A SURVEY OF THE PRAIRIES AND SAVANNAS OF SOUTHERN ONTARIO

Wasyl Bakowsky
Gore & Storrie Ltd., Cambridge, Ontario N1S 2M6;
and
John L. Riley
Ontario Ministry of Natural Resources, Aurora, Ontario L4G 3G8.

Abstract. The prairie peninsula extended into southern Ontario, and large prairie outliers were described by early surveyors and botanists. They were frequent in the near-shore areas of the lower Great Lakes, near Windsor, Chatham, Lake St. Clair, Walpole Island, Leamington, Turkey Point, and Toronto. They also occurred at inland sites, such as near London, St. Thomas, Delhi, Brantford, Dumfries Township, Lake Simcoe, Rice Lake and Peterborough. The coincidence of some prairies with portages, ancient lake bluffs and camps suggest that aboriginal peoples' use of fire, as well as natural fires and warmer- and drier-than-normal site conditions, played a role in the persistence of prairies here. Paleoecological studies show that the oak savannas that attracted some of the earliest agricultural settlers developed after 6000 BP north of Lake Erie. Many of the remaining prairies have been studied in the last 20 years and, in 1992, an assessment of prairie and savanna natural areas was commissioned by the Ontario Ministry of Natural Resources. The survey will characterize the history and ecology of southern Ontario's prairies; rank, describe and map the remaining sites; identify those already protected; and recommend the most significant sites as Areas of Natural and Scientific Interest and conservation lands.

INTRODUCTION

The earliest descriptions of prairie and savanna in southern Ontario suggest a scale of occurrence that is difficult to read from the modern landscape, so totally has it been converted to agricultural and urban land uses. This historical aspect of the ecology of southern Ontario is still not widely realized, and assumptions about complete forest coverage and the forest-clearing labours of early settlers remain deeply ingrained. The purpose of this survey is to review and analyze the status and extent of prairie, oak savanna and woodland vegetation in southern Ontario. Although these communities occur today mostly as tiny fragments of their original area, they continue to support a high complement of provincially rare species. In order to protect the floristic diversity and physiognomic structure existing within these remnants, many sites need to be protected.

In this study, physiographic regions of Ontario containing prairie and oak savanna are identified. Within each region, remnants are examined and evaluated, on the basis of physiognomic type, species associations, site substrate and moisture. High-quality remnants within both protected and unprotected sites are identified. Unprotected sites which contain representation of communities not present within protected sites are nominated as provincially significant Areas of Natural and Scientific Interest (ANSIs) to encourage the conservation of these remnants.

Historical References and Modern Remnants

Three hundred and twenty years ago, in 1670, Galinee mapped prairie vegetation during his voyage along the Great Lakes, noting "prairies" at the base of Long Point on Lake Erie. He also mapped "prairies seches" (dry prairies) near Brantford, and "grand prairies" (extensive prairies) along the eastern shore of Lake St. Clair and Walpole Island (Lajeunesse 1960).

Sarnia - Windsor Area (St. Clair and Detroit Rivers, Lambton and Essex Counties)

In 1679, the explorer Louis Hennepin wrote of the lands along the Detroit and St. Clair Rivers:

> The banks of the streight are vast meadows, and the prospect is terminated with some hills covered with vineyards, trees bearing good fruit, groves and forests, so well disposed that one would think nature alone could not have made, without the help of art.
>
> Thwaites 1903

The most significant area left in the vicinity of the St. Clair river is the unequalled expanse of prairie and savanna of the Walpole Island Indian Reserve (Figure 1).

The Windsor area was visited by deLery in 1749, and he wrote:

> The lands on the east side of the river are bordered by prairies in such as way that the inhabitants have no wood to cut in order to clear their fields and sow their grain. It is only necessary to plough the land and to cut down some shrubs.
>
> Lajeunesse 1960

One of the first botanical descriptions of the prairies of southwestern Ontario was made by John Macoun in 1893:

> In a sandy field at the southern end of Sandwich [near Windsor]...a garden of rarities was entered and in a few minutes our portfolio was filled with good things. The most interesting were *Liatris spicata, Lythrum alatum,*

