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CHANGES IN THE DISTRIBUTION OF THE SNOWSHOE HARE IN SOUTHERN ONTARIO

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Near the limits of an animal's distribution there is often a marginal zone in which the species exists in low numbers. This is attributed to environmental conditions becoming increasingly marginal as the range boundary is approached. Since snowshoe hare populations seemed to be reduced near the range boundary, efforts were made to obtain further data about the actual distribution of the species along its southern range boundary and about environmental factors prevailing in and around the areas inhabited by hares. This paper deals with a description of the past and present status of snowshoe hares (*Lepus americanus* Erxl.) in southern Ontario, while another paper will discuss the influence of environmental factors on the status of the species in more detail (de Vos, Austin and Mason, MS).

Since pioneer days, the snowshoe hare has disappeared from many parts of the east and mid-west as a result of clearing forests for agricultural land. In the Great Lakes area this has resulted in a recession of the range northward.

In Michigan snowshoe hares were once found over the entire state, but they are now restricted to an area north of a line west of Saginaw Bay (Burt, 1948). In Wisconsin, the species formerly occurred in favorable habitats in the central and southeastern parts of the state. The south boundary did not retract further in a northerly direction after 1930 (Leopold, 1947). It now runs through the center part of the state, although hares are absent also from the counties along the Wisconsin River.

Several papers refer to the early status of the snowshoe hare in Ontario. These include those written by Brooks (1905), Clarke (1944), Fleming (1913), Snyder (1930) and Soper (1923). Much information about the biology of the species is contained in the paper by MacLulich (1937). Peterson (1957) describes changes in the mammalian fauna of Ontario.

The southern boundary of the snowshoe hare in Ontario has been gradually receding northward over the past half century or more. It seems likely that before white settlement started the species was present throughout most or all of southern Ontario where it was a resident mainly of evergreen swamps (Saunders, 1932). In Figure 1, various locations are indicated where these hares were present after the turn of the century, but had disappeared

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before 1931. Further, the southern boundary is shown as it was considered to be about 1931. Hares were then absent from large sections along the north shores of Lake Erie and Lake Ontario. Finally, the distribution is given for the year 1961.

Data regarding the distribution of snowshoe hares in southern Ontario were obtained from personnel of the Ontario Department of Lands and Forests, from other individuals who had knowledge of the situation, from the literature, and questionnaires of the Royal Ontario Museum covering the period 1931-34. These data were screened as much as was possible for their validity. Letters reporting various observations are on file in the Department of Zoology of the Ontario Agricultural College. Since 1953 the author and various students visited numerous swamps within a driving distance of forty miles from Guelph to ascertain the presence of snowshoe hares.

STATUS DURING THE 1930'S

Hares were reported absent during the 1930's from the following counties: Essex, Kent, Lambton, Elgin, Haldimand, Welland and Lincoln. Apparently in the 1920's Wainfleet Swamp west of Welland was still frequented by a good population. Hares became extinct in Welland County around 1929 (R.O.M. records).

The species was considered very scarce or locally present in the tier of counties including Middlesex, Oxford, Norfolk, Brant, Wentworth, Halton, Peel and York. W. E. Saunders (1934) reported that there were almost no hares within a fifteen mile radius around London. According to C. H. D. Clarke (*pers. comm.*) hares were very numerous in 1921 in the Komoka Swamp, situated about 20 miles west of London. Hares were also present in Dorchester Swamp, east of London in the 1920's (H. Zavitz, *pers. comm.*). The last hare recorded for the southern part of Norfolk County was killed in 1932 in Charlotville Township (Hall, *pers. comm.*). While hares were still common in the northern part of Oxford County in 1934, they were rare (R.O.M. records). The only two places where hares were recorded to occur in Brant County in 1931 were Burford Swamp and Lynden Swamp. The main stronghold for hares in Wentworth County was Beverley Swamp. In Halton County, hares were absent from the southern one-third. In Peel County snowshoe hares were still abundant in 1931 around Caledon, rare north of Brampton and absent south of there. In York County hares were absent within a fifteen mile radius from the city limits of Toronto, but still common in the central and northern parts of the County.

In the tier of counties north of those discussed, hares were still locally abundant mainly in isolated swamps, but they had disappeared from the urban and intensely cultivated agricultural areas. In Huron, Perth, Waterloo, Ontario and Durham counties, hares were absent or rare in the southern parts, but still locally abundant in the northern parts. In Durham County, north of the village of Hampton, hares were abundant in the mid-twenties in a cedar swamp (A. E. Allin, *pers. comm.*). In Northhumberland County, hares had also become quite scarce due to much hunting (O. E. Kelly, *pers. comm.*).

