COSEWIC
Assessment and Update Status Report

on the

Climbing Prairie Rose
Rosa setigera

in Canada

THREATENED
2002

COSEWIC
COMMITTEE ON THE STATUS OF
ENDANGERED WILDLIFE
IN CANADA

COSEPAC
COMITÉ SUR LA SITUATION DES
ESPÈCES EN PÉRIL
AU CANADA

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Ambrose, J.D. 2002. Update COSEWIC status report on the climbing prairie rose *Rosa setigera* in Canada, *in* COSEWIC assessment and update status report on the climbing prairie rose *Rosa setigera* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-15 pp.

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COSEWIC
Assessment Summary

Assessment Summary – May 2002

Common name
Climbing prairie rose

Scientific name
Rosa setigera

Status
Threatened

Reason for designation
A successional species of diverse open habitats with a geographically restricted range, very limited habitat occurrence and small population at risk from successional changes, development and recreational activities.

Occurrence
Ontario

Status history
Designated Special Concern in April 1986. Status re-examined and uplisted to Threatened in May 2002. Last assessment based on an update status report.

COSEWIC
Executive Summary

Climbing Prairie Rose
Rosa setigera

Species information

Climbing prairie rose (*Rosa setigera*) is an arching/climbing shrub in the rose family. Flowering plants have trifoliate leaves and large attractive pink flowers that occur from late June to mid-July.

Distribution

This species occurs in central North America, from extreme southwestern Ontario and adjacent Michigan to outlying areas in New York and Pennsylvania, south along the western foothills of the Appalachian Mountains to Georgia and west to eastern Texas. In Ontario it occurs in the extreme southwestern region, primarily in Essex County, with additional populations, in adjacent Chatham-Kent Region and Lambton County and one site just across the Middlesex County line.

Habitat

It is typically found in open habitats with heavy soils, such as early successional old fields as well as prairies and shrub meadows.

Biology

Climbing prairie rose is functionally dioecious (but morphologically the flowers appear perfect), with male and female flowers occurring on separate plants. The flowers are insect pollinated. Seeds are likely bird and/or mammal dispersed and seedlings appear in early successional fields. Individuals are sometimes clonal so each may consist of adjacent crowns of arching stems.

Population sizes and trends

Four core populations are known, each with 5 to 20+ individuals and abundant fruit production. There are likely a few more populations that produce sufficient fruit for dispersal into adjacent habitats, especially in the northeast part of Windsor. In comparisons with populations surveyed in the early 1980s, five populations have been

lost, 10 could not be found but their habitats appear intact, 6 are in decline, 7 are stable and 3 new sites are recorded (plus unverified sight records). Of those 18 sites with abundance data from 1984 (plus three new sites and six sites without previous abundance) numbers of mature individuals have declined from 116 to 64. None were seen at 8 sites lacking previous abundance data. In three new sites and six without previous abundance data there were 28 mature individuals. It is estimated that there are an additional 81 individuals in the 17 sites not re-surveyed (Ambrose, 1984 and NHIC, 2000, most with no abundance data) and at the sightings near Windsor (ERCA, 1992), for a total current population estimate of 145 mature individuals from known sites.

Limiting factors and threats

This species appears dependent on open habitats, old fields recently released from cultivation or more stable shrub meadows and prairies. Human activity, including development of land for housing or other activity, inappropriate land management and recreational use of vehicles in natural areas, is negatively impacting this species.

Special significance of the species

Climbing prairie rose is a component of the open habitats of the Carolinian Zone. With much emphasis on restoring forested habitats, species of meadows and prairies often receive less attention. Biologically it is unusual for a rose, being both a climber and dioecious.

Summary of status report

The species has experienced a decline in number of sites and a decline in population sizes in most of the sites resurveyed from the 1984 status report. However, additional sites have been recorded at the Natural Heritage Information Centre and by the Essex Region Conservation Authority and there are still several populations with secure population sizes and continuing evidence of reproduction and recruitment of seedlings on new sites.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) determines the national status of wild species, subspecies, varieties, and nationally significant populations that are considered to be at risk in Canada. Designations are made on all native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fish, lepidopterans, molluscs, vascular plants, lichens, and mosses.

COSEWIC MEMBERSHIP

COSEWIC comprises representatives from each provincial and territorial government wildlife agency, four federal agencies (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biosystematic Partnership), three nonjurisdictional members and the co-chairs of the species specialist groups. The committee meets to consider status reports on candidate species.