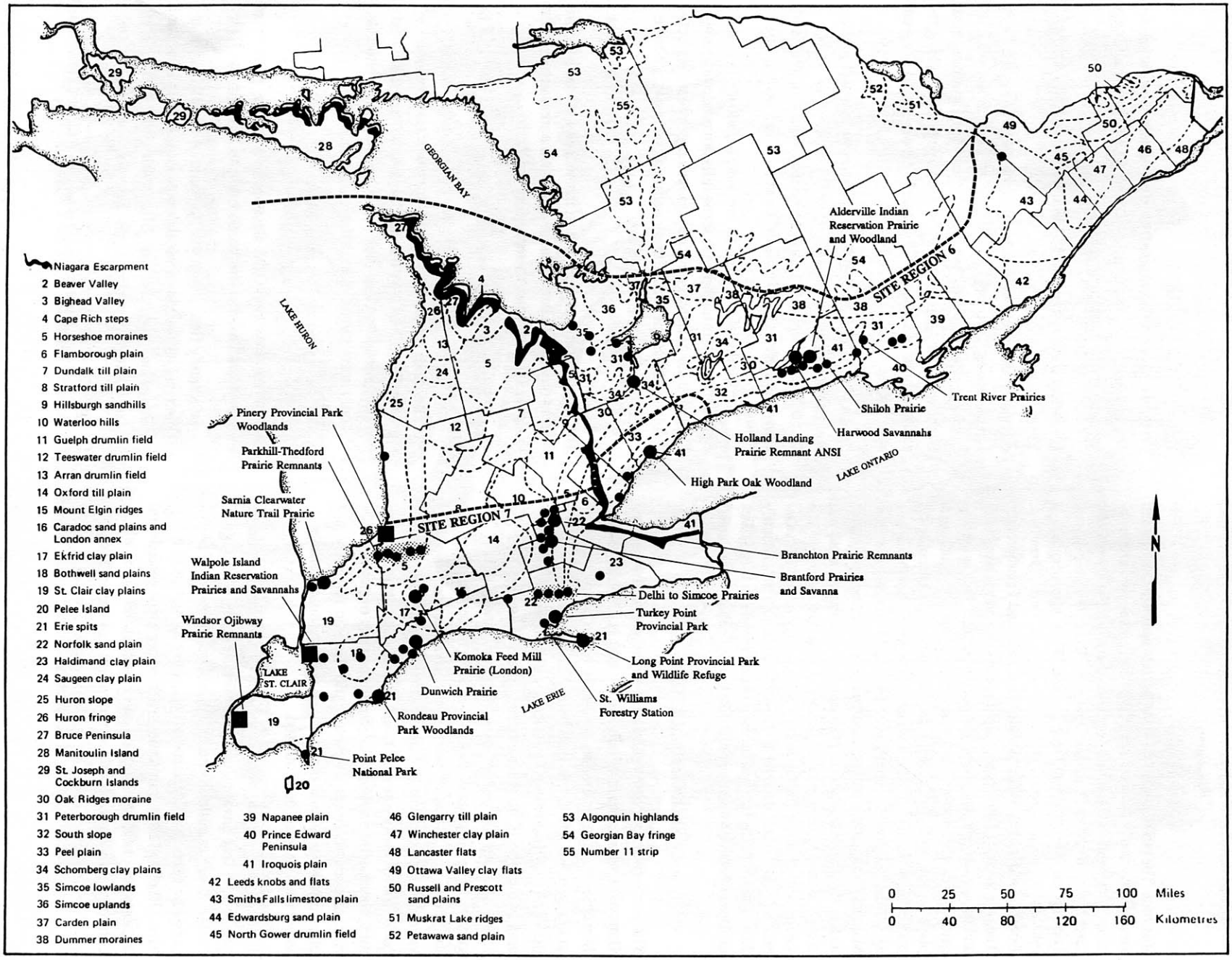

FIGURE 1

LOCATIONS OF PRAIRIE, SAVANNAH AND WOODLAND IN SOUTHERN REGION

LEGEND

------- PHYSIOGRAPHIC REGIONS

- - - - - - SITE REGION BOUNDARY

■ EXTENSIVE INTACT REMNANTS

● LARGE REMNANTS (1-2 ha>)

• SMALLER REMNANTS

SOURCE: Physiographic regions after Chapman and Putnam, 1984; Site Regions after Hills, 1966.

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DATE: | PAGE:

Aletris farinosa, Polygala incarnata, Hypoxis hirsuta, Ludwigia alternifolia, Veronicastrum virginicum, and at least a dozen others.

The surveyor Patrick McNiff (1792) mentioned that "a sandy barrren plain" extended from the foot of Lincoln Road in Windsor south to the River Canard marshes, 18 km to the south. It is estimated that plains occupied 45 square km in this area. The best known of the remaining southern Ontario prairies are, of course, in the Windsor area, the Ojibway Prairie Provincial Nature Reserve and Prairie Remnants ANSI.

