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THE EVENING GROSBEAK IN CANADA.

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Perhaps to no American bird is there greater interest attached, aesthetic or scientific, than to the Evening Grosbeak, *Hesperiphona vespertina*. Appearing as it does in the dreariest season of the year, when birds are few and color absent from the landscape, its wonderful yellow color and plaintive whistle always attract attention and interest. Even those who rarely perceive unusual bird visitors note the appearance of the Evening Grosbeak, and the winters of its occurrence always call forth letters in the papers and floods of enquiry of the local ornithologist. Over and above its showy beauty in an empty landscape the very mystery that surrounds the bird piques our curiosity. For it comes only at irregular and unexpected intervals, and, after tarrying awhile, disappears into the unknown; nor with all our present knowledge of the movements of birds can we yet say authoritatively whence it comes or whither it goes. It is some late evidence on this point that has suggested the appropriateness of a partial review of our knowledge of the species at this time.

The species was first introduced to science and popular attention by W. Cooper, who, in 1825, in the *Annals of the Lyceum of Natural History of New York*, described a specimen obtained by H. R. Schoolcraft at Sault Ste. Marie, Michigan, on April 7, 1823. Schoolcraft was told that it was common at Fond du Lac and about the head of Lake Superior. Further information was obtained from Major Delafield, who noted the bird in August of the same year on the Savanna River, north-west from Lake Superior, where it visited his camp, singing only in the evenings. Impressed

by its mournful notes, Major Delafield inferred that it dwelt "in dark retreats and left them only at the approach of night." It was from this circumstance that the bird received its name *vespertina*.

For many years occurrences of the bird within the view of students were few and far between; they but whetted the scientific appetite for information without satisfying it. The earliest record of the species in south and south-western Ontario appears to have been the winter of 1854-55,¹ when birds were taken at Toronto, Hamilton and Woodstock. In 1866 Thomas McIlwraith² records hearing of them at Hamilton, though he himself did not actually see them. In 1879, in the *Bulletin of the Nuttall Ornithological Club*, Coues compiled a history of the species, but, as far as the east was concerned, he recorded little more than that it was a rare and erratic winter visitor south to the northern states, though commoner and more widely-diffused in the mountains of the west. Its first general appearance in large numbers in eastern Canada occurred in the winter of 1889 and 1890; this was made the subject of a full report in the *Transactions of the Canadian Institute* for 1891. The *Auk* and the *Ottawa Field-Naturalist* contain numerous notices of the species about this date that add to the records of its occurrence, though they furnish no new information. Meanwhile the Western Evening Grosbeak, *Hesperiphona vespertina montana*, had been described from New Mexico in 1879. It was discover-

¹ Fleming. *Auk*, xxiv, 1907, p. 78.

² Pro. and Comm. Essex Inst., V, 1866-67, pp. 79-96.

ed breeding in Arizona in 1884, in California in 1887, and eventually was found to nest locally in the western mountains as far north as British Columbia.³

Although considerable light has been thrown on the breeding of these western birds, our knowledge of those that visit us in the east has not advanced to the same degree. The Mackenzie and Athabasca valleys have been well worked, but no Evening Grosbeaks have been found there in summer. Preble failed to locate them in the Churchill River system, and the country south of Moose Factory on James Bay has often been traversed without result. There is still room for the species in unexplored Ungava, but its winter distribution seems to indicate a more western origin. L. O. Scott, both alone and in association with M. Bedson,⁴ reported the finding of nests just outside of Winnipeg; he repeated, too, some Indian assertions about the bird breeding in the Peace River district. Later S. S. Stansell⁵ reported nests near Edmonton, Alberta, and defended his statements when questioned. None of these records were taken seriously, as they came from localities where other men had worked without discovering corroborative evidence; but some of them at least may have to be reconsidered in view of the new data that was obtained last year. Albert Lano,⁶ for example, has reported that he saw the species in July and August, 1900 and 1901, in Aitkin Co. Minnesota; and Chas. E. Johnson⁷ has recorded them as present in Lake Co. of the same state during the corresponding months of 1914 and 1915. Most important of all, William Rowan⁸ found the birds at Gimli, Man., about forty miles north of Winnipeg, in late May and early June, 1920. They appeared to be mating at the time, and remained there until July and early August. On July 26 he took a bird of the year still being fed by its mother at Indian

Bay, Shoal Lake, on the Manitoba-Ontario boundary (not the lake of the same name north of Winnipeg). This is the first substantiated breeding record for the species away from the western mountain region. It may also be noted that the writer⁸ found the birds in late May, 1917, at the other Shoal Lake north of Winnipeg, not far west of Gimli; at the time, however, he regarded them merely as late migrants and in consequence made no systematic search for nests.