DEFINITIONS

Species	Any indigenous species, subspecies, variety, or geographically defined population of wild fauna and flora.
Extinct (X)	A species that no longer exists.
Extirpated (XT)	A species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A species facing imminent extirpation or extinction.
Threatened (T)	A species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
Not at Risk (NAR)**	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)***	A species for which there is insufficient scientific information to support status designation.

* Formerly described as “Vulnerable” from 1990 to 1999, or “Rare” prior to 1990.
** Formerly described as “Not In Any Category”, or “No Designation Required.”
*** Formerly described as “Indeterminate” from 1994 to 1999 or “ISIBD” (insufficient scientific information on which to base a designation) prior to 1994.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list.

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Update
COSEWIC Status Report

on the

Climbing Prairie Rose
Rosa setigera

in Canada

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2002

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SPECIES INFORMATION

Name and Classification

Rosa setigera Michaux, climbing prairie rose, is an arching/climbing shrub in the rose family (Rosaceae). This species was first included as part of *R. carolina* In the late 1700s. In 1803 Michaux described it as a new species. It is taxonomically distinct in its northern range. Details of taxonomic revisions are given in the original status report (Ambrose, 1986) and Lewis (1958).

Description

Climbing prairie rose is a robust shrub with arching or climbing branches, often several metres long and forming peripheral plants where tips of branches touch the ground. Prickles are broad based and recurved. Leaflets are three on flowering branches and three or five on juvenile or vegetative branches. Flowering occurs in late June to mid-July with terminal corymbs (Figure 1) on current year lateral shoots from the previous year's long shoots. Petals are 2-3 cm long, pink; styles are united into an exserted column, fruit is globose and reddish-orange. It is further described and illustrated in Soper & Heimburger, 1982. A photograph is given on the ROM/OMNR web site.

Distinguishing characteristics from other roses: long arching branches, leaflets 3 on flowering stems and 3-5 on vegetative and juvenile stems, prickles broad-based and recurved.

Figure 1. Flowers of Climbing Prairie Rose (Jason M. Spangler, Austin, Texas).

DISTRIBUTION

Global Range

The range of this species is mainly through the central United States, with a small area in adjacent Canada (Figure 2). In the south, it ranges from the western foothills of the Appalachian Mountains, through the Mississippi valley, to eastern Texas. In the north, it reaches southern Michigan and adjacent Ontario, with outlying areas of New York, Pennsylvania and small isolated populations east of the Appalachian Mountains; the latter likely represent introductions from cultivation (Lewis, 1958). Maps are given for the species in the original status report (Ambrose, 1986). These are reproduced by Keddy (1984) and on the ROM/OMNR web site with some updates in localities as given in this update report.