Kent County

The land surveyor Patrick McNiff described portions of Kent County in the 1790's. Inland from Walpole, near Baldoon, he described the land as prairie bordering the creeks, with wooded lands at some distance from them (Lumsden 1966). From McNiff's notes, Lauriston (1952) described the lower Thames River in Kent County near Chatham:

> On each side and for a distance of 6 miles upstream were extensive meadows and marshes without any wood except for a few scattered trees. To the Dover side the marshes and meadows extended north northeast as far as the eye could see. ...Eight miles up...on the south side in general up to near the forks, the woodland does not extend back from the Thames more than 30 acres, in many places not so far; then commenced a plain.

Robert Stevenson wrote in 1843 of the land along the Thames downstream of Chatham (Guillet 1963).

> The land on its banks is about the richest I ever saw in any country. Six or seven feet deep of earth that would do for a garden, and extensive grass plains stretching for miles into the country, without a tree save here and there a small clump like an island in the plain - the grass, particularly that called blue joint, furnishes excellent pasture and hay.

These 'meadows' were described elsewhere as, "for the most part, flooded in the spring" (Strickland 1853). Similar wet prairies occurred along western Lake Erie in a continuous strip from Sandusky Bay west and north almost to Detroit (Mayfield 1988). Little of these Kent and Essex prairies remain. Small remnants are present at Rondeau Provincial Park, and tiny ones are found along railways and river bluffs (Figure 1).

Lambton County

Along the Lake Huron shoreline and nearshore areas in Lambton County, are the oak - pine savannas and woodlands of Pinery Provincial Park and the Port Franks area. Historically, this has been the habitat of the provincially endangered Karner blue butterfly *(Lycaeides melissa samuelis)*, which may now be extirpated. Elsewhere in Lambton, an outstanding, but small prairie persists along a rail right-of-way in Sarnia known as the Sarnia Clearwater Nature Trail (Figure 1).

Middlesex County

Patrick McNiff wrote the following passage in his notes during his survey of the Thames River in the 1790's:

> In this second and principal Fork of this River, in the angle formed by the two Streams is said to be a very extensive plain quite high and dry, where had formerly been a large Indian Village.

Today, small prairie openings occur on rim crests along the Thames River valley, and along railway lines and adjacent areas near Komoka (Figure 1).

Elgin County

Sandy areas near St. Thomas were described by the naturalist William Pope in his diary of 1842:

> The oak Plains appear to be pretty much settled about here...These Oak Openings or plains as they are called are much the prettiest parts of the country hereabouts...Many spots put one in mind of an English Park....

Although no remnants are presently known from St. Thomas, they are present to the west along a railway to the west in the Township of Dunwich (Figure 1).

Regional Municipality of Haldimand-Norfolk

Eastward, small but significant areas of oak-pine woodland with tiny prairie openings persist in the Turkey Point and St. Williams areas (Figure 1). A map of this area was sketched about 1795, attributed to Mrs. Simcoe, wife of Lieutenant Governor Simcoe. It showed the route he travelled from Turkey Point to London, characterized on the map as a route "thro open woods". According to original survey notes, this area formerly supported one of the most extensive areas of dry and dry-mesic prairies in southern Ontario, rivalling those from the Lake St. Clair - Thames River basin in terms of area.

Brant County and the Regional Municipality of Waterloo

Up the Grand River, near Brantford, Dumfries Township was frequently characterized by its surveyor Adrian Marlett in 1816 and 1817 as containing "oak plains", "white and black oak plains", "open plains" and "burnt plains" (Wood 1961).

In 1824, this area was also described by Colonel Edward Talbot:

> ...There are extensive tracts of land almost wholly free from any sort of timber. Such land is commonly called

"Plains", and is for the most part of a light sandy nature, badly watered, and greatly inferior to the timbered land. There are, however, many small tracts of this kind of a very luxuriant quality. ...From the Indian settlement on the River Ouse [near the present Brantford], to the village of Burford, a distance of nearly 13 miles there is not an acre of woodland to be seen, and yet, in this tract alone, there are at least 100,000 acres. ...They are tastefully interspersed with clumps of White Oak, Pine and Poplar-trees, which give them more the appearance of extensive parks, planted by the hand of man, than of uncultivated wilds.

