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1. Wildlife-Point Pelee National Park.
2. Muskrats-Point Pelee National Park.
3. Botany-Point Pelee National Park.
I. Title.

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Biological Investigation of Point Pelee National Park 1942

by C.H.D. Clarke

Introduction

Under instructions from the National Parks Bureau, the period April 29th to May 9th, 1942, was spent at Point Pelee National Park investigating the current shortage of muskrats and other matters. Thanks are due to the Superintendent, R.J. Grant, for his full co-operation and valuable assistance.

Point Pelee became a park because of its importance as a nature reserve. The steps leading up to its creation were:

1. Investigation by naturalists from 1879 on. Their work showed that the point was a remarkable bird migration centre and also that, being the most southern mainland in Canada, it contained a remarkable number of plants and animals confined to the Lake Erie region and in some cases found only on the point. The point acquired a reputation in scientific literature for rare discoveries.

2. Memorandum by Mr. P.A. Taverner pointing out these facts, drawing attention in addition to the attractiveness of the point, and recommending a national park. This memorandum was published by the Commission of Conservation.

3. Sponsorship of the park scheme by the Advisory Board on Wild Life Protection and by local and national organizations.

The park was set aside because it is a unique faunal and floral area, though the fact that it might have some advantages as a playground was also brought up. In the writer's opinion its unique faunal and floral value is of national interest and would justify its being called a national park under any set of standards ever drawn up, in spite of its small size. As a picnic ground and bathing beach in the riding of South Essex it is not of national interest.

At the time the park was established, in 1918, good roads were scarce and there were sand beaches by the mile, some of them on Lake Erie even closer to Windsor than Point Pelee, unoccupied and unused by the general public. The years following its establishment brought better roads, faster cars, and new summer cottages with each succeeding year. The time has now been reached where the only unoccupied sand beaches on the Great Lakes are on Indian Reservations, and in the more accessible places there are cottages on chine shores, rock piles and mud flats. Private occupation has so increased that it is difficult to find a place for public picnic parties. It is easy to see what would have happened to Point Pelee had there been no park. The point would have been ruined as a natural

area. As it was, it became more and more frequented by picnickers and campers with each year. Facilities were installed which further increased this public use. It was finally realized that the time had come for a sizing-up of the park's values and a consideration of the park area, practically yard by yard with respect to its value as nature reserve or in connection with its use for public recreation. A party of three scientists Dr. H.F. Lewis, Mr. W.E.D. Halliday and Dr. H.A. Senn was sent to the point to make an investigation and report.

VEGETATION

Since I was able to cover the entire area of the point it is felt that there is some occasion for setting down an independent description of the vegetation, together with a discussion of the problems of its conservation. A convenient geographical classification is used instead of the vegetational regions used by the special investigators of 1939.

It should be pointed out that, because of the high water table, sandy soil and exposed position of the point, vegetation develops as clumps, where trees and shrubs combine to form a dense unit. These are particularly marked on the beach, but in the interior of the park the stands of vegetation are still units and interference with part causes loss of the whole. In the course of preparing campgrounds in the past, limbing, brushing and clearing of vines and ground vegetation has been practised. The trees were left, but they soon start to go down. Every one that falls makes it just so much harder for the rest to hold on, and sooner or later they all go. In campground areas this clearing is necessary, but its extension beyond absolute necessity not only destroys natural conditions but initiates a chain of events ending in the destruction of the forest. If the openings created are large, soil instability sets in. It should never be forgotten that the point is fundamentally unstable, and has varied in size and shape within historical times. It could conceivably blow back into the lake which produced it.

Description

South tip of point to parking grounds and life-saving station

This includes the sand spit at the end of the point and a narrow patch of bush with sand beach on both sides. The sand spit is as short now as it has ever been, and some of the planted willows are undergoing wave erosion. However, the prospect of lower water gives hope that it may again build up, in which case every effort should be made to establish willows on the point. The bush, or "jungle", is in fair shape now, although wood has been removed from it in the past. It should be left scrupulously untouched both for its value in fixing the point and for its value as a bird sanctuary. With the possible exception of Bonaventure Island there is no more famous spot for birds in Canada. On a good morning in the May migration it simply

boils with birds and the confusion of songs and calls is indescribable. The number of individual birds that pass through is enormous. It might be mentioned that there I saw the only banded bird I have ever observed in the field away from the actual vicinity of a banding station, a female yellow warbler. This "jungle" could not be fenced but it can at least be left undisturbed. Large numbers of people pass on either side of it, but few enter it.

Region of the life-saving station, refreshment booth, and road end

This is bound to be the region of maximum human use for the whole point. Facilities for parking and picnicking are essential, and their improvement is always a legimate activity. For protection against sand movement the thickets on either side should be maintained, with necessary paths through them.

Region bounded by main roads, nature reserve, east beach and parking area at end of point including Post house

The region immediately north of this parking area has a secondary road along the east and south sides. It is open on the east side but becomes a "jungle" on the side touching the main road. So long as public use of this region does not break down the soil I do not think the vegetation will suffer. The removal of cactus should not be tolerated, however, and the thickets west of the secondary road and immediately south of the Post house should not be disturbed. There are at present some vine-clad cedars in it that have fallen, but are just as good cover now as they were when alive, and in my opinion their removal is unnecessary, (photograph).

