

## SUGGESTIONS FOR ORNITHOLOGICAL WORK IN CANADA\*

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In surveying the results of ornithological work done in the Dominion to date, one is struck with the number of blank spaces in our knowledge, and the fine field yet offered for original research.

In the subject of life-histories, there is hardly a species, amongst our typical Canadian forms, that has been comprehensively worked up. Most of the work accomplished along these lines has been done in the adjoining republic and describes conditions abroad, slightly foreign to us zoologically as well as politically. Of course, our workers have been fewer both actually and proportionally in Canada than in the United States, and perhaps under the circumstances the broader generalizations that our few have accomplished has been of more pressing nature than the detailed surveys accomplished in the older community.

In geographical distribution our knowledge of Canadian avifauna is fragmentary and, if it were not for the results of work accomplished in the United States, would still be but an outline. The Maritime Provinces have been touched but locally. The Labrador and the Gulf of St. Lawrence has been worked intermittently. From Montreal west to the Toronto region but high spots have been touched; in fact, the southern peninsula of Ontario is perhaps the only area of any size in Canada, that has had anything like adequate attention from an ornithological standpoint. From a line east of Georgian bay to the Manitoba boundary we know practically nothing of bird conditions. Continuous systematic work in Manitoba ceased some years ago and the other Prairie Provinces—Saskatchewan and Alberta—have received but desultory attention from visiting naturalists. British Columbia is being investigated in spots but most of its area except locally in the southern portions is a *terra incognita* as far as exact ornithological knowledge is concerned.

In the northern regions, on the Yukon river and some of its tributaries and main highways, considerable work has been done by occasional visitors. Along the route from Lake Athabasca

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to the mouth of the Mackenzie river various investigations have been conducted from time to time and, considering the accessibility of the locality, our records are comparatively full.

The Arctic coast of Coronation gulf has been, and is being studied. Of Hudson's bay and Ungava we have but scattered notes and short lists. Though considerable geographical exploration has been conducted by various parties amongst the islands of Franklin and the far north, our knowledge of the ornithological conditions there is fragmentary and imperfect.

In economic ornithology, Canada has done little if any original work.

In systematic science our working collections have been, and still are, too small to accomplish anything comparable to the work done on our own forms in the United States, even if we had our natural quota of trained zoologists to use such material to advantage.

Thus, it seems that ornithology in Canada still has most of its history before it, and outside of a few brilliant exceptions the work that should have been done by our own people has been accomplished by naturalists from the United States who have turned their attention in our direction.

The introduction of nature study in our schools and the general interest that has been awakened in allied subjects of late years has not, to date, entirely fulfilled the results expected of it. In fact, reliable observers of ornithological phenomena, both in Canada and the United States, are, perhaps, fewer to-day both numerically and in proportion to population than they were a generation ago. An elementary introduction to nature in our schools has failed to awaken any serious interest in natural problems. General and elevating interest in nature may be more widespread to-day but no ornithologist of marked ability has found his or her avocation or has been developed through these means. Whether this has been the fault of methods pursued, or causes more deep seated, the writer cannot tell. Certainly if, a generation or so ago, when the opportunities for learning even the rudiments of natural history were few and difficult to obtain, naturalists were developed at all, we should expect that to-day when the subjects are taught in every public school and the introduction to the study is almost forced upon large numbers of people, the percentage of serious and enthusiastic workers would be greater. These are the facts; the causes of the apparent failure must be left to pedagogs to argue over.

Does it not seem that Canada has reached that stage in its development where it can take its rightful position in the world as well along ornithological as in other lines?



For many years the Geological Survey of Canada has devoted what attention its limited staff could spare from its numerous other activities towards gathering Dominion ornithological data and there have been a few private investigators that have been observing and noting with commendable industry. With the broadening out of the work of the Geological Survey and its Museum, great impetus should be given to bird work in Canada. Museums are also being started or rejuvenated in the various provinces and the time seems ripe for a general awakening of interests in zoological subjects. To call attention to our shortcomings in data and workers it seems advisable to outline a few fruitful fields of endeavour that can be worked by various individuals whose tastes incline in that direction.