The plains west of Brantford were described in 1834, by the naturalist William Pope:

...Timber scattered in single trees and small patches in mostly oak. Indians were formerly accustomed to set fire to the brushwood in order to clear the land that grass might more freely grow which furnished plenty of food for deer. Thus these animals were enticed from all the surrounding forest.

The side-oats grama grass *(Bouteloua curtipendula)* is especially characteristic of the present, tiny Brantford remnants, which are along old and abandoned rail lines, and the dry crests of river bluffs. Other outstanding examples are the savanna 'rough' of the Brantford Golf and Country Club, and a small perched prairie 'fen' on a groundwater seep along a glacial lake shoreline bluff (Figure 1). Although some prairie species have been collected from this area in the past, the true extent and quality of these sites have only been realized over the past 5 years.

A recent reconstruction of the presettlement vegetation of the Norfolk Sand Plain between Cambridge and Long Point (Szeicz and MacDonald 1991), based on historic survey data, mapped prairie and oak savanna on 15% of the Norfolk Sand Plain. Based on palynological evidence from a lake in an area of oak savanna, it was also concluded that savanna developed in the area between 6000 and 4000 years BP, and occurred there continuously until European settlement.

Regional Municipality of York

Eastward, on the sandy plain of postglacial Lake Iroquois around Toronto, Black Oak savannas and pine barrens dominated (Lizars 1913, Goldie 1819). Lizars wrote:

A stunted growth of gnarled oaks did not supply the whole attraction of these Plains, and dwarf cherry, sassafras and flowering shrubs rose from a ground covered with strawberry and a profusion of flowers. All descriptions of the tract speak of the startling orange lily and the masses of perennial lupine.

Karner blues occurred with the lupines *(Lupinus perennis)* in High Park until 1926, when the savanna was sprayed with weed killer. The lupine populations are now recovering, and restoration of about 45 ha of savanna is a top priority of the presently proposed park management plan (City of Toronto 1992, Varga 1988).

In 1819, the botanist John Goldie travelled in the Toronto (York) area. Walking from Scarborough to Toronto, he "entered into what in this part of the Country the People call a Pine Plain, but what in some of the States would be denominated a Pine Barren, which is a very appropriate name for such kind of land".

Around York, he noted,

The land is naturally dry and sandy; the summer is generally dry. After leaving York 3 miles [westward, in the High Park area], you come into a Sandy Pine Barren, which continues for five miles. This is as good a Botanical Spot as any that I ever was in. (Goldie's work two years earlier in the New Jersey pine barrens explains his familiarity with and interest in this vegetation.)

Goldie walked north up Yonge Street from Toronto to the Holland Landing, just south of Lake Simcoe.

June 27. Having gone on slowly I arrived at what is called the upper Landing Place...and have bespoken a week's lodging here, as I expect it is a spot very interesting for the Botanist. [July 4] Since I came here I have seen a number of rare plants and some of them are nondescripts - There are a species of *Asclepias* with orange flowers very handsome *[A. tuberosa]*, a species of *Euphorbium* with white flowers *[Euphorbia corollata]*, a *Ranunculus [R. rhomboideus*, prairie buttercup, here at Goldie's type location], together with some others which were not in flower, that I had never seen before.

The Holland Landing Prairie was a native encampment often mentioned in travellers' diaries because it was the northern terminus of the portage route from the Humber Plains and High Park on Lake Ontario to the Holland River. Hunter (1948) summarized these accounts:

The open space referred to by Galt and other early writers was used as a camping-ground by the early Indians and fur-traders. Here could be seen encamped at all seasons of the year large numbers of Indians, often from very remote districts of the upper lakes.

The Holland Landing prairie is publicly-owned, but was planted to pine a number of years ago, which must be cleared if the prairie flora is to survive there (Gould 1988).

Simcoe County

Elsewhere in the Lake Simcoe area, a few other small remnants of prairie persist, associated mostly with the sandy terraces of postglacial Lake Algonquin shorelines. These sites are probably remnants of prairie communities more widespread on the shores of the postglacial Great Lakes during the Hypsithermal climatic warming, maintained since then on drier- and warmer-than-normal sites, encouraged by the activities and the occupation of native peoples (Reznicek 1983).