Between west beach and main road from life savers' house to Grubb fishery

As this area is by far the best piece of shore jungle along the west beach it should be given every protection, and windfalls left in position except where they are on or very close to the road. It seems possible at present to keep this section in its natural condition without fencing. Undoubtedly it would be better to have the incinerator in some environment less restricted than this narrow strip of woods. The best spot would be at the back of some of the farms near the west side of the marsh. Incidentally, it is felt that it is inconsistent with the preservation of natural conditions to expect the point to continue indefinitely to supply wood for incinerator and other fuel, and for other purposes. Other sources will be needed.

The East Beach

The east beach must be looked upon as one of the most unstable portions of the park. There are some large trees towards the south end, but these gradually thin out and finally there is nothing but a scrubby border to the marsh. The lake has broken through into the marsh many times in the past and could easily do so again. Nevertheless there is evidence that clumping of vegetation is

beginning, and with it soil stability. Every encouragement should be given to these clumps. The vines and shrubs should certainly not be cut, and it is to be expected that human use will develop certain paths and parking grounds more than others.

The last piece of the road, north of the place where it last passes close to Lake Pond, is subject to wave action and had sand washed over it this spring. It is of doubtful value.

One of the disadvantages of uncontrolled burning of the marsh in 1942 was seen in the occasional inroads of fire into the scanty vegetation of the east beach (photograph). All this vegetation is needed to fix the beach.

Sparse as is the cover of the east beach, the barest portion at the north end was chosen by the buck of the party of three deer living in the park for his abode during the fawning season. Undoubtedly he took shelter in unburnt portions of the marsh. I never saw him.

West border of the marsh, back of private property

The woods and willow clumps along the west border of the marsh are assumed to belong to the park rather than to the farms that they border on the west. The border of the marsh is very thick in some places and well provided with wild life. As a matter of fact the two does of the band of deer established within the park within the last year chose this region for their fawning season abode, and I was able to jump them one morning near the south end of it, about 300 yards from the cross road. They crossed a fringe of the Tilden property.

This area is crossed by several ditches and boat channels leading to private lands.

Main block of private lands

West of the area just mentioned is a solid stretch of private farm lands of considerable extent. Some of them in small fruits and vegetables, are quite productive, although the bulk, being in orchard, must be subject to the vicissitudes of the apple market at the present. One stretch of hardwood bush, the Tilden bush, (formerly part of the Baird estate) is of sufficiently high quality that its preservation as a sample of the southern hardwood forest is desirable. It has been culled in the past and some material is still being removed. It is neither as large nor as impressive as the Post woods, but is nevertheless of great interest. Nearby is a very good stand of red cedars on some parallel sand or gravel ridges, one of the most vigorous stands on the point. It might also be mentioned that most of the Indian relics for which the point is famous are found on the private lands. These relics would be much better housed in a local museum than dispersed and lost as is the case with many at present.

Area enclosed by main roads.

This is one area which has suffered severely from

trimming, pruning and brushing. In consequence, windfalls are severe and it is continually becoming more open. It is considered that brushing and clearing has been carried too far. In the centre of the northern part of the area, the part most subject to windfall, the ground is uneven and there is no evidence of camping. This portion might well be allowed to revert to brush. Throughout the Camp 6 and Camp 8 areas, except where the whole ground space is needed for camps, young cedar, pine and hardwood should be allowed to grow up without limbing. However, since the area has suffered from windfall camping should be concentrated in these camps in compensation for certain others where it is undesirable.

West beach, from Cross Road to forks, Camps 6 and 7

This section consists of a shore jungle broken by a number of paths and roads to the beach, with camp areas along the road. It is evidently fairly well used and so long as the present bushy areas are not disturbed it might be considered as in good condition except for the inevitable results of clearing, namely, windfalls and more windfalls. The pines are overmature, but here as elsewhere the continual loss of cedars fills one with regret.

South end of Camp 3, Camps 4 and 5

This is a splendid dry site forest, including the only pine regeneration and the best mature pine and dry site hardwoods in the park. This area, for a distance of one mile, especially the widest portion, has been less disturbed by pruning and brushing than the lands adjacent and it is strongly recommended that it be considered a natural area. This would mean that all clearing and brushing and the removal of windfall should cease. There is much driving around in this area so that fencing may be needed. Some windfalls were noted. Whether they had been deliberately left or overlooked is not known, but it is hoped that it is the former. There are a number of big old trees, many of them hollow, that add a great deal to the value of the area and should be left in place when they fall, as they will over the years, one by one.

Camps 1, 2 and 3 (north portion)

This comprises the rest of the park--a narrow strip along the west beach. Occupation by campers is quite heavy, and a good portion of the area is obviously destined for their use. At the same time the distance between lake and marsh is so small that this strip needs to be carefully watched for soil drifting, and the clumps of vegetation on shore should be carefully preserved. Any serious soil drifting should be checked by allowing ground cover around it to grow and perhaps also by planting some cedars. The area includes the park workshops. Immediately north of the latter are some dunes, actually the highest lands in the park. These should be left as far as possible in their natural condition in order to fix them. On some of them the ground cover is just beginning to break down because of some old cleaning. This was done in an irregular and amateurish way, and may possibly not have been done under direction. At any rate it is undesirable. These dunes are too irregular for camping and it is considered that they

should be left completely undisturbed.

