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INTRODUCTORY.

With the March, 1919, issue, THE OTTAWA NATURALIST, the official organ of the Ottawa Field-Naturalists' Club, ceased to exist under that name. THE OTTAWA NATURALIST had a long and honourable career. Like all similar publications it had its trials, its ups and downs, financial troubles, etc., but it weathered all storms and appeared fairly regularly during its thirty-two years of existence. In its pages are to be found many articles of great scientific value and we would like to have space to remind our readers of at least some of the more important of the contributions which it presented. With the increase in its size, improvement of paper, specially prepared articles, etc., Vol. XXXII, certainly may be regarded as an excellent production and one which has brought forth many words of encouragement from its readers.

This, the April issue of the organ of the club appears under a new name—THE CANADIAN FIELD-NATURALIST. Such a change was intimated in the April, 1918, issue of THE OTTAWA NATURALIST, and at the recent annual meeting of the Club, held on March 18, 1919, the same was duly approved. This change in name will not, of course, affect in any way the spirit of the publication. Such change only reflects its widened sphere of influence. We hope it will develop along improved lines and ultimately be accepted as the organ not only of The Ottawa Field-Naturalists' Club, but of similar organizations throughout Canada. There is an excellent opportunity for the naturalists of Canada to assist in building up this publication and making it truly representative of Canadian scientific research. The popular side will, of course, not be overlooked. Special efforts will be made to make it useful to amateur naturalists, teachers and the public generally.

The subscription price for the present volume which will contain six issues, namely for the months of April, May, September, October, November and December will be $1.00. Thereafter the volumes will consist of nine issues each volume beginning with the January number; the subscription price of each volume will be increased proportionately.

NOTES ON THE CASPIAN TERN *(STERNA CASPIA)* AND THE PARASITIC JAEGER *(STERCORARIUS PARASITICUS)* IN MANITOBA.

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Island faunæ, ever an interesting field in ornithology, become particularly attractive in continental areas where lake islands afford the only suitable breeding grounds for certain water birds.

The following observations refer to a small but interesting island in the northern part of Lake Winnipeg visited on July the 9th and 13th, 1918, whereon a colony of Caspian Terns *(Sterna caspia)* was found. No record of this species breeding in Manitoba has hitherto been published. A specimen of Parasitic Jaeger *(Stercorarius parasiticus)* was also secured and constitutes the first inland record for this province.

Through the courtesy of the Riverton Fish Company, of Riverton, Man., the authors were enabled to make the journey—a round trip of some 500 miles—from Hnausa to Berens Island. The objects of the trip were first to study if possible, breeding colonies of White Pelicans *(Pelecanus erythrorhynchos)* and second, to gather some idea of the biological conditions on the northern portion of the lake. The original intention to make Reindeer Island the base proved impracticable and a camp was established at Swampy Bay, Berens Island, where the Riverton Fish Company maintained a large fishing station. We desire to express

our warm appreciation of the sympathetic assistance afforded by the men at the stations, particularly by Mr. Johnny Jonasson. Berens Island was chosen mainly because of the possibility that White Pelicans would be found breeding on Pelican Island which lies some four or five miles west of Berens Island.

Pelican Island lies approximately in longitude 95½ and latitude 52½ and is a typical, rocky lake island, some ten to fifteen acres in extent. Between Pelican Island and the northern shore of the lake, there are no islands and so its north coast meets the full force of the waves raised by the winds sweeping across this 100 miles of open water. Lake Winnipeg with its area of over 8,000 square miles, is very dangerous owing to its quick changes from calm to storm and fishermen familiar with the whole lake, declare this region between Pelican and Berens Islands to be the worst. The shores of Pelican Island are extremely rocky—there are no sand beaches—and a landing from a rowboat requires cautious management even in calm weather. The island is partly wooded with birch, ash, etc., but inland the ground is depressed in a basin-like central hollow, overgrown with marsh vegetation. A barren tongue of land juts out from the east side of the island forming a shingle spit.

THE TERNERY.

