

represents the northern limit (about lat. 58°N.) for both species on the west side of Hudson Bay. *E. gelidus* also occurs in Alaska and Yukon Territory, but in the rest of Canada there were hitherto no records of it further north than Winnipeg, Ottawa and Montreal (see *Canadian Field-Naturalist*, 35: 27-28, 1921. As for *L. gouldii* (= *L. brachyurus*), it also occurs in Alaska and Yukon Territory, but the other northernmost records in Canada hitherto known were Wetaskiwin, Alta., Estevan, Sask., Ottawa and Montreal (see *Canadian Field-Naturalist*, 35: 89-91, 1921. For both species (*E. gelidus* and *L. gouldii*) the northernmost records lie within the limit of trees.

As soon as I reached Port Churchill on July 23, 1929, I observed that the circumpolar fairy-shrimp *Branchinecta paludosa* was extremely common in most of the rock and tundra pools here (no other Euphyllloopoda occurred here). Adults and almost adults (1-1½ cm. long) of both sexes were found from the end of July on; but in the end of August their numbers had been greatly reduced, and they had disappeared entirely from several of the pools, though both sexes were still found (2 cm. long). I also noticed then a difference in size of this species according to the particular pool (pond) in which they occurred; only in one place had they attained the maximum size (2½ cm. long), known for this species. Interesting was the finding of vast numbers of this fairy-shrimp in the pools filling out the holes (cavities) at the northeast and southeast corners (former wells?) of the ruins of Prince of Wales Fort (entrance to Port Churchill), on August 29th. The species occurred (in certain ponds) all during September and the first half of October (last ones collected October 18) on both sides of Churchill River, even after new ice had covered the pools. The last remaining ones were all females.

The other freshwater Entomostraca found here at Port Churchill in 1929 were Cladocera (*Daphnia pulex*; a few *Eurycerus lamellatus*, etc.); Copepods *Diaptomus* sp. ?); and Ostracoda; they were found as late as October 26 under half an inch of new ice in tundra pools. Several even of the larger

ponds here at Port Churchill, dried up completely (before the frost came in the beginning of October), and the life in them was thus finished earlier than in other ponds.

Besides Entomostraca, the lower macroscopic freshwater life at Port Churchill consisted of aquatic insects, and mites, etc.; Turbellaria, Oligochaeta, Snails (*Lymnaea*, *Aplexa* or *Physa*); and (in two lakes) freshwater sponges (*Spongilla* sp. ?). Interesting was also the finding of small earthworms (*Lumbricus* sp. ?) under stones in a tundra swamp, and of naked slugs (*Limax* sp. ?) here.

Contrary to what I found in Hudson Starit in 1927, the lakes, brooks and ponds at Port Churchill contained no sticklebacks or trout; though the former (*Pygosteus pungitius*) were common in beach pools, lagoons and their outlets; and the latter (*S. alpinus*) in the river itself even in brackish water. A number of larger freshwater fish, Whitefishes (*Coregonidæ*), Ling, Pike, Pickerel, Sucker, Grayling, etc.) occur in Churchill River and its tributaries.

In connection with the above observations on Canadian freshwater life, I would call attention to some recent papers by others on the subject.

H. SPANDL has published a monograph on the freshwater Amphipods of the whole world, in his "Studien ueber Suesswasser-Amphipoden I (Sitzber. Akad. Wiss. Wien, Mathem.-Naturwiss. Klasse, Abteil I, Vol. CXXXIII, 1924, pp. 431-525, pl. 1-II and text-figures), in which the Canadian, Alaskan and Arctic forms will be found.

The occurrence of *Pontoporeia* and *Mysis* in Wisconsin lakes is discussed by C. Juday and E. A. Birge in "Ecology", 8: 445-52, 1927.

Isopods (*Mancasellus tenax*), Amphipods (*Gammarus limnæus*, *Hyalella knickerbockeri*) and *Mysis relicta* have been recorded from Lake Simcoe, Ont., by Rawson in Univ. Toronto Studies, Biolog. Series, No. 31, 1928, pp. 90, 97-98.

J. D. Soper records the freshwater fishes *Salvelinus alpinus*, *Gasterosteus aculeatus* and *Pygosteus pungitius* from southern Baffin Land collected by him in 1924-26 (Museum Bulletin No. 53, Ottawa, 1928, pp. 116-7).