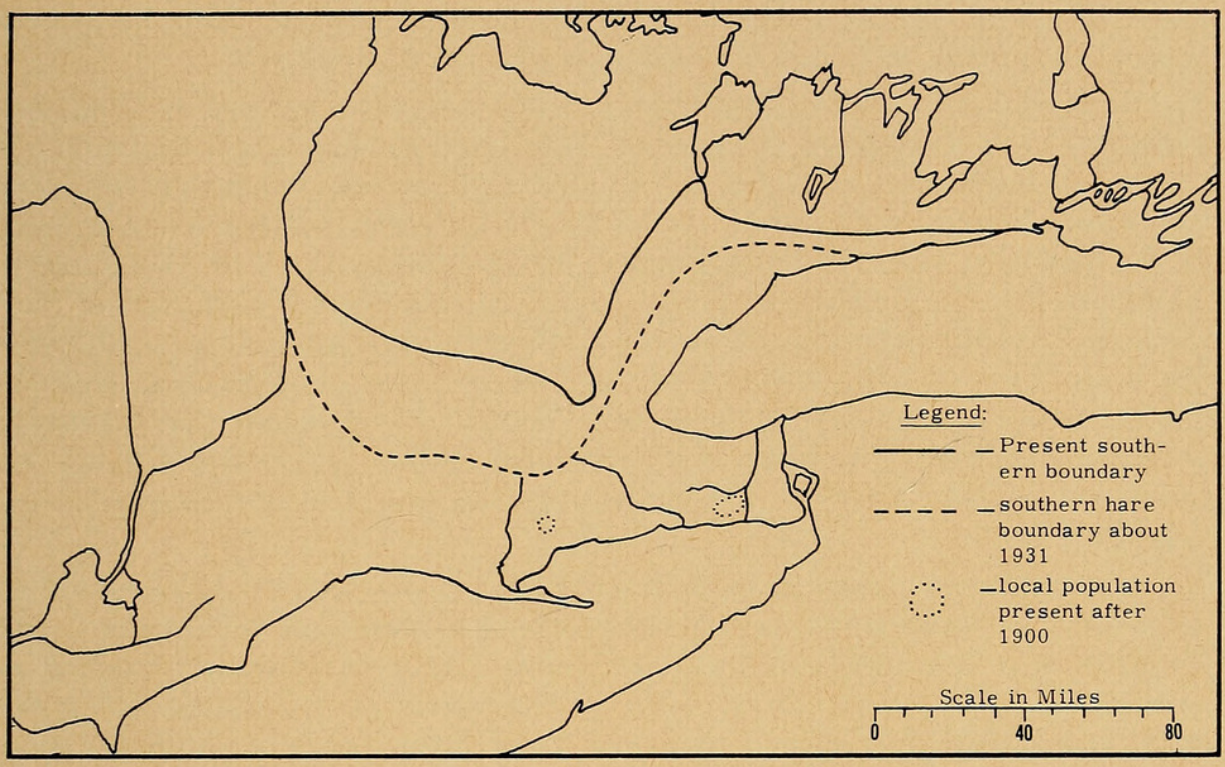

Figure 1. The present and past distribution of snowshoe hares in southern Ontario.

In Prince Edward County hares were scarce. On February 12, 1937 one track was seen in a swamp near Hillier and during the winter 1936-7 six hares were reported shot (Snyder, 1941).

Status, period 1940-1950

It appears from data obtained regarding the distribution of the snowshoe hare covering the period 1940-1950 that the range continued to shrink, although more gradually than during preceeding decades.

In Waterloo County, a few hares remained in the Philipsburg area near New Hamburg (Nith Valley Conservation Report, 1951). In the winter of 1939-40, a few hares were seen and shot in the Roseville Swamp, a few miles west of Galt (P. C. Hilborn, *pers. comm.*). In Wellington County, a few hares were shot in Puslinch Township in the southern part of the Township (Wm. Steele, *pers. comm.*). In Brant County two hares were shot in 1950 in Oakland Township, Concession IV. No reports could be obtained of observations in York County south of Newmarket since about 1949.

Status, period 1950-present

A reduction of range of the snowshoe hare took place at a slower pace than during the period 1940-1950, and apparently consisted mainly of a few small populations becoming extinct in isolated swamps. The first account of a spread in range comes from Prince Edward County where hares have been observed in at least three isolated colonies since the winter of 1960-61 (Depart-

ment of Lands and Forests records). Reference will be made to a few observations made in places where hares were considered rare.