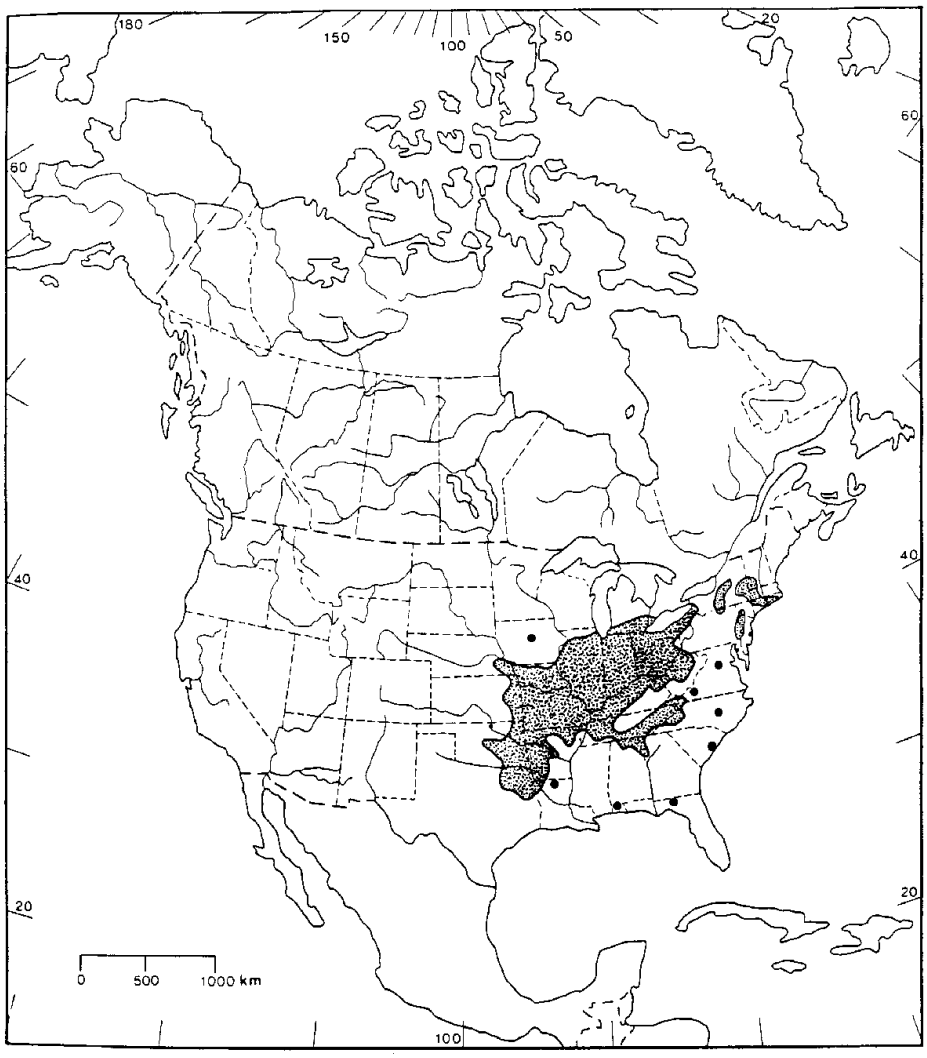

Figure 2. North American range of Climbing Prairie Rose (*Rosa setigera*), based on Lewis 1958.

Canadian Range

In Canada it occurs in extreme southwestern Ontario (Figure 3) with records in Essex County (Amherstburg, Malden, Pelee Island and Tilbury) known since the late 1800s (Macoun, 1883-6). The natural areas within the boundaries of the Essex Region Conservation Authority were thoroughly surveyed and reported by Oldham (1983). It is also known in the adjacent Chatham-Kent Region and Lambton County, and recently just over the county line in Middlesex. One disjunct collection was made in Prince Edward County in 1944 but has not been recently verified.