Northumberland County

Eastward again, extensive oak savanna occurred on the rolling sand and kame deposits on the Oak Ridges Moraine south of Rice Lake, and on the sandy till plains and drumlins adjacent to the moraine. Catherine Parr Traill was one of Canada's first female botanists, and lived for 11 years on the south side of Rice Lake. She gained fame from books such as 'Canadian Wildflowers', 'The Backwoods of Canada' and 'Studies of Plant Life in Canada, or Gleanings from Forest, Lake and Plain'. In 1836 she wrote:

> We now ascended the plains - a fine elevation of land - for many miles scantily clothed with oaks, and here and there bushy pines, with other trees and shrubs. The soil is in some places sandy, but varies...considerably in different parts, and is covered by large tracts of rich herbage, affording abundance of the finest pasture for cattle. A number of exquisite flowers and shrubs adorn these plains, which rival any garden in beauty during the spring and summer months. Many of these plants are peculiar to the plains, and are rarely met with in any other situation. The trees, too, though inferior in size to those in the forests, are more picturesque, growing in groups or singly, at considerable intervals, giving a sort of park-like appearance to this portion of the country.

The extent of these plains was also described by Samuel Strickland (1853) in his diary, as "the Rice Lake plains, which extend for nearly twenty miles along the south shore." Strickland crossed the plains on his northward journey to the lake and beyond, noting, "For nearly three miles our road lay through natural park-like scenery, flowery knolls, deep ravines and oak-crowned hills." Recent assessment of the extent of these plains based on historical records indicates that at least 172 square km, and possibly 250-300 square km may have been present here (Catling, Catling and McKay-Kuja, 1992).

Peterborough County

The surveyor John Smith (1827) described the area north of Rice Lake.

> The townships of Monaghan and Ottonabee...form the northern shores of the Rice Lake...and sandy plains skirt the Rice Lake shore.

The Town of Peterborough, which lies 20 km north of Rice Lake, was also in an area of relatively open plains, as Smith further wrote:

> The town-lot of Peterborough...being on an elevated sandy plain.

Traill (1836) described these same Peterborough plains a little more eloquently.

> These plains form a beautiful natural park, finely diversified with hill and dale, covered with a lovely green sward, enamelled with a variety of the most exquisite flowers, and planted, as if by Nature's own hand, with groups of feathery pines, oaks, balsams, poplars, and silver birches.

Other localities in this area which harbour relict prairie and savanna vegetation or species include Pontypool to the west of Rice Lake (Varga, pers. comm.), the Trent River (Catling, pers. comm.) and Healey Falls (Dore and McNeill 1980) to the east.

Paul Catling and Vivian Brownell recently made a search for remnants of this previously discounted prairie area, focusing on areas of sandy soils at high elevations. They concluded that much of that area supported something in the order of 1 mature tree per acre, and that, by 1860, only small isolated patches remained. Today, some of the best of the tiny, remaining prairies are on native lands, as they are at Walpole.

The Rice Lake plains were encouraged through burning by aboriginal peoples, who "made a practice of burning over tracts of these plainlands to promote the growth of the various grasses on which the deer fed ... Rice Lake is still called in their language 'The Lake of the Burning Plains'" (Traill 1885).

ABORIGINAL USE OF FIRE

The relationship of prairies and savannas with aboriginal land use is documented in historic accounts of campground and portage maintenance, habitat improvement for game animals, and agricultural land clearing (above references and Wood 1958, Chanasyk 1972, etc.) Fire was the customary technique.

Indian villages and campsites with prairie vegetation have been described from Windsor, Brantford, Holland Landing, DeGrassi Point and the Rice Lake Plains. A network of foot trails criss-crossed southern Ontario, often parallel to major waterways, such as the Thames, Grand and Trent-Severn. A

significant number were between waterways, such as those between Lake Simcoe and the Humber River, Hamilton west to Brantford and London, and Rice Lake to Lake Ontario. Other trails followed modern and glacial lake shorelines; the Mississauga Trail along Lake Ontario became Highway 2, Kingston Road and Danforth Avenue (Poulton pers. comm.), and others flanked Lakes Erie and Huron (Lajeunesse 1960). Trails and encampments were sites where fire was used, and several modern prairie remnants occur along them (Reznicek 1983).

Most of the historical accounts of interior prairies and savannas date from the early 19th Century, more than two centuries after the introduction of the Eurasian diseases literally decimated the aboriginal peoples and their cultures. This was also a period characterized by warring and radical disruption of the remnant aboriginal cultures of the Lower Great Lakes. It is reasonable to consider that natural and aboriginal-maintained prairies and savannas may have been even more extensive prior to first contact if such significant areas still remained after a period of a century or more of natural forest encroachment and regeneration.