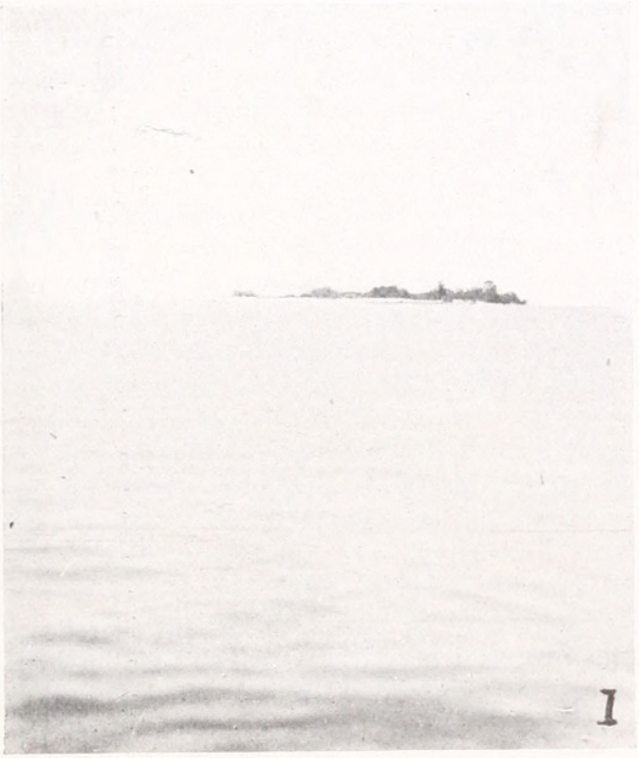
The first time the authors approached the island in a skiff, flocks of birds were observed resting on the eastern point, while with prism binoculars, Herring Gulls and Terns could be distinguished everywhere along the shingle spit and adjacent shore. Two young Herring Gulls, still in natal down, ran down the beach to the water as the boat reached land. One of these was captured. The uproar among the birds caused by the landing increased when the shingle spit was reached. Numerous deserted Herring Gulls' nests, substantially built of vegetable debris, lined the edge of the grass zone or were scattered over the bare pebbles and everywhere were the remains of pellets disgorged by the gulls. No eggs were found until the zone of vegetation had ended, when, passing out onto the bare eastern spit, a densely populated ternery was discovered. Over this space were between 200 and 300 occupied nests, frequently almost touching, each containing one or two eggs. After a brief survey of the ternery, a low hiding blind was erected and left for the birds to return to the colony.

On returning later, the whole colony was seen to be still on the wing, shrieking and screaming above the breeding ground. The cause was soon revealed. In the midst of the colony was a fisherman methodically gathering the eggs from the nests. The old fellow could scarcely understand English and after much difficulty, it was explained that some of the nests were to remain undisturbed. The birds were now so thoroughly alarmed that an hour spent in the hiding-tent in the hope of photographing them proved vain and the remaining hour or so of light was expended in examining and photographing the nests and eggs. An adult Caspian Tern was collected together with some clutches of eggs. A fair portion of the colony had not been disturbed. It was hoped that the next visit would find the owners of these nests back at the task of incubation and so the hiding-tent was left in position, as carefully concealed as possible.

On July 13, Pelican Island was re-visited. The birds were observed as before, resting on the rocks and along the shore. On approaching the breeding ground, the usual alarm of the parent birds was not in evidence and closer examination showed that every remaining egg had been destroyed—evidently by crows *(vide infra)* and on the whole spot not a single occupied nest remained. A specimen of Parasitic Jaeger and two still occupied Herring Gull nests were also discovered during this visit.

Reference to the published records of Manitoban birds yielded only an isolated record of the Caspian Tern. It is not mentioned by Bell (3) nor by E. Thompson Seton (11 and 12) and is recorded only by Nutting (6) whose record is cited by Preble (7). Nutting collected a single Caspian Tern on Lake Winnipeg at the mouth of the Saskatchewan river in 1892. The A.O.U. Check List (1) says of the Caspian Tern: "Range nearly cosmopolitan" but gives few North American breeding records, viz: "Great Slave Lake, Klamath Lake, Oregon, on islands of northern Lake Michigan, on coast of Southern Labrador, and also on coasts of Texas, Louisiana, Mississippi and (formerly) Virginia". The discovery of such a colony in Lake Winnipeg is, therefore, of unusual interest.