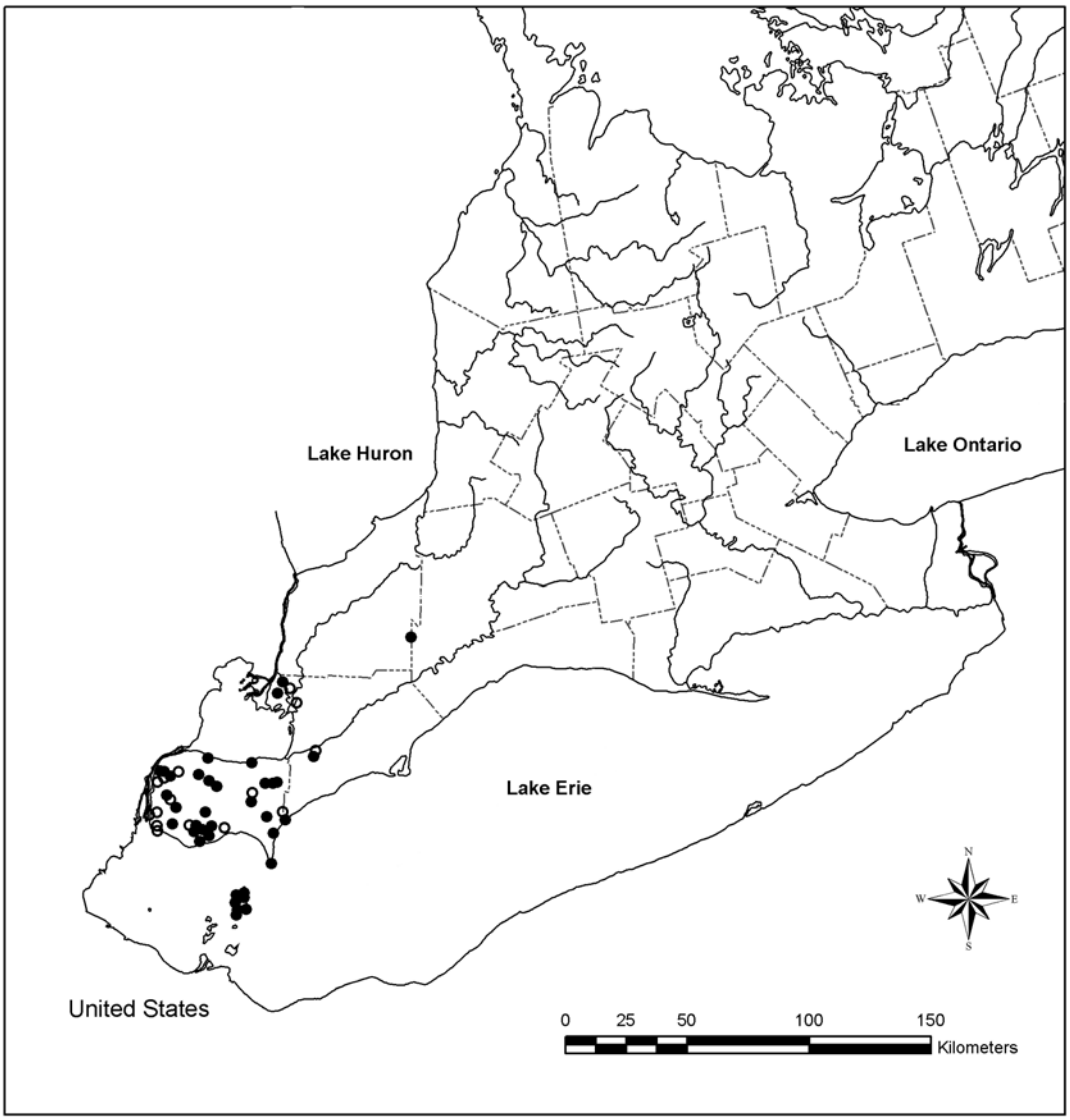

Figure 3. Distribution of *Rosa setigera* in Canada. Each dot corresponds to a site. Hollow circles represent extirpated sites from Table 1, solid circles represent extant sites from Table 1 and presumed extant sites not surveyed in 2000-01.

HABITAT

Habitat Requirements

In Canada, *Rosa setigera* occurs in old fields and shrub thickets, most commonly on sites with moist heavy soils, but occasionally on sandy or shallow soils that dry out during part of the growing season. Climbing prairie rose colonizes open habitats, often in abandoned agricultural fields and vacant urban land. As succession progresses the habitats often become less favourable for this species; senescent individuals can be seen in older shrub thickets. The shifting habitat of this species provides a challenge to making an accurate assessment. With continuing colonization an important factor in maintaining populations on such a landscape, there is a dependence on core populations that can provide abundant seeds for dispersal to new habitats. Very few of these were recorded; they include shrub meadows at Wheatley Provincial Park, St. Clair College prairie, Stone Road Alvar and Rowsoms Conservation Area. There are likely others, such as in the northeastern region of Windsor (ERCA, 1992) where it is indicated as a common shrub in a few natural areas.

It occurs in areas with a long growing season and a climate moderated by Lake Erie. Seedlings establish in open or thinly vegetated fields and meadows (all observations are by the author unless otherwise referenced).

Trends

A comparison of sites resurveyed in 2000-01 with the earlier records in the 1986 status report and Natural Heritage Information Centre (NHIC) records, reveals a decline of about 38% (about 48% loss and 10% gain) in numbers of known sites, with additional unconfirmed sites near Windsor. Habitat is being lost in urban areas, such as around Windsor, as building development continues in peripheral areas. Succession in shrub meadows also leads to degradation or loss of habitat. However, the species colonizes open habitats so there are likely several unrecorded new sites near core populations. Many habitats are maintained by active management for conservation lands (alvars, prairies and savannahs) in southwestern Ontario, but much of the potential habitat is on the edge of agricultural or developed land that is subject to changes in management and loss of habitat quality.

Protection/Ownership

Most of the core populations are under protection; the following have public ownership: Wheatley Provincial Park (provincial); Rowsoms Conservation Area and Hillman Marsh (conservation authority). Stone Road Alvar is owned and managed by the Federation of Ontario Naturalists, Nature Conservancy of Canada and Essex Region Conservation Authority. Walpole Island is managed by the Walpole Island First Nation. About six populations with several individuals each occur on private land around Windsor (ERCA, 1992). Smaller populations occur at Point Pelee National Park (but likely introduced there, V. McKay, pers. comm.) and on other private land.