Summary

As a general recommendation it is here suggested that within the camp grounds those areas as yet uncleared should be maintained. It is on the edges of such areas that poison ivy is worse. The suggestion is made that when windfalls in camps and along the roads are being cleared up, some of the brush, instead of being burned, might be piled over the worse poison ivy beds on the edges of the thickets. It is understood that windfalls are only to be removed when on the cleared portion of camp areas and along roads. It is also recommended that all areas threatened with soil drifting should be planted and allowed to revert to thicket. If they are so much used that this is impossible then they should be sodded--an expensive procedure, but necessary.

The west beach camp areas are best adapted to picnicking. The suggestion is here made that if the main road were paved and surfaced parking spaces were developed there would be less tendency for picnickers to drive all over the bush and it would be easier to concentrate them on lands destined and designated for their use. This would be a means of protecting the natural thickets.

Conditions in the park are evidently better than those observed by previous investigators. Undoubtedly the reduced volume of tourist traffic has something to do with this, but the carefully worked-out policies of the Department are equally respondible. It will be a matter of great interest to watch the working out of this policy in the future.

Photographs

1. Clearing, first stage. Trees are limbed and ground cover removed.

2. Clearing, second stage. The vegetational unit has been destroyed and the part left, the trees, are weakened and doomed.

3. Clearing, third stage. Few down trees were lying around the cleared areas at the time of this investigation, because clean-up operations were advanced, but this is typical of what happens.

4. Down cedar in jungle just south of Post House; it should be left.

5. Encroachment of marsh fire on vegetation on the east beach.

6. North-east corner of the Park.

7. Clumped vegetation developing on east beach.

8. Well developed jungle on west side of park. This should be preserved.

Nature Reserve

Particular attention was paid to the property recently fenced as a nature reserve. This was in accordance with instructions received from the Controller. The purpose for which this property, lying between the cross road and the Post house, and the main road and the east beach, was enclosed was to protect one of the best areas of natural southern hardwood and associated vegetation in Canada from damage by picnickers and others, and to restrict disturbance to those actually interested in seeing the plants and animals.

The area falls naturally into four sections:

1. The leased orchard.

2. The black walnut plantation: This was found to be in good condition. There was about 70 or 75 per cent survival of the seedlings, which are now well established. The dying-out was restricted to certain patches which would seem in consequence to be less suitable for the growth of this species. I would not recommend filling the gaps immediately. The clearing of the site was good and there is no turf in it now. This has the desirable effect of removing the danger of mice during critical early years. It will be desirable to clear out some sumach this year and perhaps for a few more years, but at present cultivation hardly seems necessary. One possible menace is the cottontail rabbit, present in large numbers. However, there is a good supply of predatory mammals and birds on the area and they should go a long way towards keeping the rabbits permanently below the danger point.

3. The mature woods: This block is in splendid condition and is rapidly assuming the appearance of an untouched primeval forest. However, the ground clearings at the old Camp 10 grounds have not yet been renewed by natural regeneration. There are a score of large trees and some of intermediate and smaller sizes that have fallen since the removal of such material was stopped. In time they will give the area the large rotten logs on the ground, now conspicuously missing. At first sight it is a matter of interest to see that these windfalls have had the effect of concealing some of the stumps and clearings caused by the removal of trees in past years. On second consideration, however, it is evident that the windfalls are due in part to the gaps in the cover caused by these operations and would have been much less numerous without them. They are most numerous in the narrowest, hence most exposed, end of the woods. It is felt, therefore, that the removal of trees from the mature hardwood bush should be considered a most serious matter.

The chief purpose for which the trees were removed was to make beach-protection groynes on the east beach, and something of the sort is clearly necessary. It is difficult to assess the true value of the groynes now, because water levels are falling, but they were evidently effective during a part of the most recent high-water period. In this connection I would like to refer to the cement and rock groynes on Pelee Island described in the Forty-fifth Annual Report of the Ontario Bureau of Mines. It is suggested that

The building of groynes of this type would be a suitable post-war rehabilitation project. There is still one serious erosion spot at the present stage of water, and there the groynes are not holding.

There was plenty of evidence that the few deer on the Point had discovered these woods and this serves to emphasize the fact that these animals need careful watching. A very few deer will satisfy the needs of Point Pelee.

4. Secondary woods, mostly along the west fence: These woods and brushy areas are in excellent condition and very favourable for some of the most truly southern animals and plants in the Pelee fauna and flora. Some clearing operations of times past are gradually being erased by natural growth.

In connection with this reserve I recommend:

1. Completion of the fence. A gate can be left for Mr. Langell. In this connection I would suggest that a number of the cedar posts resulting from windfalls on roadsides and camps might well be reserved for use by the park as required.

2. Opening a register book for those using it, each one being told that it is not for picnics.

Marsh Management, with particular reference to the Present Scarcity of Muskrats.

Well over half my time in the park was spent in and around the marsh. The park punt was kept on the east side of the big pond for the purpose of carrying out this work. On the afternoon of April 30 I was guided around the marsh by a local fisherman, Mr. Charles Tverne. Mr. Tverne's co-operation was very helpful. He takes an intelligent interest in the marsh and in obtaining factual information regarding conditions there. Interesting information was also obtained from the provincial game warden, Mr. Frank Oper, and from several park residents.

The recent history of the muskrat is that in 1942 the Superintendent recommended that, as had been done in the past, permits be issued to bona fide residents of Point Pelee to trap muskrats during the provincial open season under certain restrictions. The number of muskrats to be taken was set at 3,000. Actually only 166 muskrats were taken, and the Superintendent quoted trappers as blaming this shortage on the depredations of mink.

