on the barren grounds by the closely related species *Gavia adamsi.*

The material available indicates that there are two factors that vary somewhat independently; that of wing length and bill length, as shown in the following.

The measurements are given in millimeters, in the tables, and plotted on the chart. The wing length is the chord of the wing. The original measurements in the description of *elasson* were taken with a tape along the curve of the wing, but it is better to use the more standardized chord as do most American workers. Mr. Conover has measured the North Dakota series in this way. The bill measurement is that of the exposed culmen.

Table 1. Measurements of Summer Adults, Taken Presumably on their Breeding Grounds

WING CHORD

	Male	Female	Sex ?
Baffin Island	365, 368, 380, 380	362	363, 364, 367 368, 370
Greenland	337, 355		
Quebec	358, 358	320, 338	330, 332, 354, 358, 358, 360
New Brunswick			347
S.e. Ontario	365	324, 328	338
Manitoba	352	322, 330, 330	
North Dakota	340, 350	330	330, 350
Mackenzie District (Fort Good Hope)			320
Yukon Territory	342, 346, 354, 367, 375	318, 339, 360, 363	340
British Columbia		365, 380	

Table 2. Measurements of Summer Adults, Taken Presumably on their Breeding Grounds

EXPOSED CULMEN

	Male	Female	Sex ?
Baffin Island	76, 79, 80, 82	80	74, 76, 76, 78, 80, 84, 84
Greenland	72, 76		
Quebec	86, 89	79, 80	79, 80, 81.5, 82, 86, 88
New Brunswick			85
S.e. Ontario	88	78, 86	81
Manitoba	77	78, 74, 77	
North Dakota	75, 76.5	74	76
Mackenzie District (Fort Good Hope)			68
Yukon Territory	74, 74, 81, 82, 82	71, 78, 80, 80	72
British Columbia		73, 84	

In wing length the largest birds are from Baffin Island, with a great decrease in size of the Greenland birds, and a marked decrease in size southward from Baffin Island in Quebec and Ontario; a further decrease in size in North Dakota, Manitoba and Mackenzie, and an increase in size in Yukon and British Columbia, where specimens nearly equal the Baffin Island birds.

Variation in bill length shows a slightly different pattern. Birds with the largest bills come from Ontario and Quebec, with a decrease in size northward to Baffin Island, and still greater decrease in Greenland, and in Manitoba, North Dakota and Mackenzie with somewhat of an increase again in Yukon and British Columbia, but not to the level of the Ontario and Quebec birds.

Though the above trends in size exist, their geographical distribution raises difficulties in regard to recognizing populations by name. There are further difficulties in that there is a great overlap in measurements over a considerable area. In wing length, the Greenland, Manitoba, North Dakota and Mackenzie birds are set off from the Baffin Island and British Columbia series, but the Yukon, Ontario and Quebec series provide so much overlap that separation is difficult. Separation on bill size is still more difficult.

