

US EPA ARCHIVE DOCUMENT



WHAT IS THE STATE OF THE GREAT LAKES ALVAR AND COBBLE BEACHES?

Alvars and cobble beaches are important special features of the Great Lakes region that contribute greatly to the diversity of the region by providing unique habitats for rare, and in some cases threatened or endangered, plant and animal species. Human activities, such as shoreline development and agriculture, are putting these special communities in peril.

The Issues

- Over two thirds of known alvar occurrences in the Great Lakes region are close to the shoreline, with all or a substantial portion of their area within 1 km of the shore. These communities are naturally open habitats occurring on flat limestone bedrock and while it is likely that they have always been sparsely distributed, more than 90 percent of their original extent has been destroyed or degraded by human uses.
- Shaped by wave and ice erosion, cobble beaches provide valuable seasonal spawning and migration areas for fish as well as nesting areas for the piping plover, a bird species listed as endangered by the United States and Canada in the Great Lakes. As a result of shoreline development, cobble beaches are becoming so scarce that they are considered globally rare.

The Indicators

Alvars and cobble beaches are important features of the Great Lakes region. They both support a diverse array of plant and animal species, and a number of these species are unique to these environments. For example, lakeside daisy and the beetle *Chlaenius p. purpuricollis*, have nearly all of their global occurrences within Great Lakes alvar sites. For this reason the presence of undisturbed alvar and cobble beach sites is an important indicator of the health and diversity of a number of species. In addition to supporting ecologically distinct communities, their deterioration and disappearance illustrates the impact of development and other human practices, such as agriculture, on the biological integrity of the Great Lakes.

The Assessment

A four-year study of Great Lakes alvars was conducted in the 1990s to evaluate conservation targets for alvar communities. The study concluded that essentially all of the existing alvars should be maintained since all alvar community types are below the minimum viable threshold.

Of the remaining alvar communities in the Great Lakes region, approximately 64 percent are located in Ontario, while 35 percent are located in the Great Lakes states. Several different community types occur within each alvar site and six of these community types show a strong association with nearshore settings. The current protection status of all nearshore alvar communities was evaluated by analyzing current land ownership and the type and severity of threats to alvar integrity. It has been determined that less than 20 percent of the nearshore alvar acreage is currently fully protected, while over 60 percent is at high risk.



Chaumont Barrens Alvar Grassland, New York. Photo: U.S. EPA Great Lakes National Program Office.

ALVARS AND COBBLE BEACHES

Lake Superior has the largest cobble shoreline of all the Great Lakes, followed by Lakes Huron, Michigan, Ontario, and Erie (Table 1). The number and area of cobble beaches are decreasing due to shoreline development. A wide variety of vegetation surrounds cobble beaches and the cobble beaches themselves also serve as a home to plants that are unique to the Great Lakes shoreline, including the endangered heart-leaved plantain found on the cobble beaches of Lake Superior.

Current Actions

The documentation of the extent and quality of alvars has allowed for much greater public awareness and conservation of this important resource. In recent years, a total of 10 projects have resulted in the protection of at least 2140 hectares of alvars across the Great Lakes region, with 1353 hectares located within the nearshore area. These projects have increased the area of protected alvars dramatically in a short time.

Actions Needed

The status of alvars and cobble beaches must to be closely monitored to ensure that they are not lost. Major binational projects hold great promise for further progress in alvar protection, but there is still a large area of unprotected alvars in Ontario. More research is needed for cobble beach communities to develop baseline data. Topics to investigate include the percentage of cobble beaches that already have homes on them or are earmarked for development and the percentage of cobble beaches that are in protected areas. Finally, we need a more detailed

assessment of the location of remaining cobble beaches and the plant and animal life that they support.

To Learn More

For further information related to Great Lakes alvars and cobble beaches, refer to the *State of the Great Lakes 2005* report, which, along with other Great Lakes references, can be accessed at www.epa.gov/glnpo/solec.



Great Lakes cobble beach. Photo: U.S. EPA Great Lakes National Program Office.

Table 1. Length and percentage of total shoreline comprised by cobble beaches for each of the five Great Lakes.

	Miles of Cobble Beach	Kilometers of Cobble Beach	Percent of Total Shoreline
Lake Superior	595	958	20%
Lake Huron	300	483	9%
Lake Michigan	102	164	6%
Lake Ontario	22	35	3%
Lake Erie	16	26	2%