This constitutes a rather unsatisfactory introduction to a discussion of the Point Pelee Marsh on which our files contain much information. With this information, and with material from other sources I wish to incorporate my own findings.

Point Pelee is chiefly famous for migratory wild life, and at the time it became a park resident forms were at a low ebb. It seems to have had a hunting population which kept wild life reduced to a much lower

level than was true of less favoured spots in Essex County at large. In spite of the amount of wild land at the Point the wild turkey, for example, became extinct there twenty years before it had vanished from some other parts of Essex County. At that time there was much wild land in the county at large, but agricultural development has been so great in the Lake Erie region that Point Pelee is the only wild area left in Essex County, and by far the best sample of the Southern Hardwood forest formation left in Canada. This type of forest was found in Canada only along the shores of Lake Erie and is associated with climatic conditions permitting the occurrence of this region only of certain non-forest-dwelling wild life forms. When the park was established resident game and fur species included only cottontail, muskrat and quail. Fox, mink, and raccoon were rare or gone. Raccoon soon became re-established but fox and mink did not enter into the wildlife picture during the first twenty years of park history. The general wild life conditions will be dealt with elsewhere, but fox, mink and raccoon have been mentioned in connection with the present shortage of muskrats.

The Point Pelee marsh covers a large portion of the park. Its area is about 3,000 acres, of which only about half is muskrat range. Before the park was established it had been used by local residents as a muskrat trapping ground, and by residents and visitors for duck shooting. Both of these practices are incompatible with the principles of a national park, but have been permitted at Point Pelee. Duck shooting was specifically permitted when the park was established. Muskrat trapping was allowed when requested during the second season, after the park was established, after a year's agitation on the part of local residents. It was represented that the muskrats were damaging the dyke at the north edge of the park, that Point Pelee had enjoyed the privilege of trapping muskrats continually in the past, and also that there was an abundant supply of muskrats. Trapping was restricted to bona fide residents of the point and a limit of 3,000 muskrats was set, the Department receiving 25% of the proceeds. These conditions are substantially the same as those enforced on all subsequent occasions when trapping was permitted. It should be noted that the justification for trapping under the Parks Act is based on the assumption that the muskrats are destructive.

During the 1920 trapping season only 1090 muskrats were taken instead of 3,000 anticipated. The then Superintendent, F.H. Conover, maintained that the muskrat population on the point depended on the water level, with the depth of freezing as a contributing factor. He stated that when water levels dropped many muskrats were confined to their houses by freezing of the exit passages in the muck. They either perished there or got out on top of the ice and wandered helplessly over the countryside. During 1921,1922 and 1923 he reported low water and unfavourable conditions for muskrats and no trapping was allowed. In 1924 the residents of the point, resenting their exclusion from trapping circulated

a petition stating that muskrats were abundant and trapping should be allowed. A report by a Departmental Officer, J. N. Stinson, fully confirmed the Superintendent's statements, but trapping was allowed none the less. A 2,000 limit was set, and when only 689 rats were taken the Superintendent had every reason to consider his judgment confirmed. Against his better judgment the Department again permitted trapping in 1925. The limit was set at 1,000, but only 340 were taken. As the Superintendent said, conditions were not good for rats. During these years of low water there are several references to hides of muskrats found dead on the uplands in winter being salvaged. The exodus of rats from the marsh is familiar to every resident of Point Pelee.

In 1927, after a year's respite, trapping was allowed again, and there was an improvement in the numbers of muskrats as well as in conditions in the marsh. A 1,000 limit was set and 826 were taken. In 1928 the limit catch was finally attained. In 1929 there were 625 rats sold and in 1930 the 1,000 limit was exceeded by 200. In 1931 the limit was off, and 2,067 rats were taken. In 1932 the limit was set at 4,000 and there actually was a catch of 2,890. Then water conditions deteriorated. In 1933 the Superintendent of the time realized that all was not well as it had been and lowered the limit to 2,500, but the trappers got only 678.

From this season on until 1938 the record bespeaks only low water and bad years. The phrase "ponds dry" occurs. Apparently in this time also there again occurred emigrations of muskrats from the marsh. In 1938 the Superintendent noted some improvement in the muskrat population and in the following year the residents again petitioned for trapping privileges. That the muskrats had increased was evident when 3,137 were taken on a limit of 3,000. In 1940 the limit was set at 6,000 and 3,200 were taken. In 1941 the goal was again 6,000 and only 1,312 were taken. In the present year a 3,000 limit was set and after 166 rats were taken it became evident that there was a great shortage and trapping was stopped. The 1940 figure of 3,200 was evidently a maximum catch in a good year and probably means a population of about five rats to the acre of good rat land.

It is at once evident that something similar to what has happened now has happened twice before in the history of the park, roughly in 1920 and 1933. It is also evident that trapping is only a secondary factor in the control of rat numbers in the marsh. The cessation of trapping has never brought a great and immediate increase nor has the restricted trapping of low populations prevented their increase. It seems unlikely that mink would have any more effect. As we have already seen, there were no mink in the marsh until recent years, and they could thus have had no part in the previous shortages of muskrats. It is interesting to note that there has never been any suggestion of disease, although the records show that when muskrats are very abundant they are heavily infested with ectoparasites.

