

Area, Quality and Protection of Special Lakeshore Communities - Alvars

Indicator #8129 (Alvars)

This indicator report was last updated in 2000.

Overall Assessment

Status: Mixed
Trend: Not Assessed

Lake-by-Lake Assessment

<i>Separate lake assessments were not included in the last update of this report.</i>

Purpose

- To assess the status of Great Lakes alvars (including changes in area and quality), one of the 12 special lakeshore communities identified within the nearshore terrestrial area
- To infer the success of management activities
- To focus future conservation efforts toward the most ecologically significant alvar habitats in the Great Lakes

Ecosystem Objective

The objective is the preservation of the area and quality of Great Lakes alvars, individually and as an ecologically important system, for the maintenance of biodiversity and the protection of rare species. This indicator supports Annex 2 of the Great Lakes Water Quality Agreement.

State of the Ecosystem

Background

Alvar communities are naturally open habitats occurring on flat limestone bedrock. They have a distinctive set of plant species and vegetative associations, and include many species of plants, molluscs, and invertebrates that are rare elsewhere in the basin. All 15 types of alvars and associated habitats are globally imperiled or rare.

A four-year study of Great Lakes alvars completed in 1998 (the International Alvar Conservation Initiative (IACI)) evaluated conservation targets for alvar communities, and concluded that essentially all of the existing viable occurrences should be maintained, since all types are below the minimum threshold of 30-60 viable examples. As well as conserving these ecologically distinct communities, this target would protect populations of dozens of globally significant and disjunct species. A few species, such as lakeside daisy (*Hymenoxis herbacea*) and the beetle *Chlaenius p. purpuricollis*, have nearly all of their global occurrences within Great Lakes alvar sites.

Status of Great Lakes Alvars

Alvar habitats have likely always been sparsely distributed, but more than 90% of their original extent has been destroyed or substantially degraded by agriculture and other human uses. Approximately 64% of the remaining alvar area occurs within Ontario, with about 16% in New York State, 15% in Michigan, 4% in Ohio, and smaller areas in Wisconsin and Quebec. Data from the IACI and state/provincial alvar studies were screened and updated to identify viable community occurrences. Just over two-thirds of known Great Lakes alvars occur close to the shoreline, with all or a substantial portion of their area within one kilometer of the shore.

Typically, several different community types occur within each alvar site. Among the 15 community types documented, six types show a strong association (over 80% of their area) with nearshore settings. Four types have less than half of their occurrences in nearshore settings.

The current status of all nearshore alvar communities was evaluated by considering current land ownership and the type and severity of

	Total in Basin	Nearshore
No. of alvar sites	82	52
No. of community occurrences	204	138
Alvar area (ha)	11,523	8,097

Table 1. Number of alvar sites/communities found nearshore and total in the basin.

Source: Ron Reid, Bobolink Enterprises

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threats to their integrity. As shown in Figure 1, less than one-fifth of the nearshore alvar area is currently fully protected, while over three-fifths are at high risk. The degree of protection for nearshore alvar communities varies considerably among jurisdictions. For example, Michigan has 66% of its nearshore alvar area in the Fully Protected category, while Ontario has only 7%. In part, this is a reflection of the much larger total shoreline area in Ontario, as shown in Figure 2. (Other states have too few nearshore sites to allow comparison).

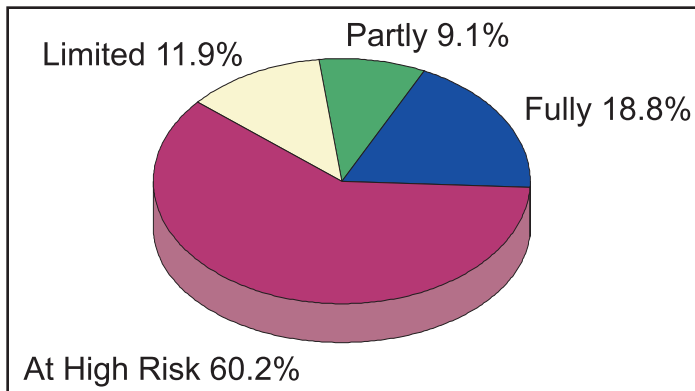


Figure 1. Protection status of nearshore alvar area (2000).

Source: Ron Reid, Bobolink Enterprises

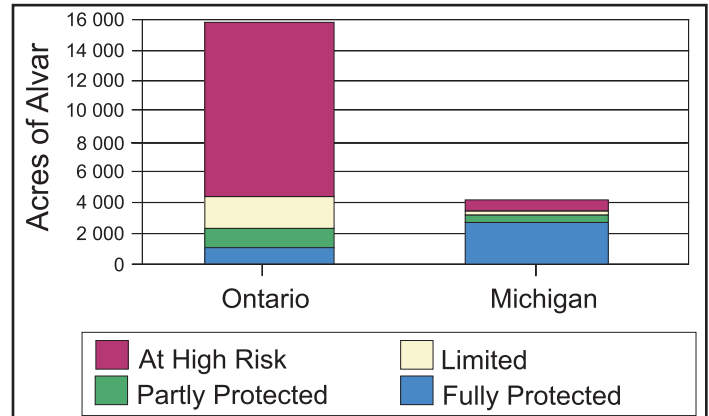


Figure 2. Comparison of the protection status of nearshore alvars (in acres) for Ontario and Michigan.

