



## Great Lakes/Coastal: Alvar/rock

### Description

Alvar/rock Great Lakes features represent the various rocky shoreline areas along the Great Lakes. Alvar/rock includes a wide variety of distinct bedrock types including limestone, sandstone, basalt, volcanic conglomerate, and other igneous and metamorphic bedrock types. While all of the shoreline bedrock communities are considered rare in Michigan, alvar or limestone pavement lakeshores is an ecologically significant natural community that is considered globally rare. Alvar communities generally have a distinctive vegetative zonation from the non-vegetated wave-swept shoreline to the more densely vegetated herbaceous or shrubby areas inland that grade into the upland forest. Because of their stability and diversity of habitats, alvars generally possess very diverse plant communities.

### General Condition of Feature

Much of the alvar or bedrock lakeshore in the Eastern Upper Peninsula is considered to be in fair or good condition (~60%) and about 15% is considered to be in excellent condition. The remaining areas are considered degraded or very degraded. Alvar or bedrock lakeshore contains natural communities that are imperiled or critically imperiled in the State.

### Associated Natural Communities

Alvar [Alvar Grassland]	Sandstone Bedrock Glade
Limestone Bedrock Glade [Alvar Glade]	Sandstone Lakeshore Cliff
Limestone Bedrock Lakeshore [Alvar Pavement]	Sinkhole

### Associated Species of Greatest Conservation Need

#### SNAILS

delicate vertigo (*Vertigo bollesiana*)  
a land snail (*Vertigo cristata*)  
tapered vertigo (*Vertigo elatior*)  
deep-throat vertigo (*Vertigo nylanderi*)  
pleistocene catinella (*Catinella exilis*)  
cherrystone drop (*Hendersonia occulta*)

#### INSECTS

a leafhopper (*Flexamia delongi*)  
tawny crescent (*Phyciodes batesii*)

#### BIRDS

Le Conte's Sparrow (*Ammodramus leconteii*)

### Associated Threats

#### MODIFICATION OF NATURAL PROCESSES

- Altered fire regime

#### HABITAT CONVERSION

- Industrial, residential, and recreational development: Some alvar areas are used and designated as roads.

#### NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Non-consumptive recreation: Uncontrolled ATV and ORV use, as well as off-highway activities like Jeep Jamborees, may impact these systems.

#### BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Species like spotted knapweed (*Centaurea maculosa*), St. John's wort (*Hypericum perforatum*), brome (*Bromus spp.*), and timothy (*Phleum pratense*) may affect community composition.

#### EDUCATION

- Lack of scientific knowledge

### Conservation Actions Needed [Threats addressed]

#### LAND & WATER PROTECTION

- Expand conservation easement programs [variety of threats]
- Support and expand conservation purchase of high quality occurrences [variety of threats]

#### LAND, WATER & SPECIES MANAGEMENT

- Manage to approximate natural disturbance regimes using prescribed fire. [Altered fire regime]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- Where possible, motorized vehicle trails should be located a minimum of 100 feet (and preferably more than 500 feet) from rivers, streams, lakes and other wetlands except at designated crossings. [Non-consumptive recreation]
- Maintain, to the extent feasible, geologically unique areas and natural karst processes. [Industrial, residential, and recreational development; Non-consumptive recreation]
- Avoid modifying microclimate and microhabitat condition within caves, cliffs, talus slopes, and areas of exposed bedrock. [Industrial, residential, and recreational development; Non-consumptive recreation]
- Support Landowner Incentive Programs to foster conservation on private land [variety of threats]

*LAW & POLICY*

- Work with municipalities to promote planning and zoning insuring adequate protection for alvar communities. [Industrial, residential, and recreational development; Mining practices]
- Develop and enforce regulations to curtail recreational activities that cause significant damage. [Non-consumptive recreation]

*RECREATION*

- Promote responsible ATV and ORV use. [Non-consumptive recreation]

*LAND AND WATER PROTECTION*

- Promote protection of significant alvar patches through purchase, easement or other economic incentives. [Industrial, residential and recreational development]

Research and Survey Needs

- Identify and quantify sources of disturbance. How does recreational use impact alvar or coastal rock communities? What are the natural disturbance factors and what is their periodicity?
- Identify the characteristics of alvar systems that provide benefits to wildlife and which species may be affected by changes in these characteristics.
- Determine indicators of alvar integrity and diversity.

Monitoring

- Track alvar acreage and distribution across the landscape.
- Track damage and disturbance intensity and distribution.
- Track indicator species abundance and distribution. Associated plant species may provide the best indicators.