There is some evidence therefore to show that the nesting area of the Eastern Evening Grosbeak includes not only the country from which it was reported by Major Delafield in the original description of the species, but that it extends along the northern forest belt from Lake Superior to some point westward. It is true that Mr. D. Blakely of the Victoria Memorial Museum collected ornithological specimens throughout the season of 1919 on Lac Seul, Ont., about 125 miles east and a little north of Indian Bay, without seeing it, and that Capt. Angus Buchanan¹⁰ traversed the country between Prince Albert, Sask., and Reindeer Lake with equally negative results. But these apparently blank spaces in the range of the bird can be explained by the supposition that it is nearly as erratic in its summer as in its winter distribution, changing its breeding localities from summer to summer in the same way as some other northern species appear to do, for example, the Crossbills, the Pine Grosbeak and the Bohemian Waxwing. The Evening Grosbeak, in fact, does seem to be erratic in this respect in the west, where its breeding in any locality at one season is no surety that it will breed there the next, or that it bred there the season before. Such an irregularity would largely explain why we have isolated records that remain unverified by previous or later work in suspected or adjacent regions. Moreover the fact that the nests of the Evening Grosbeak are situated (in British Columbia at least) high in the taller evergreen trees and that the birds become retiring and suspicious in the breeding season further reduces the probability of find-

³ The history of this species will always be associated with the name of the young ornithologist Francis J. Bittwell, who was killed in the presence of his wife, during their honeymoon, while attempting to reach a nest of the Western Evening Grosbeak in New Mexico.

⁴ *Ottawa Field-Naturalist*, xiii, 1899-1900.

⁵ *Auk*, xxvi, 1909, pp. 390-400, and *Ottawa Field-Naturalist*, xxiii, 1909, pp. 125-127.

⁶ *Auk*, xxxvii, 1920, p. 455.

⁷ *Ibid.*, pp. 541-551.

⁸ *Ibid.*, pp. 585-586.

⁹ *Can. Field-Naturalist*, xxxiii, 1919, p. 14.

¹⁰ *Fleming*, *Can. Field-Naturalist*, xxxiii, 1919, pp. 109-113.

ing them at this time without a special search.

In regard to the winter range of the species, as contrasted with its summer range, there has been a decided change of late years, a change that is very apparent at Ottawa, but observable probably elsewhere as well. The old reports of the species would indicate that originally it was a very rare as well as a very erratic visitor, although numerous enough whenever it did come. Latterly, however, it has appeared so much more often that it can be regarded as almost regular. It is true that none have been seen this winter, but then this has been an unusual winter in every way, and if Evening Grosbeaks have not appeared, neither have other species upon whose presence we can more usually count. According to the record, while the Evening Grosbeak has gradually become more regular in the locality of Ottawa, other winter species such as the Pine Grosbeaks, the Crossbills, the Bohemian Waxwings, the Eastern Horned Larks, the Red-Polls and the Snow-Buntings have become much less so. A possible, even a probable explanation of this newly-acquired regularity of the Evening Grosbeaks may be found in the recent spread of the Manitoba maple, *Acer negundo*. John Macoun has recorded what was probably nearly the original distribution of this tree in Canada.¹¹ Outside of a few trees growing in Toronto he did not meet with it again to the west until beyond Lake Superior in the northern parts of the prairie provinces. Now the samaras or winged seeds of this maple hang to the tree all winter, and whenever obtainable constitute the principal food of the Evening Grosbeak. Indeed, when the seeds finally drop off, the birds descend to the ground and rarely leave the locality until the supply is exhausted. In the early days, with so large an area of country barren of their favorite food, it is not surprising that the birds only strayed over it in exceptional winters under pressure of food failure elsewhere. Today, however, the distribution of this maple is radically different. It is a hardy, quick-growing shade tree, and in consequence has been planted extensively,