BIOLOGY

General

Climbing prairie rose is an arching/climbing shrub of old fields and shrub meadows. Its long arching branches and recurved prickles allow it limited climbing ability over other shrubs, but often it is suppressed and ultimately shaded out as nearby shrub growth becomes dense. It is dioecious (Kevan et al., 1990), an unusual condition in roses. Fruit develops on the females and is likely dispersed by birds and small mammals. First year seedlings were not seen in the field surveys, but in a few old fields recently released from cultivation juvenile plants were observed near mature populations. Limited vegetative proliferation occurs from the tips of arching stems.

Reproduction

Flowers are visited by a diversity of pollinating insects, mostly bees and flies. Plants were found to be cryptically dioecious (i.e., male and female plants have morphologically similar flowers). Both males and females produce pollen, although the pollen on the female flowers was not functional in stimulating fruit production in other plants and male plants produce no fruit (Ambrose & Kevan, 1990; Kevan et al., 1990). Being functionally dioecious, isolated individuals are not able to produce fruit. The fruit is a hip, typical of roses, with a fleshing receptacle enclosing hairy achenes. Clonal reproduction is occasionally seen around older plants, in the form of new plantlets developing where the tips of branches touch the ground.

Survival

As a species of early successional or open communities, individuals can be short lived (perhaps 10-20 years) unless conditions are present which keep the habitat open. Where plants were found in the same location as the previous survey in the early 1980s the stems were relatively young indicating new growth from the crown, vegetative plantlets or locally dispersed seeds rather than persistent old stems. Where shrubby vegetation becomes dense this species is suppressed, fails to flower and dies out. In dense vegetation it also appears to be more prone to mildew. In 2000, mildewed flower buds were observed on this species in two dense shrub meadows with several individuals each; they failed to open and no fruit was produced.

Dispersal

The firm fleshy reddish-orange fruit, containing hard seeds, are likely dispersed by birds and mammals. When seed sources are nearby young plants have been observed in old fields in early stages of succession, leading to the conclusion that dispersal is effectively taking place. The rarity of this species in the states to the south and west reduces the likelihood of long distance dispersal into Ontario.

Nutrition and Interspecific Interactions

Pollinating insects and seed dispersers are important for fruit set and seed dispersal to new habitats. Flowers of both male and female plants produce pollen, gathered by pollinating insects, but no nectar. While the pollen of female flowers is non-functional for stimulating fruit production, it appears to provide a nutritional reward to the insects.

Invasive exotic shrubs are seen in some habitats (e.g., *Elaeagnus umbellatus*) and could become significant competitors. For this species of open habitats, natural succession can also reduce the suitability of sites.

Adaptability

Most populations occur in old fields and shrub meadows on heavy soils. A few also occur on sand (Pt. Pelee, Ojibway Prairie and LaSalle) and thin soil over limestone (Stone Road Alvar).

POPULATION SIZES AND TRENDS

Previously known populations appear to be in a decline of about 38%, with about a 21% decline in numbers of individuals, from the comparative data of the 1984 report and 2000/01 surveys. There are several core populations that likely are providing fruit and seeds for establishment of smaller and outlying populations on suitable open habitats. After the completion of the second year of fieldwork, a map of additional populations was provided by Paul Pratt of the city of Windsor, from records compiled in 1992 (ERCA, 1992). On this map are six sites with multiple occurrences noted at the eastern limits of the Windsor boundary, plus others with listed presence to the south. Of the intensively surveyed sites and other records, including the above, it is estimated that there are currently about 145 reproductive individuals (This includes the 64 recorded in Table 1 below plus an estimated additional 81 plants in the unsurveyed sites [2 per site for the 18 Ambrose (1984) and NHC (2000) records, 3 per site in the 15 ERCA (1992) sites around Windsor] for a total estimate in known sites of 145). There are likely another 50 individuals in undocumented populations near core reproductive populations, based on undocumented observations of occurrences in nearby habitats by a local field ecologist (G. Waldron, pers. comm.) and the author's own observations in sites on Pelee Island.

With clonal spread within populations it is not possible to obtain accurate counts of genetic individuals with only field observations; however, when clusters of rose crowns were observed in a population they were considered to be clones and in such situations a multi-crowned cluster is counted as an individual. When the species has occupied a site with a long history of being open the clusters become less clear, such as at the Stone Road Alvar where periodic droughts and fires have maintained its open character. The presence of fruiting in this dioecious species gives a clue that more than one individual is present in isolated populations, such as the one in Middlesex County

(no. 53). However, even this is problematic, since dioecious species typically show a small percentage of hermaphroditic individuals (e.g., *Ptelea trifoliata*, Ambrose et al., 1985).