Although there are no published records of the species breeding in Manitoba, we have reason to believe that it was previously recognized by Mr. Eric Dunlop, since killed in action in France, a naturalist who in 1914 and 1915 collected in northern Lake Winnipeg for the Carlisle Museum, Carlisle, England. Dunlop is said to have found the Caspian Tern breeding on the west coast of Reindeer Island, but, unfortunately, his records are not available. While in the north, the authors met with Dunlop's chief guide, Capt. Goodman, who through his work with Dunlop had become acquainted with many of the birds. Capt. Goodman stated that in 1914 the Caspian Terns were found breeding only on the west shore of Reindeer Island and had not been noted anywhere else although numerous islands, including Pelican Island, were then visited.



1. Pelican Island. The shingle spit upon which the ternery was situated is visible in the foreground of the island.

2. Young Herring Gull. The rocky character of shore adjacent to the ternery is here shown. July 8, 1918.

3. Caspian Tern's nest showing remarkable variation in eggs of single clutch. Also exceptional in its employment of drift to form a "nest".

4. Typical nest of Caspian Tern. Note entire absence of vegetable nesting materials.

The Caspian Terns' nesting ground was a compact area situated on a slope of the shingle spit and measured only some 20 yards by 30 yards. The ternery sloped from some 10 to 12 feet above lake level at the highest point down to some four feet above lake level at the lowest point. In this space were well over 200 nests. Somewhat over 400 eggs were noted and exact measurements taken of 46 of them. A small, peculiar pond to the west of, and some 10 yards from the boundary of the ternery, contained a few water plants and algæ and was well populated with large frogs *(Rana pipiens)*. This pond showed every evidence of being much visited by the birds. Between 600 and 800 adult Caspian Terns must have been observed on the first visit, the birds resting on the stones along the shore, fishing off-shore or flying together with Herring Gulls and Common and Forster Terns above the island. The stomach of the individual shot contained remains of small fish. The identity of the species was first suspected from the size and shape of the eggs, later determined by close range observation from the hiding-tent and finally confirmed by the finding of dead specimens and the shooting of an adult female.

The nest frequently consisted of mere depressions in the shingle, absolutely no vegetable or other materials being utilized. In some other instances, grass bents, dead rushes, bits of drift, etc., were gathered together forming a rude, basin-shaped structure. Thus the type of nest appears to resemble most closely that of Lesser Tern *(Sterna minuta)* (9) and not that of the Common Tern *(Sterna hirundo)* (10) which most frequently builds quite a noticeable nest of gathered materials. The deserted and much better constructed nests of Herring Gulls were occasionally used by the Caspian Terns, apparently no additions or alteration being made by the new tenants. In no case did the number of eggs in a nest exceed two. Frequently, there was only one egg, usually fresh, in a nest. It is of interest that Van Winkle (5) records three as the usual number of eggs per nest on the Gravel Gull Islands, Lake Michigan, whereas we found that in some cases where there were two eggs in the nest, they were both in such an advanced stage that there would have been ample time for the third egg to have been laid had three been the normal number of the clutch.

The eggs exhibited a considerable range of variation in color, size and type of marking, but destruction by the fishermen and the crows prevented the taking of a series of measurements similar to those made by Rowan, Parker and Bell (10) as was originally intended. The measurement of a characteristic series of 46 eggs was fortunately secured, from which the following data were obtained:

Average length, 63.59 m.m.; average breadth, 43.84 m.m.; greatest length, 72.00 m.m.; shortest length, 56.00 m.m.; greatest breadth, 46 m.m.; least breadth, 41.00 m.m.

The two eggs of a clutch sometimes differed considerably, though a sufficient number were not examined to allow of satisfactory statistical treatment. Thus: in clutch No. 33 the two eggs were 70 x 46 and 67 x 45 m.m.; in clutch No. 23 the two eggs were 66 x 45 and 63 x 43 m.m.

Like differences were found also in color, for in one nest one egg was of a pale blue background with a few very faint spots, while the second was heavily spotted and blotched with black upon a brown background. The eggs that were opened and examined exhibited every stage of development from practically no incubation, the primitive streak stage, through to large embryos. The majority, however, were fresh. None seemed less than a week from hatching.

THE PARASITIC JAEGER.