not only about many farm houses, but in all the villages, towns and cities that have sprung up to the east and north of the Great Lakes. Thus a baited pathway has been laid from the usual summer home of the Evening Grosbeak right to our doors, and undoubtedly the bird has taken advantage of this fact to travel our way more often than it did before. It may even be prophesied that with the further increase of the Manitoba maple northward, the Evening Grosbeak will find sufficient food nearer its summer home and again become scarcer in our neighbourhood; for it was the extension of cultivation in similar localities that seems to have brought about a like change in the movements of the other birds that I have mentioned.

The Western Evening Grosbeak, *Hesperiphona vespertina montana*, was separated from the eastern bird on account of some slight colour differences and a relatively greater length of bill. For a long time our British Columbian Grosbeaks were, as a matter of course, referred to the western race. It has been evident for some time, however, that while they may be different from the eastern birds, they are certainly not the *montana* as originally disposed, with which they agree neither in colour details nor in the shape of the bill. Jos. Grinnell, the first to try to unravel the subject,¹² subdivided the birds previously grouped under the head of *montana* into three races, *montana*, *californica* and *brooksi*, and referred the British Columbian and the Washington birds to the last named subspecies. He based his distinctions on variations in colour and bill form. Now one trouble in estimating the values of these different characters is the difficulty of obtaining comparable material. All our specimens of true eastern *vespertina* are in winter plumage, while the majority of British Columbian specimens are in summer condition. Allowing for this, however, an examination of the few winter western birds available seems to indicate that while the width of yellow on the forehead and the back coloration of the male in the *brooksi* can be readily matched in specimens of the eastern bird, the dark-

¹¹ Macoun. Cat. Canadian Plants, Pt. I, Polypetalae, 1883.

¹² Grinnell, Condor, xix, 1917, pp. 17-22.

coloured head of the female *brooksi* does really enable us to separate the two races with some confidence. The bill averages a little slenderer in *brooksi* than in eastern specimens, but this is not a reliable guide, for the difference is so slight that it is hardly recognizable even in the figures that accompany Grinnell's description, and at times is quite swamped by individual variation.

I have been fortunate in having submitted to me for examination the two birds that were taken by Rowan at Indian Bay. One is an adult female in rather worn and faded breeding plumage, the other her fully fledged young still suffused on back and breast with the ochraceous buff that is lost in the post-juvenile moult before the first winter. There can be no question that the latter is a bird of the year, and the fact that it was still being fed by its parent indicates that it was raised within a short distance of where it was taken. The parent that was captured is fortunately a female, and consequently of the sex needed for subspecific determination, but the disturbing fact is that it bears the colour marks of the western bird, *brooksi*, rather than those of the expected eastern *vespertina*. Its head, in contrast with its back, is decidedly dark, and the specimen generally, in spite of its slightly worn and faded condition, is identical with birds from the Okanagan Valley, B.C. It is true that the bill is large and stubby rather than attenuated, and that a large stubby bill is a postulated character of the eastern bird; but, as mentioned before, this, in the opinion of the writer at least, is too variable a character to be of much service in determining individual specimens. Of course, it does not seem reasonable that the British Columbian Evening Grosbeak, *brooksi*, breeds eastward to Lake Superior nor would I care to suggest such a conclusion except to negative its probability. We may prefer to regard this specimen simply as a variant of the eastern *vespertina*, or perhaps suspend judgment until further evidence is secured.

This unfortunate occurrence of abnormality in a unique specimen brings up the important subject of the determination of slightly characterized races when they are found far from their natural habitats.

Birds with their great mobility certainly can and do wander to the most astonishing localities, and it is not impossible for occasional specimens to appear far from the land of their origin and direct blood relatives. In such cases are we to identify entirely from the characters that the birds exhibit? If we do, we are bound to make a multitude of errors through mistaking individual for racial variations. On the other hand if we allow considerations of geography to influence our identifications we are just as certain often to twist the evidence to suit our geographical preconceptions.