The writer made an examination of every section of the marsh in April-May, 1942. At this time nothing

like a house census could be attempted, but it was evident that there was not a large enough number of 1941-built houses to begin to justify the limit of 3,000 set for the 1942 season. Muskrats were not abundant in the fall of 1941; they must have been comparatively scarce. They were more abundant in the fall of 1940, houses of this date being much more common. In April-May, 1942, water had recently risen and was a foot above the level at which the 1941 houses were built. The nest chambers were thus mostly submerged, and it is thus not surprising that there were practically no signs of muskrats occupying houses. Only about three of the houses seen could possibly have been occupied. There were some signs of muskrats at large in the marsh, but they were scarce and only one muskrat was actually seen. Supposedly occupied houses were not opened because of the scarcity of muskrats. Most of the old houses contained nothing. Mr. Charles Tverne, who had given the Superintendent information about mink depredations, was actually able to dig the remains of a mink-killed muskrat out of an old house. He stated that he had seen many places in mid-winter where mink had killed muskrats.

There was much old sign of mink but very little fresh. Fresh sign of mink was seen at only one place in the marsh, and there also remains of a freshly devoured Florida gallinule were found. Fresh tracks of mink were seen on the Marantette property beyond the north-east corner of the park. It was evident that mink were comparatively uncommon in the marsh, but that they had been common recently. Winter sign showed plainly that they had been feeding on muskrat in winter. Foxes were not common in the park, raccons were abundant and weasels and skunks evidently not uncommon. A number of dead turtles were seen in the marsh, evidently left from the winter, and a fairly fresh dead coot was found. A sick (unwounded) black duck was seen in the marsh, and on the end of the point a sick loon was seen. There was nothing extraordinary in these observations, except that the dead turtles suggested abnormal conditions under the ice during the winter. There were still many turtles left in the marsh.

I was informed that the only other muskrat marshes in south Essex, Cedar Creek and Big Creek, had had practically no rats this spring. Bradley's marsh on Lake St. Clair had a large number but water levels in this marsh are maintained by pumping, not possible at Pelee, and the muskrats are fed. The fact that the rat shortage was not confined to Point Pelee at once suggests that it had nothing to do with the park and that therefore it constitutes no reason for changing any park policy.

The history of the muskrat population is roughly as follows:

1919-20	decreasing, but not scarce.
1921-25	low.
1926-32	increasing or high.
1932-36	(?) decreasing or low.
1937(?)-40	increasing or high.
1941-42	decreasing and low.

The factors at work insofar as they are known may be assessed as follows:

Water Level

Through the kindness of the Chief of the Hydrographic Service of this Department, complete information on the water level of Lake Erie, on which the marsh depends, has been obtained. There is evidently sometimes a lag in the seepage, so that the marsh is higher or lower than the lake. This factor is one that might be investigated with a view to seeing whether or not the outlet should be reopened from time to time, as is often suggested, but it is not a condition for which any allowance can be made in this study.

It should be explained that the sand barrier between the lake and the marsh, known as the east beach, consists of a layer of sand over old marsh muck, which might cause a slower seepage than pure sand. There is a continual drift of sand into the fringe of the marsh, caused by wind action, and in many places this wind-borne sand has killed the marsh vegetation on the east side. This gradually builds up, while on the outside the lake wears it away. The lake now rolls over areas which were once marsh just as farther down the point it rolls over the former site of a thriving orchard.

We are thus forced by lack of data to neglect the lag between lake and marsh level due to the impermeability of the beach, but on the whole it can hardly be very important. Examination of the data for the lake shows that every year the lake is highest in the open part of the year and lowest in winter. It is apparent that for the muskrats the crucial level is the lowest reached during the time when the marsh is frozen.

The following comparison results:

Year	Lowest monthly mean of closed part of year	Change in level during year	Muskrats
1918-19	571.97	up	
1919-20	570.51	down	decreasing
1920-21	571.59	slight up	low
1921-22	570.99	slight down	low
1922-23	570.62	down	low
1923-24	570.87	slight up	low
1924-25	570.28	down	low
1925-26	569.73	slight up	low
1926-27	570.76	up	increasing?
1927-28	571.37	up	increasing
1928-29	571.88	up	increasing
1929-30	572.84	high level	increasing
1930-31	570.63	down	high
1931-32	570.86	slight up	high
1932-33	570.67	down	decreasing
1933-34	569.40	down	decreasing
1934-35	569.39	slight up	low
1935-36	569.41	slight up	low
1936-37	570.12	up	low?
1937-38	570.63	high level	increasing
1938-39	570.92	high level	increasing
1939-40	570.31	slight down	high
1940-41	571.00	down	decreasing
1941-42	570.48	probably down	low

There is certainly a co-relation. When it is remembered that the rat information is only a rough guess and not a census it is seen that more accurate analysis is impossible. The muskrat population follows closer to the general trend of water level than it does to the extreme low, the latter figure being possibly not always the same in lake and marsh.

Since trends in water levels and muskrat populations are similar there may be assumed to be a relationship between them.

Freezing

Data on ice thicknesses are not available. We have however, a set of temperature figures available, published by the Ontario Department of Agriculture in their annual summary of agricultural conditions. The place is Chatham, near enough to Pelee that the trend is probably the same. Granted that only the broadest possible comparison may be made between these data, it is evident that temperature, probably as acting on depth of freezing may well be a factor in the muskrat population control. It is seen that this must be considered along with water levels. When the water level is high it is evident that low temperatures are of little importance, and when the water level is down temperatures above average do not save the day.

The principal years of muskrat decrease are characterized by both low temperatures and dropping water levels. These are 1919-20, 1933-34 and 1940-41. Some of the best muskrat years are likewise marked by high water levels and high temperatures, for example 1929-1932. However, during the recent muskrat high the temperatures were not particularly high, but the water level was very good.