Ornithology can be approached and studied from various sides and by individuals of many different tastes and inclinations. For the general nature lover, interested in birds from a poetic or aesthetic standpoint, the study of life-histories offers a most attractive field. Careful watching and observing of feathered friends in their secluded haunts, bloodlessly stalking them with camera and note or sketch-book and divining the hidden secrets of their lives is a pleasure that can be indulged in by all and enjoyed by many. The most common bird of our vicinity is an object worthy of the most careful and painstaking attention. The Wren building in the improvised nesting box in the garden, the Song sparrow of the near-by thicket are both awaiting a careful record of the story of their daily lives. The amount of original, valuable and interesting information, that can be gathered from such homelike sources is almost infinite and unexpected surprises will almost daily repay the close observer. To those whose time and opportunities are limited such birds about home are fruitful. By those with more leisure, greater ambition or ampler opportunities work farther afield may be pursued and species less commonplace can be studied. In fact there is work in this line for everybody of widely divergent taste and situation and even city parks and backyard gardens will amply repay attention.

As a suggestion for investigation, the following outline of problems to be solved may be followed. It is merely suggestive and can be enlarged indefinitely.

Is the species a resident or a migrant?

When does it arrive and leave?

What are the determining influences upon its migrations,—food supply, weather, or does physiological development produce a periodical desire to migrate?



Which individuals come or leave first, male or female, young or old?

Are they mated when they arrive or do they select mates after arrival?

Are there any courtship ceremonies?

What characters seem to determine sexual selection? Vigor? Beauty? Song?

Do the same individuals return year after year to the same localities, and do they mate together annually?

How wide is the local range of the individual, do they keep close to this home area or wander widely?

When, where and how do they nest?

Which sex chooses the site?

Which sex builds the nest and how much and in what way do they aid each other?

What seems to be the qualities that they look for in selecting a nesting site?

Do they work on the construction throughout the day or only at regular intervals?

What is the technic of nest building?

Is the technic the result of instinct, experience or memory and does it improve with experience.

Are all individuals of the species equally expert in nest building?

How far can they adjust nest to new materials, situations or conditions?

Is there any change in the routine habits before, during or after nest building?

Are the eggs deposited immediately after the nest is finished?

What is the incubation period?

How many eggs are laid and when, how often, what is a normal set?

Does the egg laying seem under the conscious control of the individual?

What determines the number of eggs,—the size of the nest, the judgment, age or vigor of individual?

How are the eggs brooded, by which sex, do they divide the labor? Are the feathers removed from the abdomen of the brooding bird consciously or do they wear off by friction with the eggs? What is the incubation temperature? How often are the eggs turned by the parent?



How are the eggs protected during exceptionally inclement weather?

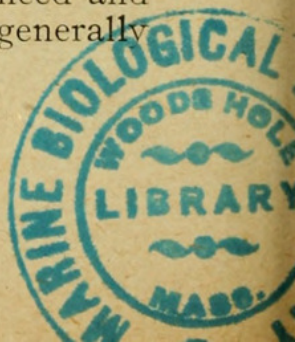
This list covers but a short time in the bird's life, but it shows how much can be learned and studied in but one phase of its existence; other moments in the lives of any species are equally interesting.

One of our greatest desiderata is an accurate investigation of distribution of bird life in the Dominion. The uninitiated rarely realize how many of the published ranges of our birds are based upon geographic probabilities, a *priori* reasoning or are copied and recopied, from previous writers. Examples are many. A great proportion of our southern Canadian lists give the Northern Hairy woodpecker as the common form and the Eastern Water thrush as ranging to the plains. The fact is, that the first is but a very rare winter visitor to the area, and Grinnell's Water thrush is the common form in the Lake Erie peninsula. Many more such cases could be cited. The only basis acceptable for such determinations are specimens examined by trained experts. Even when the forms are collected, comparison with series of specimens of allied forms is necessary to certainly established its identity. In these we are woefully lacking and still have to depend upon the courtesy and interest of our friends across the line in the separation and substantiation of many difficult forms.

To establish the Canadian ranges of our birds, their migration routes and general status, we need skilled observers at all possible points, to note and collect local data and specimens. Ideally there should be an observer and collection in every county in the Dominion; each keeping track of his own area and comparing and checking it with results from adjoining stations. Provincial Museums should gather up these local details within their sphere of influence and the whole should be amalgamated and correlated by the Dominion authorities, represented by the zoological branch of the Geological Survey at Ottawa. In this way we would have co-operation and series of local collections illustrating intensive work throughout the Dominion.

All such work, however, to be of service must be based upon exact personal knowledge and substantiated in every way possible. We look back to-day upon apparent mistakes made by our predecessors, even those of marked and recognized ability, and wish for data by which to check their statements. The next generation will demand the same of us and with more reason for impatience, if it is absent. Ornithology has advanced and the necessity for substantiating everything is more generally recognized now than in the past.

(To be continued)







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