The Parasitic Jaeger *(Stercorarius parasiticus)* of which a specimen was found on July 23 on the north end of Pelican Island, is also a bird of some interest as it is the first record for this area. The Canadian Catalogue of Birds (Macoun, 5) gives the following record for Hudson Bay: "a specimen of the melanistic form (of *Stercorarius parasiticus*) taken at Fort Churchill, Hudson Bay, 1845 (Dr. Gillespie, Jr.)" Preble (7), however, records the species as occurring on the coast of Hudson Bay, below Cape Eskimo in 1900. Both of these, however, are on the sea-coast and at least 500 miles north of Pelican Island. The two other members of this strange genus, the Pomarine Jaeger *(Stercorarius pomarinus)* and the Long-tailed Jaeger *(S. longicaudus)* have been recorded for Manitoba, the former on Hudson Bay (Preble, 7) and the latter once from Aweme, Man., May, 1903, by Mr. Norman Criddle (Macoun, 1909) and also once from Clandeboye, Man., October, 1902, by Atkinson (2).

The specimen of Parasitic Jaeger which the authors discovered was lying dead on the rocky ground above the drift line in the midst of a deserted Herring Gull colony. The individual was an example of the white phase. From the situation and appearance of the bird it is possible that it had been killed by Herring Gulls while poaching on the colony, a fate several times recorded for this species.

OTHER BIRDS.

The following observations were made concerning other species of birds noted on Pelican Island:

HERRING GULL *(Larus argentatus)*. This species

had practically completed breeding. Over 300 deserted nests and but four occupied nests were discovered—three with well-grown young and one with eggs.

RING-BILLED GULLS *(Larus delawarensis)* were noted in company with the last species.

FORESTER'S TERNS *(Sterna forsteri)* and COMMON TERNS *(Sterna hirundo)* were numerous, almost equalling the Caspian Terns in numbers. The gulls and terns all consorted together freely.

BLACK TERNS *(Hydrochelidon nigra surinamensis)* were entirely absent although they are quite numerous in the south end of Lake Winnipeg.

WHITE PELICAN *(Pelecanus erythrorhynchos)* were not noted, although excreta and two humeri were found. However, the species was regularly observed fishing in Swampy Bay, five miles from Pelican Island, so it probably is a frequent visitor here also.

SCAUP DUCKS *(Marila marila* or *M. affinis)* were observed, five or six individuals together, resting on the water not far offshore from the ternery.

MALLARD *(Anas boschas)* were observed and one adult female collected.

WHITE-WINGED SCOTERS *(Oidemia deglandi)* are frequently caught and drowned in the fishermen's nets. They probably visit Pelican Island frequently.

Two or three LEAST SANDPIPERS *(Pisobia minutilla)* were observed on the beach.

LESSER YELLOW-LEGS *(Totanus flavipes)* were seen feeding along the water-edge.

A PECTORAL SANDPIPER *(Pisobia maculata)* was shot out of a flock of five feeding near the ternery.

Several SPOTTED SANDPIPERS *(Actitis maculata)* were found feeding along the shore.

NIGHT HAWKS *(Chordeiles virginianus)* were noted at Swampy Bay and very probably inhabit Pelican Island. None was observed probably because both visits were made during daylight hours.

CROWS *(Corvus brachyrhynchos)* were common on the island. When the ternery was first visited, the crows gathered near at hand to watch the proceedings. When the second visit was paid, the crows were disturbed from the area of the ternery itself, where they were engaged in eating the Caspian Terns' eggs. The crows appear to feed largely upon the dead fish cast up by the water and they were constantly observed patrolling the shores in search of such food. Nests were found in considerable numbers.

SAVANAH SPARROWS *(Passerculus sandwichensis savanna)* were in song and apparently breeding near the ternery.

CEDAR WAXWINGS *(Bombycilla cedrorum)* were common in the trees on Pelican Island. They were still in flocks and had not yet, apparently, begun nesting.

RED-EYED VIREOS *(Vireosylva olivacea)* were noted here as they were on every island and bit of the wooded shore the authors visited during the whole trip.

YELLOW WARBLERS *(Dendroica aestiva aestiva)* were common and breeding.

BLACKBURNIAN WARBLERS *(Dendroica blackburniae)* were noted and were in full song.