In the table below the monthly mean temperatures for Chatham are given along with the trend in water level and the trend in the muskrat population. I have underlined all mean temperatures above freezing and below 20°F.

Temperature: Monthly Means, Chatham, Ontario, (Fahrenheit)

	Dec.	Jan.	Feb.	Trend in Water level	Muskrats
1918-19	34.9	30.0	28.2	up	
1919-20	21.8	16.4	22.0	down	decreasing
1920-21	32.0	29.2	29.1	slight up	low
1921-22	30.6	23.9	28.3	slight down	low
1922-23	28.1	25.4	20.5	down	low
1923-24	37.6	21.5	24.8	slight up	low
1924-25	24.5	21.6	30.2	down	low
1925-26	26.7	24.2	25.8	slight up	low
1926-27	26.5	24.0	31.8	up	increasing?
1927-28	30.1	25.5	27.3	up	increasing
1928-29	33.0	21.1	23.1	up	increasing

	Dec.	Jan.	Feb.	Trend in Water level	Muskrats
1929-30	27.1	23.0	32.5	high level	increasing
1930-31	28.7	27.6	32.2	down	high
1931-32	36.9	36.4	34.1	slight up	high
1932-33	30.0	34.5	28.6	down	decreasing
1933-34	28.3	29.3	15.4	down	decreasing
1934-35	27.0	24.7	26.6	slight up	low
1935-36	25.8	22.3	15.9	slight up	low
1936-37	31.4	29.3	28.3	up	low?
1937-38	25.0	23.8	30.4	high level	increasing
1938-39	28.9	26.1	26.3	high level	increasing
1939-40	33.1	17.8	25.3	slight down	high
1940-41	10.9	not available		down	decreasing
1941-42	not available			probably down,	low

Burning

The question of marsh burning is discussed below. On the basis of the small amount of evidence available one hesitates to make a positive statement but burning seems to have had no effect on muskrats. Where, as in the case of the Sanctuary Pond, a fire actually makes a new pond where formerly a marshy meadow stood, it is obviously helping the muskrats, but it would not thus control their fluctuations.

Disease

There is no evidence of disease. This spring there was evidence that many turtles had died in the marsh in winter, but the cause of this is assumed to be low water possibly combined with deeper than average freezing.

When muskrats emigrate from the marsh as they often have done they die of starvation or are killed by predators.

Predators

Many predatory animals take muskrats from time to time, but the depredations of most are not important. The muskrats are not ordinarily active by day. Owls and raccoons undoubtedly make forays into the marsh at night. There are one or two pairs of great horned owls on the point but their forays over the marsh must be rare. On the other hand their value in controlling rabbits is great. Raccoons make extensive forays into the marsh, visiting all parts of it. Some may even spend much of their time in it. However, there is little evidence of depredations on muskrats. Snapping turtles are not uncommon and may kill a few muskrats. On the dyke I saw a domestic duck escape from the grasp of a medium-sized snapper and on the strength of this observation would consider that a wild duck or a muskrat could have escaped even more easily. The largest old mossbacks could catch ducks or muskrats, but there is every reason for believing that the more sluggish fishes and amphibia are much more often taken, and they are much more readily available.

The only predatory animal that is seriously considered in connection with the decline of the muskrat population is the mink. Mink are very fond of muskrat flesh and presumably hunt and kill them regularly.

Studies of the food habits of mink have shown that in summer they feed very little on warm-blooded animals, but in winter these become their chief source of food. Mice are most important, but muskrats and rabbits also have a place.

It has already been pointed out that mink reappeared in the park in recent years, and that the two previous muskrat decreases, much as they resembled the present one, could not be ascribed to mink. As a matter of fact, mink are present in most of the muskrat marshes in Canada and the United States, and there is no evidence that they have a controlling influence on the number of muskrats anywhere. Studies have shown that under normal conditions the number of muskrats taken by mink is proportional to the available supply of muskrats; and when the latter are scarce the mink kill very few. It is, however, possible to have abnormal conditions under which even a low population of muskrats will be preyed on by mink. A paper "Reactions of muskrat populations to drought" by Paul L. Errington (Ecology, Vol.20, 1939, P.P.168-186) reports such a condition.

Low water levels left a muskrat population so exposed that losses from mink were heavy. Errington points out, however, that most of these muskrats were doomed anyway. It is considered that this was the case at Point Pelee in the winter of 1941-42. The muskrats with their normal foraging house-exits closed by low water and frost were unable to escape when the mink attacked them. Had there been no mink they would have ended up wandering over the park uplands, as they had done so often in the past. There is certainly no grounds for belief that mink are a controlling factor on muskrats at Point Pelee when they are not elsewhere.

At present time mink are not abundant in the marsh. In 1941 there were 24 taken in muskrat traps during the muskrat season. In 1942 there were 2 mink so taken. In both years there has been a large catch of mink just outside the park, on the dyke and in the drainage ditches, by very efficient methods. Mr. Chas. Tverne, who spent half a day with me in the marsh, is the principal mink hunter. It is probable that most of the park mink often wander outside and the fact that mink are not common in the park now is due to the number caught outside. Since mink wander widely, and since opportunities to capture them are afforded by their wanderings outside the park, and since local trappers have acquired a high degree of skill in mink hunting under local conditions within the few years since mink have put in an appearance it is not considered necessary to make further trapping concessions by allowing trapping for mink in the park.

