No. X

RESULTS OF THE HUDSON BAY EXPEDITION, 1920

II. THE GASTEROSTEIDÆ

BY

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In the winter of 1920-21, I received a collection of sticklebacks from Mr. Frits Johansen, which he had made in James and Hudson Bay and the tributary waters at the instance of the Biological Board of Canada. It is of special interest as being the largest collection of such material ever made in those regions, about whose fish fauna so little is definitely known. It consists of nearly 200 specimens, which are in a good state of preservation.

Our knowledge of the sticklebacks of Hudson Bay is merely fragmentary and very incomplete. To illustrate this, it is only necessary to state that in "Fishes of North and Middle America," Jordan and Evermann, 1896-1900, Hudson Bay is mentioned only once and that in a footnote. The Atlantic and Pacific coast forms, as well as those of the interior, are well known through the writings of Richardson, Reinhardt, Storer, DeKay, Girard, Eigenmann, Kendall, and others; but little is known of the species of Hudson Bay. Information from that remote and hitherto inaccessible region leaked out slowly. It is gratifying, however, to learn that the Biological Board of Canada is making successful progress in unlocking the hidden treasures of the north, and making them known to the scientific public.

Sticklebacks were taken at 15 stations, which, for convenience of reference, I have numbered, giving also the dates.

- July 3. Stn. No. 1.—Ponds in swamp on beach, and at low tide, south coast of James Bay, 30 miles west of Moose River.
- " 8. Stn. No. 2.—Pools in swamp at Fort Albany, James Bay.
- " 14-15. Stn. No. 3.—Pond at Moose Factory.
- " 16. Stn. No. 4.—Pools at beach, east side of Charlton Island, James Bay.
- " 18. Stn. No. 5.—Trout pond on south side of Charlton Island.
- " 27. Stn. No. 6.—East side of South Twin Island, James Bay.
- Aug. 6 & 7. Stn. No. 7.—Creek-mouth, east side of Hudson Bay, about 15 miles north of Great Whale River.
- " 8-11. Stn. No. 8.—East coast of Hudson Bay, lat. 56° N.
- " 12. Stn. No. 9.—Ponds on river flats, second river south of Little Whale River, east side of Hudson Bay.
- Sept. 2. Stn. No. 10.—Sea surface between Cape Jones and Long Island, east coast of Hudson Bay, 1 mile off mainland.
- Sept. 10. Stn. No. 11.—East coast, James Bay, lat. 53° N.
- " 11. Stn. No. 12.—Moar Bay, east coast of James Bay, about lat. 53° N.

Sept. 14. Stn. No. 13.—Brackish land-locked pool (creek outlet) at beach of Cape Hope Islands, east side of James Bay, lat. 52° 30' N.

“ 22. Stn. No. 14.—In pools in creek, interior of Charlton Island, James Bay.

Oct. (middle) Stn. No. 15.—In pools at Abitibi River, and between New Post and Moose River.

Eucalia inconstans (KIRTLAND).

BROOK STICKLEBACK.

The writer is not aware of any previous record of this species from the Hudson Bay country, nor is there any from Newfoundland or Labrador. Its alleged occurrence at Sukkertoppen, Greenland (Proc. Ac. Nat. Sci. Phila., 1865, p. 81), by E. D. Cope, would seem to need verification.

Mr. Johansen found this species at stations 2, 3, 5, 13, 14 and 15, but seemingly not in abundance; or, perhaps, the facilities for making large hauls were not at hand. A new character, however, has been added to the distribution; namely, its occurrence in saltish water, for he collected it at station 13 in a “brackish land-locked pool.” It has always been regarded as a strictly fresh-water species, and its occurrence there may have been accidental; but, in high latitudes, the severe cold, long winters, and deep freezing of coastwise streams and ponds may induce, or rather force, a migration to brackish water. In this way the species may have become more tolerant of such a medium. Whitefish, too, in the far north, are known to descend to the sea, or at least into brackish estuaries.

The fish are fairly typical of the species as met with in the United States and southern and western Canada. It is observed, however, that the gill membrane is freer from the isthmus, the depth less in proportion to the length, the pelvic spines shorter, and the thoracic processes less divergent; but minor differences such as these are specifically unimportant, and are apt to be seen among all species when representatives from widely separated localities are compared.

Pygosteus pungitius (LINNAEUS).

NINE-SPINED STICKLEBACK.

It was to be expected that this species would be met with, for it is the most widely distributed of all the sticklebacks and probably extends its range farther into the boreal regions of North America than any other. It had been recorded from Greenland, Labrador, the Arctic islands, and the Hudson Bay country.

Mr. Johansen collected it at stations 1, 4, 6, 9, 10, and 13, and generally in quantity. At station 1, 69 specimens were secured; at station 7, lat. 56°, the most northern point visited, only 4 were taken.

The majority is composed of under-sized and young fish. One specimen, the largest, is 63 mm. long. The dorsal spines are 9; a very few have 10; one has 8. No example with 7 is seen. This is about the status of the species elsewhere. In colour and colour pattern they are similar to those of the Bay of Fundy, though somewhat duller.

Gasterosteus cuvieri (GIRARD).

This partly naked stickleback is the only *Gasterosteus* in the collection. By some authors it is classed as a variety or subspecies of the fully armoured *G. bispinosus*, but the reason is not apparent. Its characters are very uniform over a wide range, including Hudson Bay, and intermediate forms, linking it with the alleged parent species, are not met within this range. These are the essentials of a good species, and entitle it to full recognition as such.

It was found to be common. At stations 1, 3, 8, 10, 11, 12 and 13 collections were made. It does not seem to be limited to tidal pools, creeks, estuaries, and shore waters, but occurs at considerable distances from the coast, as for instance at station 10.

The fish are, on the average, small, the largest being 54 mm. in length, or a little over half the greatest length of *G. bispinosus* in the Gulf of St. Lawrence and Atlantic shore waters of Nova Scotia. The lateral scales are typically 4-4, occasionally 4-5, rarely 5-5; nothing beyond this is seen. They are counted from behind the one under the first dorsal spine backwards.

G. bispinosus does not appear in the collection; it is doubtful if it occurs in Hudson Bay at all. In the United States National Museum there is one small collection of *Gasterosteus* from Hudson Bay, but it consists entirely of *cuvieri*; neither is any other found in the collection made there by Rev'd. W. G. Walton in 1919 and examined by the writer.