Source: Ron Reid, Bobolink Enterprises

Each location of an alvar community or rare species has been documented as an “element occurrence” or EO. Each alvar community occurrence has been assigned an EO rank” to reflect its relative quality and condition (“A” for excellent to “D” for poor). A and B-ranks are considered viable, while C-ranks are marginal and a D ranked occurrence is not expected to survive even with appropriate management efforts. As shown in Figure 3, protection efforts to secure alvars have clearly focused on the best quality sites.

Documentation of the extent and quality of alvars through the IACI has been a major step forward, and has stimulated much greater public awareness and conservation activity for these habitats. Over the past two years, a total of 10 securement projects have resulted in protection of at least 2140.6 ha of alvars across the Great Lakes basin, with 1353.5 ha of that within the nearshore area. Most of the secured nearshore area is through land acquisition, but 22.7 ha on Pelee Island (ON) are through a conservation easement, and 0.6 ha on Kelleys Island (OH) are through state dedication of a nature reserve. These projects have increased the area of protected alvar dramatically in a short time.

Pressures

Nearshore alvar communities are most frequently threatened by habitat fragmentation and loss, trails and off-road vehicles, resource extraction uses such as quarrying or logging, and adjacent land uses such as residential subdivisions. Less frequent threats include grazing or deer browsing, plant collecting for bonsai or other hobbies, and invasion by non-native plants such as European buckthorn and dog-strangling vine.

Comments from the author(s)

Because of the large number of significant alvar communities at risk, particularly in Ontario, their status should be closely watched to ensure that they are not lost. Major binational projects hold great promise for further progress, since alvars are a Great Lakes

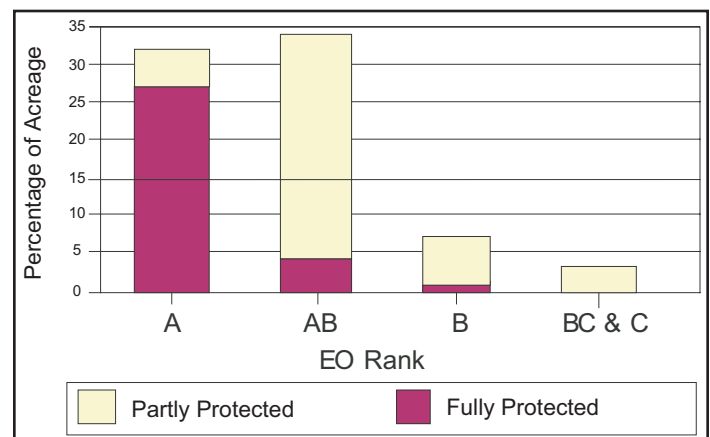


Figure 3. Protection of high quality alvars.

EO Rank = Element Occurrence (A is excellent, B is good and C is marginal).

Source: Ron Reid, Bobolink Enterprises

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resource, but most of the unprotected area is within Ontario. Projects could be usefully modeled after the 1999 Manitoulin Island (ON) acquisition of 6,880 ha through a cooperative project of The Nature Conservancy of Canada, The Nature Conservancy, Federation of Ontario Naturalists, and Ontario Ministry of Natural Resources.

Acknowledgments

Authors:

Ron Reid, Bobolink Enterprises, Washago, ON; and
Heather Potter, The Nature Conservancy, Chicago, IL.

Sources

Brownell, V.R., and Riley, J.L. 2000. *The alvars of Ontario: significant alvar natural areas in the Ontario Great Lakes Region*. Federation of Ontario Naturalists, Toronto, ON.

Cusick, A.W. 1998. *Alvar landforms and plant communities in Ohio*. Ohio Department of Natural Resources, Columbus, OH.

Gilman, B. 1998. *Alvars of New York: A Site Summary Report*. Finger Lakes Community College, Canandaigua, NY.

Lee, Y.M., Scrimger, L.J., Albert, D.A., Penskar, M.R., Comer, P.J., and Cuthrell, D.A. 1998. *Alvars of Michigan*. Michigan Natural Features Inventory, Lansing, MI.

Reid, R. 2000. *Great Lakes alvar update, July 2000*. Prepared for the International Alvar Conservation Initiative Working Group. Bobolink Enterprises, Washago, ON.

Reschke, C., Reid, R., Jones, J., Feeney, T., and Potter, H. 1999. *Conserving Great Lakes alvars: final technical report of the International Alvar Conservation Initiative*. The Nature Conservancy, Chicago, IL.

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