Summary

With regard to muskrat shortages at Point Pelee the following facts are evident:

1. The Point Pelee Marsh, including ponds, has an area of some 3,000 acres. Its water level fluctuates with Lake Erie.

2. Of this area open ponds and wet meadows, extremes

unfavourable to muskrats, reduce the actual first class muskrat range to about 1,000 acres. On this range it is doubtful if the population has ever greatly exceeded 5,000. In 1940, a record year, the actual catch fell far short of the 6,000 limit. It is evident that the rats had even then started to decrease, and that 1939, when there was a 3,000 limit, was really the record year, but granting this, the muskrat population must be lower than the estimates usually made.

3. Really high populations occur only when the water level is high.

4. Decreases in the muskrat population come about through lowering of water levels often combined with restrictions of their winter foraging ability by freezing of underwater passages.

5. Such events are characterized by winter wanderings of muskrats above the ice. In recent years they have been characterized by increased depredations of mink. These depredations are not the basic cause of muskrat scarcity.

Recommendation

It is recommended that the marsh be closed to trapping for two years, if not longer. In the meantime an annual winter house census should be made, based on parallel compass lines. The distribution of marsh vegetation should be mapped at the same time.

General Consdierations

Apart from the question of muskrat scarcity there are a number of questions of marsh management which ought to be considered.

Burning the marsh

A great many people believe that the marsh should be burned over annually. In 1925 and in 1934 it was actually burned deliberately after recommendation and approval. "Unofficial" fires have taken place in 1919, 1920, 1922, 1925, 1928, 1935, 1936, 1941 and 1942. At present well over half the area is burnt by fires consuming only last year's dead stalks. It is necessary to consider the effect of burning on certain plant communities as opposed to the obvious removal of vegetation which would otherwise choke the marsh. The most potent argument in favour of burning is the present sanctuary pond. It was a dry meadow when it caught fire in August, 1936, and burned to mineral soil. When the water level rose next year it became a pond and was immediately the best concentration point for rare birds in the whole marsh. It was, however, a very special sort of fire. Only a thorough study of the marsh protracted over several years could give information adequate enough for a recommendation. It is likely that the final verdict would favour leaving some areas unburnt while burning others, but the type of information now available does not allow any conclusion.

Outlet and East Beach

The fact that there is a reputed lag between the water level of the marsh and that of the lake has been mentioned, as well as the fact that suggestions are often made that the outlet be reopened. This may or may not be desirable. There is no information available on which to base an opinion in view of the great number of factors that need consideration.

The slow encroachment of the east beach on the marsh has also been described. In my opinion a dense willow jungle should be established along the inner margin of the east beach to protect the marsh.

Duck Shooting

When Point Pelee National Park was first established, the question of whether or not duck shooting should be continued was considered in the light of conditions obtaining at the time, and the matter was left open by arrangements being made for duck shooting on certain days in the open season, a policy carefully observed since. The question involves more than the management of Point Pelee National Park, however, for this is one of the most important breeding and resting grounds for waterfowl in eastern Canada. In recent years the population of ducks on the continent has diminished, as compared with that of the early years of the park, and this together with the importance of the Point as a stopping place, especially for some of the depleted species, lead to the conclusion that shooting should be curtailed. The concession in favour of duck shooting is unique in our park system.

Duck Blinds

At present there are in the marsh a large number of semi-permanent structures such as the one illustrated, made of wattles on a wood frame, with canvas and even sheet metal used in some instances. Many of them have a wooden floor. These structures are not particularly sightly, and it is my understanding that in the early days of the park they were not allowed. Many of them could quite fairly be described as buildings. Their removal would improve the appearance of the marsh.

Sanctuary

In August, 1936, a fire at the north west corner of the marsh burned out vegetable detritus down to the mineral soil. The area had previously been a sort of wet weedy meadow, but in 1937, with improved water levels it became a pond. It is not connected with the main pond system.

From the first it became the chosen haunt of egrets, snowy herons and othdr rare birds, including a scarlet ibis, a species not previously known in Canada. In order to protect this pond from intrusion, duck-hunting privileges were withdrawn from it.

Photographs

1. Unburnt marsh, note limited visibility.

2. Burnt marsh. Note visibility.

3. Unburnt strip in marsh.

4. Burnt marsh, willows probably killed.

5. East beach, wind and waves; tracks of European hare on sand.

6. Sick black duck.

7. Sick black duck, skulking.

8. Sick black duck, captured by Mr. Tverne.

9. Mallard duck nest in sanctuary.

10. Mink hole in an old rat house; the feather is part of fresh remains of a gallinule.

11. Duck blind.

Birds and Mannals.

The purpose of this section is to summarize general observations on birds and mammals made April 29-May 9, at Point Pelee National Park, especially in regard to their relation to the value of the area as a park.

Birds- Species observed numbered 132, of which 94 were seen on May 8 alone. The migration had not yet reached its height. Special notes are as follows:-

Black-crowned Night Heron- This species nests on Pelee Island. It is thought likely that it is beginning to nest on the Point, although no proof is at hand.

Mallard- A number are nesting in the marsh, particularly in the Sanctuary, where two nests, both of 9 eggs, were shown to me by Mr. Tverne.

Black Duck- Evidently nesting in numbers, but no nests were found.

Gadwall- One pair at least was present continuously, obviously not nesting.

Baldpate- Present in numbers, apparently not nesting.