RESULTS

Since prairie, oak savannah and woodland vegetation was formerly an integral part of Southern Region's pre-European settlement landscape, and their remnants today host a large proportion of the province's provincially rare flora and fauna (as well as providing valuable scientific information on post-glacial processes, climates, plant migrations, etc.), it is important that these be protected. Protection of a few such sites is not enough, as the diversity of community structure and species associations varies greatly across Southern Region. This study attempts to address this through the use of a physiographic classification to identify this diversity. The physiographic regions used in this report correspond to those delineated by Chapman and Putnam (1984). By using such a framework, both protected and unprotected sites can be analyzed to determine the degree they are represented within a physiographic region. Where vegetation types are not represented in protected sites, and are known to occur within a region, they are nominated as provincially significant ANSIs if their floristic quality, structure and extent warrants such a designation.

This report identifies twelve physiographic regions within Southern Region as containing provincially significant remnants of prairie, oak savannah or oak woodland vegetation. Eight such regions occur within Site Region 7 and five regions are found within Site Region 6. In Site Region 7, this vegetation has been identified from seven protected sites (related dune grasslands and savannahs are known from two other protected sites), and a further 9 sites are recommended as provincially significant ANSIs. In Site Region 6, one protected site is known to support some of this vegetation, and four additional sites are recommended as provincially significant ANSIs. All significant sites are listed in the following, grouped according to site region and physiographic region.

Site Region 7

Horseshoe Moraines (East)
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Branchton Prairie Remnants (prairies)

Caradoc Sand Plain and London Annex
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Komoka Feed Mill Prairie (prairies)

Bothwell Sand Plains
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Dunwich Prairie (prairies)

St. Clair Clay Plains
- Protected Sites:
  Ojibway Nature Reserve, Prairie Remnants ANSI,
  Windsor Municipal Parks - Ojibway Park,
  Tallgrass Prairie Heritage Park, Black Oak Heritage Park
  (prairies, savannahs and woodlands)
- Nominated Provincial ANSI:
  Walpole Island Indian Reservation
  (prairies, savannahs and woodlands);
  Reaume Street Prairie (prairie)

Erie Spits
- Protected Sites:
  Rondeau Provincial Park
  (oak savannah and woodlands, prairie-like dune grasslands);
  Long Point Provincial Park and Wildlife Refuge
  (cottonwood and red cedar dune savannahs);
  Point Pelee National Park
  (dune cedar savannahs)
- Nominated Provincial ANSI:
  none

Norfolk Sand Plain
- Protected Sites:
  Turkey Point Provincial Park (oak-pine woodland);
  St. Williams Forestry Station (oak-pine woodland)
- Nominated Provincial ANSIs:
  Brantford Prairies and Savannah (prairies, savannah, prairie fen);
  Delhi-Simcoe Prairies (prairies)

Huron Fringe
- Protected Sites:
  Pinery Provincial Park (oak savannah and woodland)
- Nominated Provincial ANSI:
  Sarnia Clearwater Nature Trail (prairies)

Iroquois Plain
- Protected Sites:
  High Park Oak Woodlands ANSI (oak woodlands)
- Nominated Provincial ANSI:
  none

Site Region 6

Oak Ridges Moraine
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Harwood Savannahs (savannah)

Peterborough Drumlin Field
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Alderville Indian Reservation Prairie and Woodland (prairie, oak woodland)

South Slope
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Shiloh Prairie (prairie)

Simcoe Lowlands
- Protected Sites:
  Holland Landing Prairie Remnant ANSI (prairie)
- Nominated Provincial ANSI:
  none

Iroquois Plain
- Protected Sites:
  none
- Nominated Provincial ANSI:
  Trent River Prairies (prairie)

DISCUSSION

Catherine Parr Traill wrote (1885):

> Before the plainlands above Rice Lake were enclosed and cultivated, the extensive grassy flats were brilliant with the azure hues of the Lupine in the months of June and July, but the progress of civilization sweeps the fair ornaments from the soil.

The prairies and savannas across southern Ontario were put under with great efficiency by our forebearers, and they remained largely unknown, and certainly unheralded, until the last 20 years. Some workers may have even discounted the historical literature. For example, for many years, James Herriott's collections of prairie species along the Grand River bluffs south of Cambridge were considered as too fantastic by some botanists, who rationalized them as introduced waifs along rail lines (e.g., *Silphium terebinthinaceum*).

The evidence of historic prairies remained in the geographic names of communities across southwestern Ontario. Prairie Siding, Plainsville, Fairfield Plain, "Church of the Paris Plains", Round Plains, Raleigh Plains, and Dover Plains are a few of the signposts left.