The discovery of the Caspian Tern Colony on Pelican Island is especially interesting in the light of our knowledge of the distribution of this bird. The A. O. U. Check list (1) gives the winter range of this species as "South Atlantic and Gulf Coasts". To and from this region, logically, the Pelican Island terns must each year journey; yet there is not a single record of a Caspian Tern being collected in Central or Southern Manitoba. The route of migration that would seem most reasonable is that down the Red-River-Mississippi Valley chain, yet this absence of records proves fairly conclusively that the Caspian Terns do not regularly or in numbers, traverse this path. The alternative suggestion is a migration route by way of Hudson Bay, thence to the Atlantic coast and thence southward. The Pelican Island and Reindeer Island colonies might thus possibly be explained as an invasion of this species from Hudson Bay, these islands—the outliers of the numerous islands including Berens Island—being the first of the group upon which the species has established itself. The birds in going to their winter range, still probably use the old route of invasion and travel circuitously out by way of Hudson's Bay and the Atlantic coast. Analagous to this might be cited the case of the Bobolink *(Dolichonyx oryzivorus)* which, according to Cooke (4) has invaded Utah by extending its range far westward, then southward yet in returning to its winter home in southern Brazil, the Utah bobolinks do not go directly, but move along their old invasion route, *i.e.*, they first journey northward, then eastward, then they turn south to their distant winter range. It is conceivable that in the case of the bobolink, a frequenter of damp meadows, its choice of route is partly, perhaps largely, determined by following such suitable localities and therefore it does not cross the arid regions to the south and southeast of the points reached in its new advance. Indeed it is only since the extension of irrigation in certain parts of Utah that it has made its appearance there. Whereas the Caspian Tern, having once got into the lake region has practically an unbroken inland water system over which it could return to the south.

The Pelican Island colony is declared by the

fishermen, who recognize the Caspian Tern to be a new bird on the lake, to date within the last few years. Indeed the earliest definite information regarding it was their report that three years previous to our visit, a wolf crossed to Pelican Island from Swampy Bay and destroyed all eggs and young birds in the colony. The species was not found by Dunlop when he visited the island in 1914 and it is hardly possible that he could have missed it had it been there. Capt. Goodman stated that, on Reindeer Island, Dunlop found the Caspian Terns breeding as late as mid-August.

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DOUGLAS FIR SUGAR

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Much interest has recently been aroused over what appears to be phenomenal deposits of sugar on the leaves of Douglas fir *(Pseudotsuga taxifolia)* in certain areas of British Columbia. Although Douglas fir sugar has been known to the Indians of the dry-belt for many years, its occurrence seems to have been overlooked by the numerous surveyors and others who have travelled in the province; at least, in-so-far as the writer is aware, no record has been made of its occurrence previous to 1915, when an illustration appeared in the British Columbia Botanical Office Report for the year 1914, showing a branch of Douglas fir laden with white masses of sugar. This photograph was prepared from specimens received from Mr. Jas. Teit, of Spence's Bridge, B.C., who, in connection with his ethnological work on the plants used as food by the British Columbia Indians, wished to have an explanation of the deposits; Mr. Teit also forwarded samples of Douglas fir sugar to Dr. E. Sapir of the Geological Survey of Canada, who had the samples analyzed.

During the summer of 1917, when the European conflict caused an increase in the cost of living and the introduction of measures to economize sugar, interest in this phenomenon was renewed and intensified by the appearance of a glowing account supplied to one of the Vancouver newspapers by some irresponsible contributor. As a result, a number of people became quite enthusiastic regarding this "new" discovery and hastened to ascertain its commercial possibilities.

In view of the fact that many people in Canada are interested in the phenomenon, and at the request of Mr. Teit, the writer consented to give a summary of what is known regarding Douglas fir sugar and the factors influencing its exudation as deposits on the leaves. All the information relating to the distribution and habitats of sugar-bearing Douglas firs was supplied by Mr. Teit who, being resident in the heart of the dry-belt and having an intimate knowledge of the Indians of the interior, was best able to secure the necessary data.

It appears that Douglas fir sugar cannot be relied on as an annual crop. Some years it is abundant, other years little or none is found. It is therefore regarded by Indians as an extra, rather than a necessary part of their food supplies, but when available in quantity it is collected and may be kept for future use.

NOT THE WORK OF INSECTS.

Previous to having seen the specimens, the writer suspected that the sugar had been produced as an exudation on the leaves through punctures made by insects possibly aphides; such as is said to occur on *Tamarix mannifera* which, when attacked by a *Coccus*, yields a kind of mucilaginous sugar—the manna of Mt. Sinai; but information to the effect that only healthy trees produced the sugar and that such trees were practically free from insects,