The sites surveyed are tabulated in Table 1. The site numbers in the table refer to the detailed list of all recently known populations (since 1980). It lists both sites for which there were abundance data suitable for comparison in 2000/01 shown here, as well as other reports without data. Records received at NHIC after the 1984 status report were compiled and the Windsor records are listed in the middle column.

Table 1. Ontario sites of *Rosa setigera* with available comparative data.

Site	Co./ Region	Population location	Ambrose 1984	NHIC, 2000; ERCA, 1992	2000-01 survey
		EXTANT			
3	Essex	Colchester S. Tp., O.5 km NW of Arner	4*		1 TH: S/S
19		Malden Tp., 2.5 km NE of Malden Centre	7 + sev		0 + 3 TH: S/S
23		Mersea Tp, Hillman Marsh	---		NEW SITE 3
27		Pelee Is., Mosquito Pt.	Few		2
28		Pelee Is., Red Cedar Savannah roadside	6		2
29		Pelee Is., Sheridan Pt.	6		2 TH: S/S
30		Pelee Is., Stone Rd. Alvar	10 + 3		6 + sev
31		Pelee Is., W Shore Drive	---		NEW SITE 1
36		Tilbury W. Tp., Comber cemetery	P		1
37		Tilbury W. Tp., Comber sewage lagoon	---	1987: P	2
39		Tilbury W. Tp., Rowsoms C.A.	27 + 2		2[+sev?] + 2
41		Windsor, Ojibway Park and Prairie	---		NEW SITE Few at each
42		Windsor, St. Clair College	3		5 + 6
43		Windsor, Springarden Prairie	P		Few TH: ATV
44		Windsor, east and south	---	NEW SITES Sight records, (ERCA, 1992)	---
45	Ch.-Kent	Chatham Tp., S of Whitebread	3		1
48		Raleigh Tp., 2.5 km SSE of Prairie Siding	4 + 1		0 + 1
50		Romney Tp., Wheatley Prov. Park	P		7 + sev TH: IE
52	Lambton	Walpole Island	4 + 1		2
53	Middlesex	Mosa Tp.	---	1987: 1 colony	8 + 12

Site	Co./ Region	Population location	Ambrose 1984	NHIC, 2000; ERCA, 1992	2000-01 survey
		EXTIRPATED			
1	Essex	Anderon Tp., 2 km. E of Amherstburg	2		0: Extirpated? TH: S/S
6		Colchester S. Tp., 3 km N of Harrow	1		0: Extirpated? TH: S/S
12		Gosfield S. Tp., Jack Minor Woods	---	1984: P	0: Extirpated?
17		Bois Blanc Island	P		0:EXTIRPATED TH: ID
18		Malden Tp., Knapps Island	P		0: Extirpated?
20		Malden Tp., Green Dragon Woods	---	1985: P	0: Extirpated?
22		Malden Tp., Willowood	12 + few		0:EXTIRPATED TH: ID
34		Sandwich W. Tp., LaSalle	4		0: Extirpated? TH:ID
35		Sandwich W. Tp., Suzanne S	---	1990: P	0:EXTIRPATED TH:ID
38		Tilbury W. Tp., Roscom R.	P		0: Extirpated?
40		Windsor, Devonwood C.A.	P		0: Extirpated?
46	Ch.-Kent	Dover Tp.	1		0: Extirpated?
47		Raleigh Tp., 1.5 km E of Prairie Siding	5		0:EXTIRPATED TH:IM
49		Romney Tp., Wheatley C.A.	1		0:EXTIRPATED TH: IM
51	Lambton	St. Anne Island	---	1987: P	0: Extirpated?
Total			116 + 20 +	8 = 124 + 20	64 + 44

*numbers: reproductive plants + vegetative plants (P = present, no abundance data; few = ~3, sev = ~10). TH = Threats: S/S, succession/shade; ID, incompatible development; IM, inappropriate management; ATV, ATVs making trails through habitat; IE, invasive exotics. EXTIRPATED= none observed and habitat altered; extirpated? = none observed but habitat intact.

LIMITING FACTORS AND THREATS

Four sites have been completely or mostly lost due to incompatible urban development since the 1986 status report. Others have been lost or put in jeopardy by insensitive management of the sites with regard to their natural heritage. Some populations that once occurred along rail lines are now in decline as these have been converted to trails and the vegetation that was once controlled on a regular basis is now allowed to proliferate, making the site less favourable to this species. Similar natural successional processes have also reduced a once significant core population to a few senescent individuals (no. 19, Malden); other smaller populations have experienced similar declines.