Most versions of Edgar Transeau's famous map of the prairie peninsula don't include any areas in southern Ontario, even though early versions of the map did, such as the one shown in Stuckey (1981). It included parts of the Bothwell and Norfolk Sand Plains, the St. Clair and Haldimand Clay Plains, and the Horseshoe Moraines.

To summarize, prairies and savannas were an extensive and outstanding feature of several large portions of southern Ontario. The extent of the losses of native prairie and savanna can be estimated from the few such reconstructions of pre-settlement vegetation, from paleoecological studies, and from estimates of the historic frequency of such ecosystems on certain soil types.

The present distribution of prairie and savanna remnants suggests the probable, pre-contact extent of prairie ecosystems. They occur principally on the sandy lake plains of modern Lakes Huron, Erie and Ontario, and, more rarely, on the shoreline bluffs of postglacial and modern lakes, and on some of the well-drained, sandy-gravelly kame moraines away from the lakes (Figure 1).

A great deal of attention has been drawn to the loss of wetland ecosystems in southern Ontario, based on estimates of 70% wetland loss since European settlement. A much greater percentage of prairies and savannas have been converted to

other uses. Manitoba completed studies concluding that they had lost 99% of their tallgrass prairies (Rowe 1990).

Maps of the presettlement vegetation of southwestern Ontario, based on the notes of original lot surveyors, have been prepared by Chanasyk (1972), Catling et al. (1992), Faber-Langendoen (1984), Faber-Langendoen and Maycock (1987), Lumsden (1966), Morsink (1978), Szeicz and MacDonald (1991) and Wood (1958, 1961). A series of unpublished county maps based on the original lot surveys, has also been assembled by Peter Finlay (1978), and is stored at the Southwestern Region Office of the Ministry of Culture and Communication, London, Ontario.

Based on these interpretations of surveyors' notes, the minimum area of 'open plains' is estimated to be 530 square km in southwestern Ontario (Essex, Kent, Lambton, Middlesex, Elgin, Haldimand-Norfolk, Oxford, Brant, Waterloo, Niagara, Hamilton-Wentworth). This represents 2.4% of the surface area of the region. In the Rice Lake area, at least 172 square km, and possibly as much as 250-300 square km was present.

This minimum estimate conflicts, however, with other historical accounts and maps, such as those of McNiff (1791) and Talbot (1824) above. It is undoubtedly an underestimate of the presettlement occurrence of prairies, for a number of reasons.

In the first surveys, lot surveyors recorded oak and pine-oak forests in many areas where numerous relict prairie and savanna communities even persist now. It is likely that much of the oak savanna was termed forest by surveyors, or the distinction was not made at all. For example, when Joseph Pickering noted that girdling of trees was the customary manner of clearing land on the Long Point plains in 1831, because the trees were often thirty yards apart and easy to avoid with the plough (Guillet 1963), those lands were likely surveyed as forested or wooded, rather than open.

Wood (1961) noted that European settlers may have viewed lands described as plains with suspicion, considering treelessness as a condition reflecting sterile soils. Would lands recorded at a registry office as forested be more attractive to new immigrants? On the other hand, Wood (1961) also noted that other settlers, chiefly those born in North America or with experience here, recognized the attractiveness of land which could be directly ploughed without prior clearing.

Finally, many prairies and savannas occurred as a mosaic within a larger forest matrix, on a scale smaller than a concession. In such situations, common to the prairie-woodland ecotone, the surveyor would have likely characterized the dominant forest vegetation.

At present, approximately 2100 ha of prairie, oak savanna and woodland remain in southern Ontario, most of it located at Walpole Island Indian Reservation (450 ha), the Windsor Ojibway Prairie Remnants ANSI (320 ha), and Pinery Provincial Park (1,250 ha). Based on the minimun estimate of 530 square km of prairie and savanna in southwestern Ontario, 3.8% of the area of this ecosystem **at the time of 19th century surveys**, remains. Because the extent of this vegetation, even at the time of lot surveys, was underestimated, a more accurate estimate would be that less than 0.5% of original prairies and savannas remain. Based on similar estimates, and even fewer, smaller relicts in the Rice Lake area, it is likely that less than 0.1% of former prairie and savanna ecosystems persist there (Catling, pers. comm.).