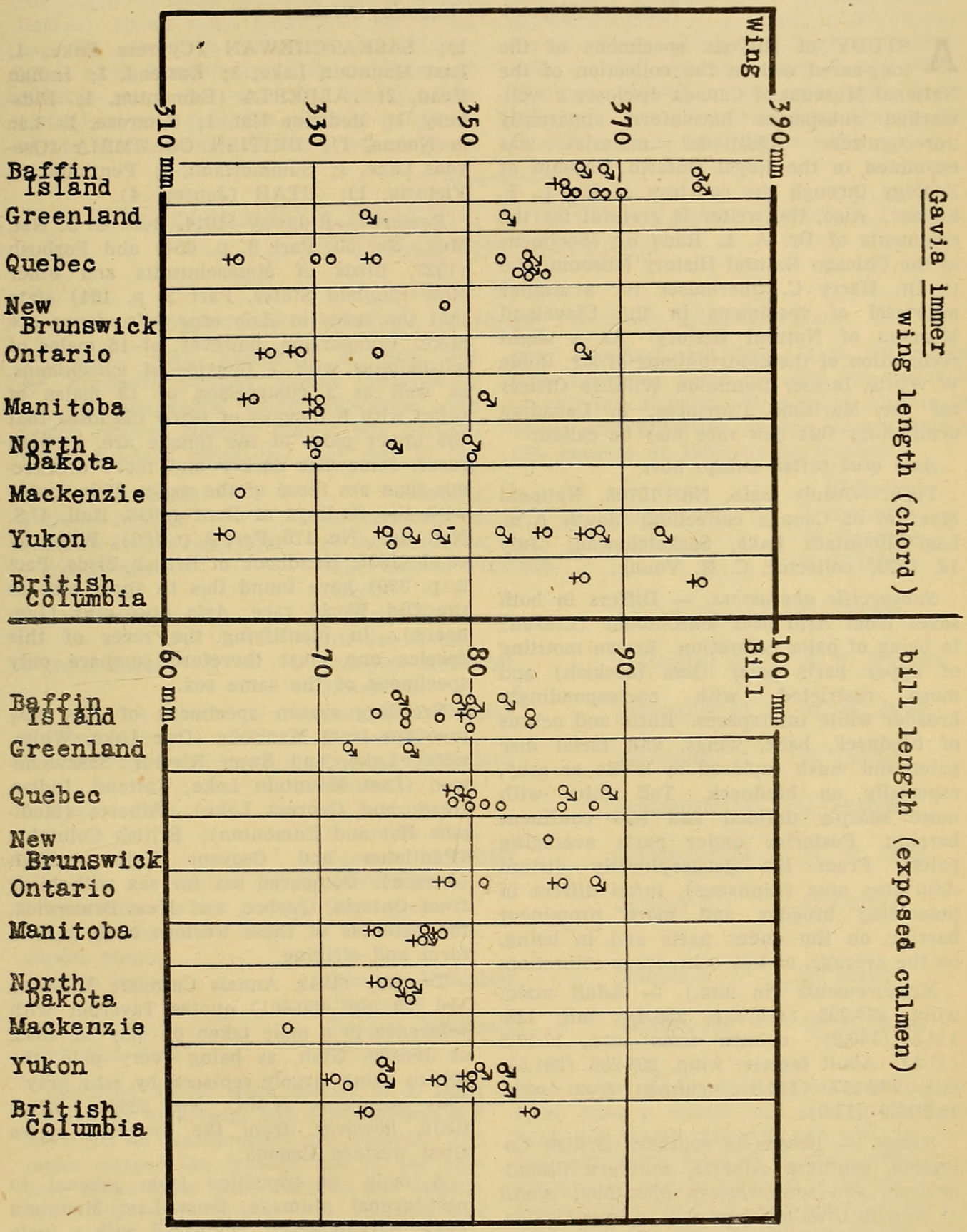
If subspecies were to be recognized on the above material their diagnosis and ranges would have to be something as follows:

Gavia immer immer: wing ♂ (12) 342-380 (av. 363 mm.); ♀ (11) 318-380 (av. 345) breeds at least in (a) Quebec, Ontario and Baffin Island and (b) in Yukon and British Columbia.

Gavia immer elasson wing: ♂ (5) 337-355 (av. 347); ♀ (4) 322-330 (av. 328); breeds at least in North Dakota, Manitoba, and the district of Mackenzie (and Greenland ?).

As loons are large birds, minor variations are conspicuous. The above averages are so close, overlap is so great, and the distributional pattern of characters so complex, it seems inadvisable to recognize by name any races of the black-billed loon.

A note as to the vernacular name of *Gavia immer* is in order. To most American people it is "the loon"; but to those who have to deal also with the yellow-billed loon, the common loon becomes the black-billed loon, especially where it is rare and the yellow-billed loon is the common species. Bishop (1921, Auk, 38, p. 367) has suggested calling this species the "black-billed loon", a suggestion well worth following.


Gavia immer
wing length (chord)
bill length (exposed culmen)
Wing
310 mm
330
350
370
390 mm
Bill
60 mm
70
80
90
100 mm
Baffin Island
Greenland
Quebec
New Brunswick
Ontario
Manitoba
North Dakota
Mackenzie
Yukon
British Columbia