There are good reasons for either course. If a race means anything it must be based on germinal characters and denote blood relationship between the individuals composing it. An albino Negro would not be a Caucasian, however close the superficial resemblance might be. The very fact that an isolated community of a species has developed certain common characteristics indicates the possibility, perhaps even suggests an innate tendency, of the species as a whole to vary in that special direction; it would surprise us less to find such a variation sporadically in individuals of other communities than one the possibility of which has not been demonstrated. In other words, we can expect to find, even in pure lines of descent, disturbing variants (sports, if you will) resembling established races more often than departures in novel directions.

These considerations are against identifying by character alone without considering geography as an indication of probable descent. However, to lay too great stress on geography is equally dangerous and misleading. For if we plot distribution on the determination of specimens we certainly must not make postulated distribution, the basis for such determination or we shall be reasoning in a vicious circle. All we can do in doubtful cases is to acknowledge our ignorance, and content ourselves with naming the species, leaving the determination of the subspecies open for further investigation or fuller data.

In this case of the Evening Grosbeak, then, although we may be firmly convinced that the Indian Bay breeding bird is of

eastern stock, it does not seem that we are warranted in calling it anything more definite than *Hesperiphona vespertina*, the

Evening Grosbeak, leaving its eastern or western affinities, *vespertina* or *brooksi*, open for future consideration.

THE LARGER FRESHWATER CRUSTACEA FROM CANADA AND ALASKA.

BY FRITS JOHANSEN.

(Continued from Vol. XXXV, page 30)

III.—B. TADPOLE-SHRIMPS.

This suborder (Notostraca) is distinguished from the Anostraca by having a broad and flat dorsal shield covering the body, and from the Conchostraca by having a depressed body, and the shield single and attached at the front, not double (as a clam-shell) and confluent with the body dorsally.

The "tadpole-shrimps" do not have the antennae developed to the extent of the fairy-shrimps and clam-shrimps except in their larval stages, but both pairs are diminutive dwarfed stubs, especially the second pair. The paired eyes are not stalked, but sessile and placed close together dorsally near the front edge of the carapace. The mouth parts are well developed, and behind them follow a great number of foliaceous body legs (similar to these of the fairy-shrimps), of which the last (11th) pair in the females form a peculiar flat and rounded pouch (like a watch-glass) containing the eggs. The first leg-pair is the longest and ends, with *Apus*, in three long filaments, used as sensitive organs by the adults and also as swimming-organs by the younger stages. Behind the carapace protrude a varying number (1 to 3 dozen) of abdominal segments (the tail), which end in a plate (telson) flanked by two long filaments (cercopods). The color of the adults is a brownish green,¹ the carapace and eyes being the darkest. These animals thus remind one forcibly of the marine "horse-shoe-crabs" (*Limulus*) and as in the latter there is much movement possible between the shield and the body, of great import-

ance to the animal when digging into the mud or turning around. The interior organs are similar to those of the fairy-shrimps though the heart is shorter and there is a large, paired shell-gland.

Locomotion is accomplished principally by the foliaceous legs similar to those of the fairy-shrimps, and also by twistings of the tail. The food consists of small freshwater invertebrates (Entomostraca, etc.), or dead animals (even of its own species) which it catches in the water or by tunnelling in the surface of the mud bottom, passing any captured prey along to the mouth parts by the aid of the foliaceous legs. The larvæ hatch in the spring as clumsy nauplii or metanauplii from the ripe (red) eggs deposited in the fall upon water-plants, etc.; they differ much less from the adults than the larvæ of the two other suborders (fairy-shrimps and clam-shrimps), having traces of the carapace and abdominal segments, and later short cercopods. On the other hand particularly the second pair of antennæ are far longer and more powerful than is the case with the adults, and function as the principal organs of locomotion. During the summer the larvæ grow on and gradually assume the shape and colour of the adult. In some of the species the females attain a length of several centimeters, while the males are somewhat smaller. The latter are generally far less numerous than are the females and often first make their appearance in the latter part of the summer; it is therefore probable that when this is the case the eggs the females carry in the beginning of the summer are produced parthenogenetically, though it must

¹ That of the larva first orange, later yellowish.



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