THE PILOT BLACK-SNAKE IN ONTARIO

By ROBERT V. LINDSAY



IF THE relative abundance and distribution of any single species of animal is to be determined by the number of published records of its occurrence within a given area, obviously then the Pilot Black-Snake (*Elaphe o. obsoleta*) may be aptly considered

a rare reptile in Ontario. In view of the large size of the serpent and its decided partiality for open fields, meadows and roadways, the marvel is that so few specimens have ever been taken. In fact, a search of the literature will reveal only one reference to its occurrence, at Point Pelee in

Essex County. This record appeared in *The Canadian Field-Naturalist* for May, 1925 (page 93) where Mr. E. B. S. Logier states that the late Mr. C. W. Nash took several specimens there, one of which, taken November 2, 1915, measured six feet three inches in length.

In addition to this single published account, five additional records of this snake have come to light, besides those from Frontenac County, the publication of which is the purpose of this article. The first of these unpublished records appeared under the heading of "The Snakes of Ontario" in the *Toronto Mail and Empire* of October 6, 1894, where the late Dr. J. H. Garnier says "*Coluber obsoletus*, pilot racer, reported south of Windsor, Essex county". At Point Pelee Mr. W. E. Saunders caught one on November 29, 1909, which was identified as a Pilot Snake by the late Professor John Macoun (according to Mr. Saunders' notes). The third record refers to the cast of a specimen now in the Ontario Provincial Museum at Toronto, taken in Essex county in September, 1913, by the late Mr. C. W. Nash. In that institution there is a splendid live specimen of *E. o. obsoleta* living in comfortable quarters under the care of Mr. Robert Virtue. The snake was captured on August 22, 1928, by Mr. W. Robertson at Fonthill, Welland county (in the Niagara peninsula) and sent to the Museum. It appears that Mr. Robertson, a farmer, while busily engaged in a harvest field on the above date observed the reptile as it dropped from a forkful of oats in transit. With commendable nerve Mr. Robertson promptly seized the surprised serpent and its preservation marked a new locality (175 miles east of Essex) for this snake in Ontario. The snake feeds regularly, in captivity, on a diet of house mice, but will not submit to handling, appearing every bit as wild and untamable as it did on the day of its arrival. The fifth unpublished record of its occurrence was made by Mr. Logier of the Royal Ontario Museum of Zoology, who informs me that while engaged in a faunal survey investigation of Prince Edward county with a party of Museum biologists during the summer of 1930, he was told of a large black snake that had been found near Picton during recent years. Mr. Logier is inclined to the belief that it was *E. o. obsoleta*. Picton, it might be mentioned, is about 125 miles east of the Fonthill record.

In Frontenac County I have seen four specimens of the Pilot Snake, two in 1929 (not preserved) and two in 1930, the 1930 specimens being later carefully examined by Mr. W. J. LeRay, of the University of Toronto, Dept. of Biology, who confirmed my tentative identifica-

tion. The first one that I saw, (on August 5, 1929) was a badly damaged specimen on the dirt roadway at Battersea—sixteen miles north of Kingston). The snake had evidently been lying there for several days and a cursory examination of it sufficed, for certain obvious reasons. The smooth lateral scales in contrast to the feebly-keeled dorsal scalation was convincing proof of its being none other than *Elaphe o. obsoleta*. Mr. Ralph Sleeth, a farmer living a quarter of a mile east of Battersea, told me that five days previously he had killed the serpent in his hayfield and that his dog had probably carried the remains to the road. Mr. Sleeth stated that it was positively the first black snake he had ever seen on his property and was sufficiently interested to measure the animal, the total length being four feet eight and a half inches. On the same day another specimen of *E. o. obsoleta* was discovered on the roadway at Godfrey (thirty miles north of Kingston), which is approximately the northern limit of the limestone formation in the county. This one had suffered irreparable damage through coming into too close contact with the ubiquitous and devastating motor car. It was not preserved.

On August 14, 1930, we again paid Battersea a visit and singularly enough found the remains of another Pilot Snake on the roadway less than a hundred feet from the spot where the first specimen was found a year previously. Preserving the specimen, we resumed our journey until within a mile of Inverary (five miles northwest of Battersea) where we noticed another fairly large Pilot Snake lying on the roadside. Being only recently killed and in a much better state of preservation we preserved it too, four feet one inch being its total length.

In a recent communication, Mr. Clyde L. Patch, of the National Museum of Canada, states that this snake has been recorded from Massachusetts and southern New York. The discovery of specimens in Frontenac county would, then, appear to extend the formerly known range considerably farther north.

The other day it was my privilege to peruse the late Mr. C. W. Nash's old journals and I found many interesting notes of which the following extract is of special interest.