In the nothern part of Waterloo County few hares survive in Wellesley and Woolwich Townships (Report of Department of Lands and Forests). A few hare tracks were seen by A. de Vos in Beverley Swamp, Wentworth County on February 21, 1956. A few hares survive in isolated woodlot areas in the northern part of York County (D. Johnston, H. Van Wyck, *pers. comm.*). Mr. J. J. Armstrong saw what he considered a snowshoe hare track in a swamp in Oakland Township, Brant County, on February 27, 1960. Mr. Harold Reeve (*pers. comm.*) reported two isolated populations in Durham County south of highway no. 2 in 1955. Mr. F. M. Helleiner (*pers. comm.*) observed one hare two miles north of Glen Major in Ontario County on January 22, 1950. In 1958, J. Catcher reported one shot in Caledon Township, Peel County.

During recent years, as was the case during previous decades, snowshoe hares are uncommon or rare along the southern boundary of the species. The distribution is scattered, and hares are mainly restricted to poorly drained or swampy areas in which there is heavy coniferous cover. Stands of white cedar, black and white spruce, or a mixture of these, appear to offer the most suitable habitat.

In order to obtain a clearer picture of the recent distribution of the species along its south boundary, large swampy forest areas in the southern and central part of Wellington County were searched systematically for the presence of snowshoe hares. In Figure 2 are shown the various locations which were visited between 1952 and 1958. The location, vegetation, size of the area, and the presence of hares were recorded on each visit. Of the sixty-seven locations visited twenty-two did not contain hares. The areas which did not contain hares were generally more open and contained predominantly white elm, trembling aspen, willows and red maple, although some also consisted largely of mature white cedar, spruce or hemlock. Several woodlots, overgrazed by livestock, did not contain hares. A glance at Figure 2 shows how discontinuous the distribution of hares is in the southern part of the County.

Snowshoe hares fluctuate in numbers at fairly regular intervals attaining a relatively high abundance every nine to eleven years (MacLulich, *op. cit.*). During periods of abundance certain individuals will egress from their preferred habitat which may initiate either a permanent or a temporary extension of range, depending on environmental conditions in the newly occupied range.

It appears that man's activities in modifying the habitat have produced the necessary change to eliminate hares.

Reasons for the reduction in range of the species in southern Ontario include drainage and other man-made changes in the vegetation of swampy areas. Particularly the removal of white cedar, but also to a lesser extent of other conifers, has had an influence on diminishing suitable range conditions. Other reasons are depletion of suitable food and cover by overgrazing of livestock and overshooting of isolated populations of hares.