The losses are such that the remaining prairie ecosystems perform few if any of their original landscape functions with regard to mammals, birds, reptiles, and amphibians, although they continue to function as diverse, high-fidelity floristic ecosystems. The remnant sites are so small that declines in populations of dependent butterflies, such as the Karner blue and frosted elfin *(Incisalia irus)*, which may be considered cyclic occurrences in larger ecosystems, have recently become extinction events in southern Ontario.

The prairies and savannas of southern Ontario have now been studied in considerable detail by Paul Pratt (1979), Tony Reznicek (1983), Don Faber-Langendoen (1984, 1987), Paul Maycock (1987), Wasyl Bakowsky (1988), Paul Catling, Vivian Brownell and Sheila McKay-Kuja (1992), Gary Allen, Michael Oldham, Larry Lamb, Al Woodliffe, Don Kirk, Terry Crabe, Brent Tegler, Casey VandenBygaart, and others. The conservation imperative is clear.

Critical sites, such as the Windsor Ojibway Prairie Remnants ANSI, Pinery, Rondeau, Turkey Point, and High Park and others are formally conserved as parks and reserves, by provincial agencies, by the cities of Windsor and Toronto, and by several conservation authorities and non-government organizations. Active management is being taken to encourage the health and maintenance of prairie ecosystems at these sites, but the resources available for this work are limited.

The prairies of Walpole Island are an extraordinary legacy of our native people. In the last few years, considerable efforts have been made to share our collective knowledge of this ecosystem, so that the natural heritage of Walpole continues to be woven firmly into the land decisions of those land owners.

Other efforts at prairie protection and management have been taken by Ministry of Natural Resources staff on publicly owned lands, such as the Manester Property at St. Williams (former home of the Karner blue and frosted elfin), and by

private individuals, who have created and encouraged prairies. Overtures have been made by individuals, naturalists clubs and public agencies to municipalities, to argue for land use planning that is sensitive to the significance and maintenance of prairie remnants. This vigilance is very much required, especially in the case of railway lines which are being abandoned and potentially developed across the southwest.

CONCLUSION

The Ministry of Natural Resources has a project underway to assemble and review all the presently available information on the remaining prairies and savannas across southern Ontario. This report is intended to set priorities for the Ministry's conservation efforts for prairies and savannas, and to provide a useful overview and analysis for all the partners in prairie conservation.

Since the early 1980's, the Ministry has published a series of reports on the significant natural areas of each of more than a dozen site districts or ecodistricts across southern Ontario. The objective has been to identify the best remaining natural areas as a system of sites representative of the full diversity of Ontario's natural history. Some of those areas are in provincial and federal parks. The others, outside the park system, are known as Areas of Natural and Scientific Interest, or ANSIs.

As recently as the early 1980's, when the ANSI reports were done, prairies in Ontario were considered to be extremely rare and extremely small. For instance, the prairie remnants at Walpole, around Brantford, and south of Rice Lake were largely unknown to many biologists, academics and historians. As a result, prairies were not usually identified as a priority natural heritage theme in selecting ANSIs. Much better information is now available on prairies and savannas, and it is now appropriate to revisit the natural area data base for all southern Ontario, to document the best remaining prairies.

The present prairie and savanna study assembled the best available information on remnant prairie and savanna natural areas in each physiographic region (Chapman and Putnam 1984) for Site Regions (or ecoregions) 6 and 7 (Hills 1961). Sites with similar features have been compared with each other in terms of selection criteria such as diversity, ecological functions, condition and special features. They are contrasted with the dominant presettlement and modern vegetation-landform features of each physiographic region. The best sites meeting the selection criteria will be identified as ANSIs.

It is the policy of the Ministry of Natural Resources to encourage the protection of the significant natural heritage features of ANSIs. In itself, identification of a site as an ANSI confers no legal protection to a site. However, it establishes such sites as conservation priorities for the Ministry and others. Municipalities can exercise restrictive land use controls in Ontario under the *Planning Act*. The Ministry encourages municipalities to recognize ANSIs in their official plans, and, in some situations, intervenes in the planning process if an identified ANSI is compromised through developments authorized through the land use planning process.

The identification of private lands as ANSIs is not always well received by private landowners. However, experience has shown that landowner contact projects and awards do encourage more sympathetic private stewardship. In Ontario, the identification of ANSIs also enables private landowners to receive property tax rebates under the Conservation Land Tax Reduction Program.

This survey should become a useful resource document for the many individuals who are interested in the conservation of prairies and savannas in southern Ontario, and enable us to advance the conservation of the best remaining sites. The draft report has been released, and the final version will be completed and published by the fall of 1993.

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