SPECIAL SIGNIFICANCE OF THE SPECIES

In Canada, *Rosa setigera* is limited to extreme southwestern Ontario, Essex and adjacent counties. It is the only native climbing rose, is unusual for a rose in being dioecious and has flowers that are very showy. There are no citations for the use of this species on the Native American Ethnobotany Database web site. However, there are numerous listings of other rose species for various medicinal purposes so this species may have been used in a similar manner.

Climbing prairie rose is occasionally available in the specialty native plant horticultural trade.

EXISTING PROTECTION OR OTHER STATUS

The Nature Conservancy gives this species a global rank of G5, a national rank of N2N4 (USA) and N3 (Canada); there are two states where it is listed as imperilled (S1 in Virginia and S2S3 in Michigan) and two states (Iowa S3 and Georgia S3?) and Ontario (S3) where it is listed as vulnerable. For four nearby states it is listed as unranked (S?): Pennsylvania, Ohio, Indiana and Wisconsin. In no state is it listed as secure (S4 or S5) by the most recent listing of 2001, accessible through the NatureServe web site.

It is listed as a species of Special Concern by COSEWIC but is currently without formal protective status in Ontario.

SUMMARY OF STATUS REPORT

Where comparison of current population counts to past estimates is possible, the evidence summarized in Table 1 suggests a decline in numbers of individuals (25%) and occupied habitats (38%). Of the known sites, both from actual counts and estimates of others not surveyed, it is estimated that there are about 145 individual mature shrubs of this species. It was observed to colonize and thrive in early successional old fields and other open habitats, thus there are likely undocumented new populations, possibly reducing the severity of this observed decline.

As pressure increases to develop natural areas around Windsor and at other sites, this species will be in greater jeopardy. However, with better awareness and more sensitive land management, the jeopardy could be greatly reduced. Much of the activity that is causing the loss or decline in populations could be modified to protect this species and other species of plants and animals in jeopardy in open habitats. For example, mowing or herbicide spraying of open meadow habitats, trenching and brush clearing operations along ditches and roadways, parking and trail construction in parkland, and unrestricted use by ATV operators.

TECHNICAL SUMMARY

Rosa setigera	
Climbing prairie rose	Rosier sétigère
Range of Occurrence in Canada: southwestern Ontario, Essex and adjacent counties.	

Extent and Area information	
• *Extent of occurrence (EO)(km²)*	<2000 km^2
• *Specify trend (decline, stable, increasing, unknown)*	Stable
• *are there extreme fluctuations in EO (> 1 order of magnitude)?*	No
• *Area of occupancy (AO) (km²)*	15 km²
• *Specify trend (decline, stable, increasing, unknown)*	Decline, about 38%
• *are there extreme fluctuations in AO (> 1 order magnitude)?*	No
• *Number of extant locations*	19 confirmed, another 19 sightings 1980-92
• *Specify trend in # locations (decline, stable, increasing, unknown)*	Decline: 5 sites lost, 10 not found, 6 in decline, 7 stable, 4 new.
• *are there extreme fluctuations in # locations (>1 order of magnitude)?*	No.
• *Habitat trend: specify declining, stable, increasing or unknown trend in area, extent or quality of habitat*	Declining; habitat being developed or degraded.
Population information	
• *Generation time (average age of parents in the population) (indicate years, months, days, etc.)*	3 years to flowering in cultivation (likely longer in the wild).
• *Number of mature individuals (capable of reproduction) in the Canadian population (or, specify a range of plausible values)*	145 estimated from 2001 inventory + sightings since 1980.
• *Total population trend: specify declining, stable, increasing or unknown trend in number of mature individuals*	Slow decline over past 18 years.
• *if decline, % decline over the last 10 years or 3 generations, whichever is greater (18 year comparison)*	21% decline
• *are there extreme fluctuations in number of mature individuals (> 1 order of magnitude)?*	No
• *Is the total population severely fragmented (most individuals found within small and relatively isolated (geographically or otherwise) populations between which there is little exchange, i.e., < 1 successful migrant / year)?*	Total s. Ontario population mostly in clusters: Pelee Is., Windsor, Wheatley, Tilbury, Walpole Is.
• *list each population and the number of mature individuals in each*	3. Arner 1 19. Malden 0 24. Hillman Marsh 3 27-31 Pelee Is. 13 36-7. Comber 3 39. Rowsoms C.A. ca. 12 41-43. Windsor ca. 14 45-6. Whitebread/Pr. Siding 1 50. Wheatley Prov. Pk. 7 52. Walpole Is. 2 53. Mosa Tp. 8 19 records not surveyed ca. 81 total: 145