Blue-winged Teal- Evidently nesting in fair numbers, but no nests were found.

Shoveller- Seen only on April 29.

Wood Duck- Seen only April 29.

Ring-necked Duck- Seen only April 29.

Canvas-back- Seen only May 1.

Greater Scaup Duck- Present continuously, but not nesting.

Lesser Scaup Duck- Present up to May 2.

Buffle-head- Seen only May 1.

Ruddy Duck- Present up to May 5.

Red-breasted Merganser- Flocks of hundreds present continuously.

Turkey Vulture- As many as four seen at once.

Bald Eagle- Two immatures seen at once on various days.

Bob-white- Reported, but not seen by me. The point is obviously much less suited for this species than it used to be. The cultivation of truck crops makes for absence of cover in the fields in crucial weeks, and the development of camp grounds has removed the ground cover from the interior of the park, nearest the fields, where the bob-white need it. They find some shelter in the grape vines along the shore, where I can recall seeing them on a previous visit, but this is not near enough to the fields.

Ring-necked Pheasant- Very abundant. In view of the fact that the point is not a hunting area the pheasant is as abundant as need be, and it is obvious that natural enemies have not killed any significant number.

Willet- Two on the east beach, May 2.

Caspian Tern- Observed May 1.

Carolina Wren- Present in the Nature Reserve.

Hooded Warbler- Observed May 5.

Blue-gray Gnatcatcher- Abundant in migration.

Leconte's Sparrow- Observed May 3.

Mammals.

Prairie Mole- Runways in all the dry portions of the point, in woods and fields, and in bare sand patches, often running down to the lake. This species has been recorded at Kingsville and Harrow, but is common in Canada only at Point Pelee.

Red Fox- A few tracks were seen and foxes are evidently not rare. The residents know only of red foxes and the gray fox evidently does not occur.

Raccoon- Abundant. One was seen.

Skunk- Not uncommon. Tracks were seen regularly on the shores.

Mink- Reported elsewhere. Abundant within the year, but now reduced in numbers.

New York Weasel- Two seen. Evidently not uncommon.

Woodchuck- Not uncommon.

Muskrat- Reported elsewhere.

Meadow-mouse- Common at time of visit. A large number of these animals must have been destroyed by marsh fires.

Baird's Mouse- Common. One was caught in the Langell Orchard.

Meadow Jumping Mouse- One was seen along the border of the marsh.

European Hare- One was seen near the end of the point, and tracks were abundant on both beaches.

Cottontail Rabbit- Abundant.

White-tailed Deer- The Superintendent told me when I arrived that during the winter he had seen a deer track on the point and that two deer had been seen outside the park about the same time. I later learned that deer had recently been seen inside the park.

Field work showed signs of deer all around the marsh and in various other parts of the park and private lands. A rainstorm showed that there was at the time of my visit a buck living on the east beach and two does on the southwest border of the marsh. This was evidently a fawning-season segregation. The two does were seen by me on May 8.

These animals certainly once lived in the park area, but their return is not a cause for unmixed rejoicing. At Rondeau Provincial Park the hardwood forest regeneration was wiped out for years by deer and they could do it just as easily at Point Pelee. Their increase should be closely watched and checked at the least sign of damage.

Incidentally, I was told that there was a coyote-like animal seen at the point within the year, and while I was there, there was a track on the nature reserve of an animal which could have been a coyote, but might just as easily have been a dog. Dog tracks are often seen, and some of them had obviously been wandering at night and hunting. Dogs encountered in the woods were very friendly and seemed to sense that I was interested in wild life. The Superintendent complains of the difficulty of enforcing the regulations which prohibit dogs running at large in the park, but permit it on private lands.

Recommendations.

1. It is recommended that a careful watch be kept

on deer. On May 9, they numbered three. At present they probably have had a fawn increase, and may even number seven head.

2. It is recommended that two species formerly present in the park be re-introduced, namely the wild turkey and the ruffed grouse. Both were once abundant but were shot out. Conditions now are considered quite favourable for the wild turkey, especially if a natural area is left in the pine-oak forest. The fenced nature area would give them the undisturbed mid-day and night roost that they require and there are plenty of feeding grounds which they could visit undisturbed in the early hours of the morning. All in all, the point is considered as favourable for wild turkeys now as it was in the days of their abundance. At any rate, it would be well worth while trying them. The advice of the U.S. Fish and Wildlife Service might be sought regarding stock.

Ruffed grouse would probably also be successful, although it must be admitted that the best area is not in the park. Rather, it is the Tilden bush, where a thriving young cedar forest exists close to a hardwood bush. The edge of the mature hardwood forest in the present nature reserve would be suitable as would also be the section nearest the main road.

Ruffed grouse for Point Pelee should be obtained as near as possible to the park, because the grouse of this region were certainly of the highly coloured southern type, and not the Canada ruffed grouse. The nearest centre of abundance known to me is Norfolk County, but they may be found closer to Point Pelee than that. They should be taken under permit from the Ontario Government by some competent person under the control of this Department.

If coniferous trees were established in the Langell Orchard the success of ruffed grouse would be beyond doubt.

POINT PELEE NATIONAL PARK

0 ¼ ½ ¾ 1 MILE
(Scale Approx.)

SITUATED IN THE COUNTY OF ESSEX ONT.

Clarke, C. H. D.
Biological investigation of Point Pelee National Park, 1942.

TITLE

DATE LOANED	BORROWER'S NAME