"In a letter of July 20, 1906, (filed) Mr. John Ewart of Yarker says, 'On one or two occasions I think I have run across the black snake near Sydenham, S. Frontenac. They were black and shiny on back and not mottled like the water snake, and do not make for the water when disturbed as the water snake does. They sometimes climb trees which is pretty good evidence they are not water snakes. This was some years ago

and they were by no means common, but if I have a chance will secure a specimen.' "

Apparently this gentleman was satisfied that

he had found something pretty good, but for some unknown reason he neglected to carry out his good intentions.

CONTRIBUTIONS TO THE KNOWLEDGE OF EXTREME NORTH-EASTERN LABRADOR

By BERNHARD HANTZSCH

"Beiträge zur Kenntnis des nordöstlichsten Labradors, von Bernhard Hantzsch, *Mitteilungen des Vereins für Erdkunde zu Dresden*, Dresden, Volume 8, 1909, pp. 168-229. Volume 9, 1909, pp. 245-320.

(Translated from the original German text in the Library of Congress, Washington, D.C., by M. B. A. Anderson, M.A., Ottawa, 1928.)

Original pagination given in the text.

(Continued from page 55)



THE whole district exhibits rocky, mountainous landscapes for the most part, as Figure 2 [in the original] typically shows. The neighbourhood nearest to Killinek does not rise higher than 100 to 120 meters above the sea, the peaks in the east of the land, especially of Kallaruselik, up to 500 meters. South of MacLellan Strait the mountain masses rise up to a height of perhaps 1,000 meters, in some peaks perhaps even still higher. On the whole the formation of these gneiss mountains is rounded and undulating. In all parts, though, are found fields of boulders, steep rocky declivities and deep cut valleys, so that almost always it is necessary to climb over a confused mass of stones, or climb up and down. The natives, it is true, in their favourite hunting grounds know the most convenient and safest connecting paths between the different places, but if it is wished to cover no set distances, but roam through the district as an explorer, who would like to investigate every possible thing, then in general it is necessary to give up travelling on the level tracts of country. Often long detours are necessitated; indeed many times even with companions who knew the place, I scrambled about so, that we found no way out and had to retrace long distances. If you are on the summit of the high range then you can often travel in a certain direction for kilometers over rock worn quite smooth which has a deserted and rigid appearance, like a lava stream. The wind travels across this with unbridled force, so that no plant life develops here. Only in sheltered clefts, gorges and intervening valleys in the midst of such level surfaces are moss, grasses and flowers. According to all indications these rocky flats worn so peculiarly smooth have been caused by earlier glaciers which at some time may have covered the district to a considerable extent, perhaps in part as an "ice-cap", but now as far

as is known, occur nowhere else in Labrador. A little to the north indeed, in southeastern Baffin island, there are at the present time such glacierized localities. It is assumed, that the movements of the [P. 185] former glaciers radiated from the interior of the land to the coasts (compare A. P. Low, Report on an Exploration of Part of the South Shore of Hudson Strait and of Ungava Bay, Geological Survey of Canada, vol. XI, 1899, p. 45 L), and Robert Bell suspects that the whole northeastern corner of Labrador at that time rose much higher above the level of the Atlantic Ocean than now. The bed of Hudson Strait at that time may have represented a large land valley, which was apparently also covered with glaciers (Report of an Exploration on the Northern Side of Hudson Strait, *l.c.*, 1901, p. 29 M). This theory explains strikingly the present nature of our district: its slight absolute height opposite the mainland of Labrador, the towering up of Button Islands, as the remains of earlier highlands, the rugged, rough surfaces of the more precipitous summits, which tower up from the mass of ice as former "Nunataks" (horns), the polished state of the plateaus, situated between these horns, caused by the grinding action of glaciers. Also the presence of mighty moraines, as well as isolated erratic blocks or even smaller heaps of rocks, which remained behind in the bed of the glacier, after it had melted, bore witness of the earlier conditions.

As already remarked, the chief type of rock in this locality is gneiss in all its possible combinations. It appears not infrequently stratified in ribbon-like layers, a thing which attracts attention particularly in such localities, where steeply raised sites of rock were levelled by the grinding action of glaciers. The different light and dark strata then stand out in marked contrast. Here and there the gneiss is shot through in broad veins by pegmatite of a prevailing flesh colour, as for example just at the entrance of the last indentation of the harbour of Port Burwell, frequently also farther southward in Ungava Bay. This rock reminds one of marble to some extent, especially when it is wet, and is often so-called, therefore, by the white people of the district. I seldom found overlying limestone, in most cases appearing



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