• *specify trend in number of populations (decline, stable, increasing, unknown)*	5 lost, 10 not found, 6 in decline, 7 stable, 4 new
• *are there extreme fluctuations in number of populations (>1 order of magnitude)?*	No
Threats (actual or imminent threats to populations or habitats)	
– land being developed, especially in Windsor area – successional development of open habitats – inappropriate management of conservation areas and roadsides – unrestricted recreational use of all terrain vehicles (ATVs) – invasive exotic shrubs a potential problem	
Rescue Effect (immigration from an outside source)	
• *does species exist elsewhere (in Canada or outside)?*	Canada: no. USA, yes.
• *status of the outside population(s)?*	Globally secure (G5); but S1-S2 in 2 states, S3 in 2 states; nowhere S4 or S5
• *is immigration known or possible?*	Not known but possible through fruit dispersal.
• *would immigrants be adapted to survive here?*	Likely if from northern source.
• *is there sufficient habitat for immigrants here?*	Yes, but problem is loss or degradation of habitat.
Quantitative Analysis	
5 populations lost, 10 not found, 6 in decline, 7 stable, 4 new. Comparative counts from survey populations: 1984: 116 + 20 juveniles, 2000-2001: 64 + 44 juveniles. Total current estimated population of all records: 145 reproductively mature and juveniles.	

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Mike Oldham provided the NHIC Element Occurrence reports and was responsible for many of the early reports in the Essex region. Gerry Waldron provided additional observations for Essex County. Paul Pratt provided observations for Windsor sites near Ojibway Park and Prairie, and a summary of the 1992 ERCA report compiled by Dan Lebedyk for Windsor natural areas. Funding provided by the Canadian Wildlife Service, Environment Canada.

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Pertinent Web Sites

Environment Canada: Species at Risk in Canada. www.speciesatrisk.gc.ca/Species/English/SearchDetail.cfm?SpeciesID=245

Native American Ethnobotany Database, compiled by Daniel Moerman. www.umd.umich.edu/cgi-bin/herb/

NatureServe, Association for Biodiversity Information. www.natureserve.org

Ontario Natural Heritage Information Centre (NHIC)
www.mnr.gov.on.ca/mnr/nhic/nhic.html
ROM/OMNR: Royal Ontario Museum/Ontario Ministry of Natural Resources Species at Risk Module. www.rom.on.ca/cgi-bin/cbcb/fastfact.pl?speciesID=48

BIOGRAPHICAL SUMMARY OF AUTHOR

John Ambrose came to the University of Guelph Arboretum in 1974, after receiving a PhD in Botany from Cornell University. At the Arboretum, in addition to being the Curator, he developed a program based on the rare woody plants of the Carolinian Zone of southern Ontario, including field surveys, status reports and detailed studies of their population and reproductive biology. After 17 years there, he moved to the Toronto Zoo as Curator of Botany/Manager of Horticulture. There he developed new natural habitat exhibits and a naturalization program for peripheral lands of the site, in addition to his exhibit responsibilities. These reflect his growing interest in restoration ecology. In 1999 he left the Zoo to teach a new course in restoration ecology at the University of Guelph. He currently is self-employed and continues to work with endangered species recovery planning, serving on three recovery teams for Carolinian trees.

AUTHORITIES CONSULTED

Mike Oldham of NHIC was contacted for information on file for this species. Paul Pratt provided information of recent sightings at Ojibway Park and Prairie and nearby natural areas, as well as a summary of the 1992 ERCA report on natural areas of Windsor. Gerry Waldron provided information on recent sightings in Essex County.

COLLECTIONS EXAMINED

With good data on collection and site records from the updated element occurrence reports of the Natural Heritage Information Centre (NHIC, 2000) and the COSEWIC status report (Ambrose, 1986), researching time was concentrated on going to representative sites, concentrating on those for which there was good base data on population abundance. Population densities, reproduction and observation of local threats were compared with those recorded earlier. Observations were not made for 18 NHIC element occurrence reports and the 1992 ERCA report for Windsor (15 sub-sites), the latter received after the field work was completed. About 43 person-hours were spent in the field for updating the status of this species.