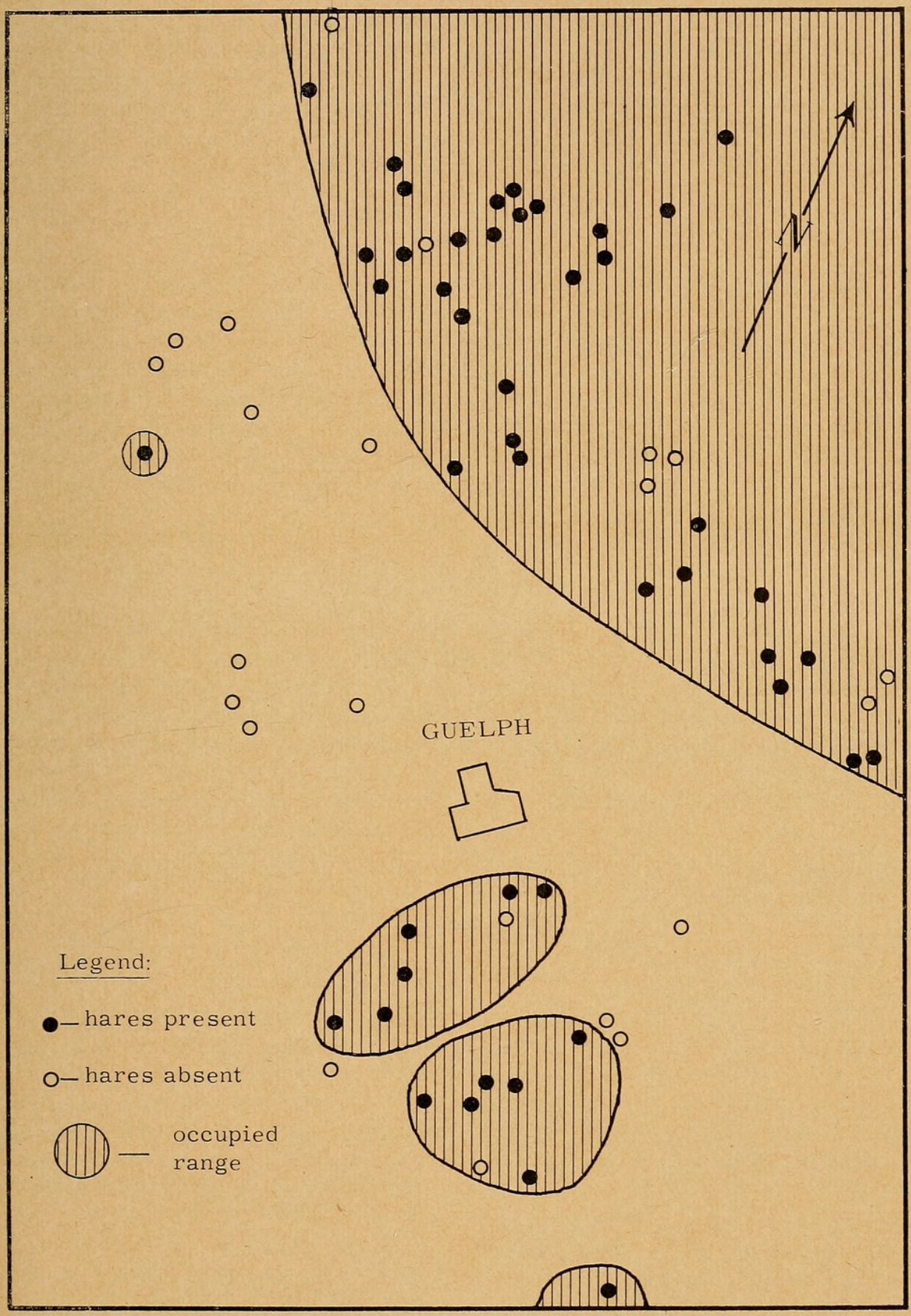

Figure 2. Distribution of snowshoe hares in the vicinity of Guelph, Ontario, 1960. Scale 1 inch = approximately 5 miles.

Reforestation efforts during recent decades and farm desertion may change the trend reported on in this paper. Recent evidence indicates that some reforested areas in the Lake Simcoe Forest District are being re-occupied. Thus there is no stable southern limit to the distribution of snowshoe hares, but rather it is fluctuating within a marginal zone. Occupancy of habitat can be favourably or unfavourably altered by man's activities.

SUMMARY

Changes in the distribution of the snowshoe hare are described for southern Ontario, covering the period 1930 to the present. The species has receded in range in a northerly direction during that period. Reduction in range may have come to a halt and there is some evidence that limited range extension is taking place, particularly where reforestation and farm desertion is in progress. Reasons for reduction in range include drainage and changes in the vegetation of swampy areas by logging and overgrazing by livestock, as well as overshooting of isolated populations. Occupancy of habitat can be favourably and unfavourably altered by man's activities.

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NESTING OF THE YELLOW RAIL IN SOUTHWESTERN MANITOBA

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On June 11, 1962, I flushed two Yellow Rails, *Coturnicops noveboracensis*, from the edge of a boggy area, about two miles from the city of Brandon, Manitoba. This type of wetland is known in western Canada as "buffalo-wallows", and is usually in the form of a regular succession of grassy hummocks and water-filled depressions. As this was the first time I had ever encountered this rail, after more than forty-five years of birding in the Brandon area, I determined to research the species. I was aided in this work by a house guest, Oscar M. Root, of North Andover, Massachusetts.

By June 22 I had found four areas each of which harbored one pair of Yellow Rails. These four locations were within one mile or less of each other, and all were subjected to thorough searches for nests, during the last part of June and the first two weeks of July.

I chose Area Two for the first search, since the spot is by far the smallest, about 1½ acres in extent, and has very little willow or other concealing growth in it. I entered this expanse of sedgy humps-and-hollows early in the morning of June 17, and at 9:30 found my first nest of the Yellow Rail. Angus H. Shortt, of Winnipeg, Manitoba, tells me that this is Manitoba's first recorded nest of this species. Containing four eggs, it was sunk into the crown of a low hummock, was made entirely of dead grass, had a canopy of last year's sedge grass overhanging it, and was further hidden by the growth of new, green, sedge grass. Only the glint of sun on eggs betrayed the nest.

The nest-hummock was surrounded by eight inches of water, and the small opening into the nest was only several inches above water-level. The