

Michigan Department of Natural Resources, Forest, Mineral & Fire Management Division  
**HIGH CONSERVATION VALUE AREA (HCVA) AND ECOLOGICAL REFERENCE AREA (ERA)  
MANAGEMENT AND MONITORING FORMS PACKET**

Portions of this information are exempt from Michigan's Freedom of Information Act, 1976 PA 442, MCL 15.243



**BACKGROUND AND INSTRUCTIONS**

Prior to using this packet material and forms please refer to Work Instruction 1.4 Biodiversity Management on State Forestlands and the Conservation Area Management Guidelines available on line at:

[http://www.michigan.gov/dnr/0,1607,7-153-30301\\_33360-144865--,00.html](http://www.michigan.gov/dnr/0,1607,7-153-30301_33360-144865--,00.html).

Identified HCVAs and ERAs will be managed to conserve, protect, maintain, and/or enhance their defined conservation objectives or values. The management methods used will vary depending on the objective and type of designation. On DNR-managed lands, Ecological Reference Areas may be protected through a variety of mechanisms (refer to Conservation Area Management Guidance). Management activities or prescriptions in Ecological Reference Areas are highly restricted to those that maintain or enhance the defined attributes and values and protect the immediate natural resource values or human health and safety.

This packet is for each High Conservation Value Area (HCVA) without an existing management plan and all Legally Dedicated State Natural Areas, Ecological Reference Areas (ERA), Critical Dunes and Coastal Environmental Areas on state forest land. Its purpose is to: 1.) document baseline information on each area and its conservation values, threats, management goals and objectives, and 2.) to track changes in threats, when management activities are carried out, monitor if they are effective, and capture needed changes in management determined not to be effective.

Keep the original copies of these forms in the Compartment/Stand File within each FMU and send copies to respective DEQ and DNR program managers and the DNR, FMFM Forest Resource Management Section, Monitoring Specialist.

**SUMMARY: LOCATION MAP, MANAGEMENT RECOMMENDATIONS**

**PART I: HCVA BASELINE INFORMATION , GOALS AND OBJECTIVES**

COMPLETE FOR EACH HCVA WITHOUT AN EXISTING MANAGEMENT PLAN

PART I TO ACCOMPANY PART II

**SECTION 1: SITE INFORMATION**

- A. HCVA TYPE
- B. SITE ,CONTACT AND ADMINISTRATIVE INFORMATION
- C. OWNERSHIP INFORMATION
- D. CONSERVATION PARTNERS
- E. OTHER DOCUMENTS RELATED TO THIS HCVA

**SECTION 2: CONSERVATION VALUES (TARGETS)**

- A. BIODIVERSITY VALUES
- B. SOCIAL/ECONOMIC VALUES
- C. INFRASTRUCTURE/FACILITIES VALUES

**SECTION 3: CURRENT CONDITIONS (THREATS)**

- A. VALUE OR TARGET VIABILITY (POOR, FAIR, GOOD, VERY GOOD)
- B. CURRENT PRIMARY THREATS

**SECTION 4: MANAGEMENT GOALS AND OBJECTIVES**

**PART II: HCVA MONITORING**

**SECTION 5: COMPLIANCE MONITORING (WERE TASKS COMPLETED?)**

**SECTION 6: EFFECTIVENESS MONITORING AND RECOMMENDATIONS (HOW WELL DID MANAGEMENT WORK OR WERE OBJECTIVES ACHIEVED? WHAT ARE NEXT THE STEPS?)**

**SECTION 7: THREATS MONITORING FIELD FORM – STAND ALONE FORM (WHAT IS THE STATUS OF VALUES OR TARGETS?)**

MAY BE COMPLETED BY ANYONE FOR ANY HCVA

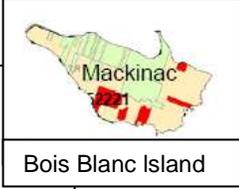
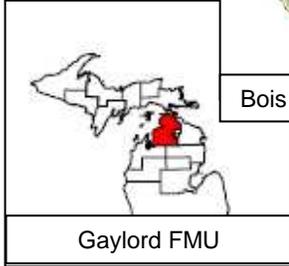
OR PART OF MONITORING PACKET TO ACCOMPANY PART I AND PARTS II, SECTIONS 6, 7 AND PART III.

Helpful References:

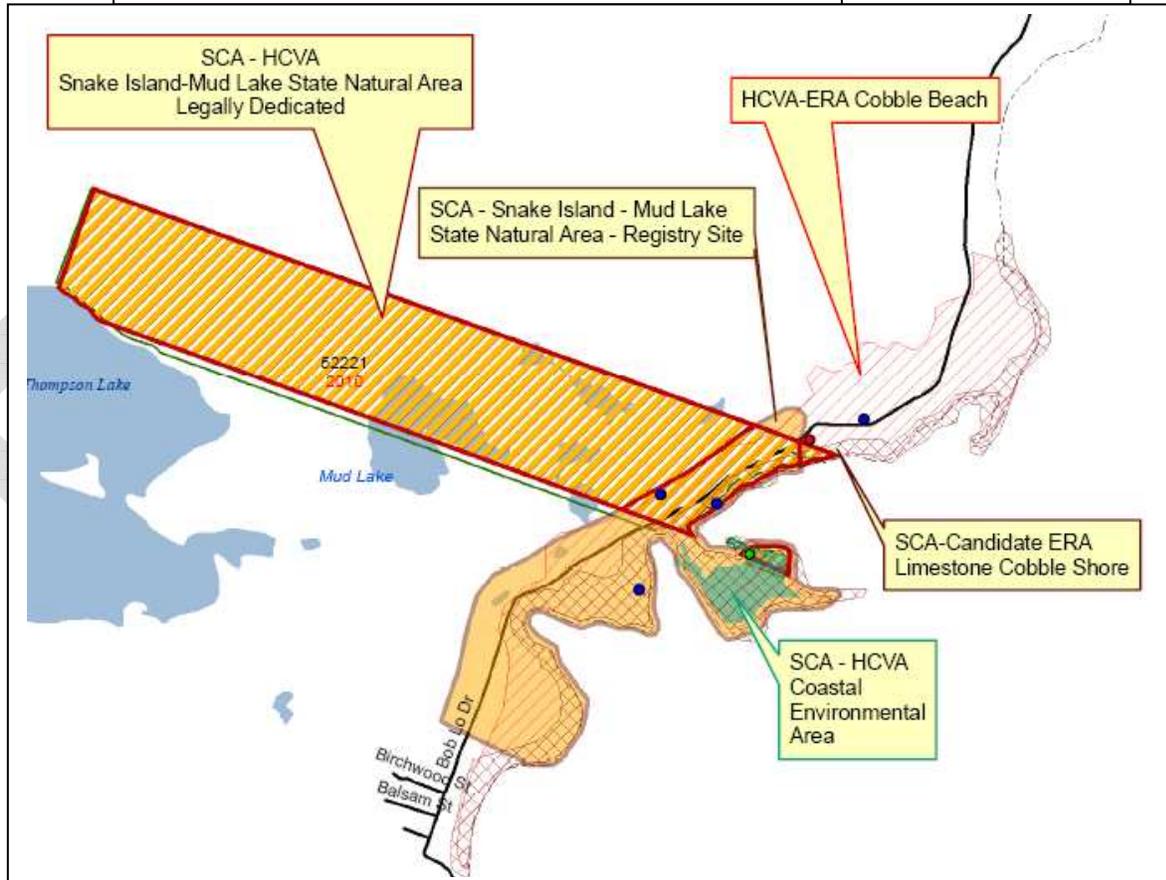
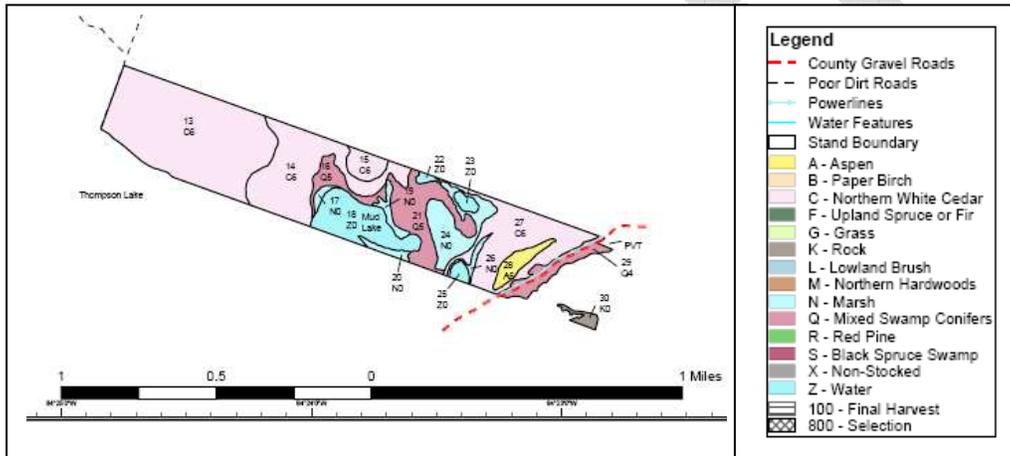
Marqoluis, R. and N. Salafsky. 1998. Measures of Success. Island Press, Washington, DC.362 pp.

The Nature Conservancy. 2005. CAP (Conservation Action Planning) Toolkit - version 08-23-05.  
See 2007 overview at <http://sites-conserveonline.org/dcs/projects/art10152.html> and the workbook at [http://www.conserveonline.org/2003/07/s/ConPrjMgmt\\_v4](http://www.conserveonline.org/2003/07/s/ConPrjMgmt_v4)

# SUMMARY



**Snake Island - Mud Lake  
 State Natural Area  
 Bois Blanc Island  
 Limestone Cobble Shore  
 Ecological Reference Area  
 Gaylord Forest Management Unit  
 Mackinac County, Michigan  
 French Survey Section 26  
 Acres  
 Photo by Joshua  
 Cohen**



**RECOMMENDED MANAGEMENT GOALS AND ACTIVITIES (FROM SECTION 4 AT BACK OF DOCUMENT)**

**CHECK ALL GOAL CATEGORIES THAT APPLY**

- NATURAL COMMUNITY MAINTENANCE OR ENHANCEMENT GOALS**
- ECOLOGICAL SYSTEMS MAINTENANCE OR ENHANCEMENT GOALS**
- SPECIES MAINTENANCE OR ENHANCEMENT GOALS**
- SPECIES RESTORATION GOALS**
- SOCIAL ECONOMIC GOALS**
- INFRASTRUCTURE/FACILITIES GOALS**
- ADMINISTRATIVE GOALS— PROTECTION STATUS; CAPACITY BUILDING; FUNDING, VOLUNTEERS**

**GOAL# AND DESCRIPTION FROM SECTIONS 2 AND 3**

**Goal 1: Manage according to Public Act 451 of 1994 Part 351 WILDERNESS AND NATURAL AREAS**

Objective 1: Sec. 35105. prohibits the following activities:

- "Removing, cutting, picking, or otherwise altering vegetation, except as necessary for appropriate public access, the preservation or restoration of a plant or wildlife species, or the documentation of scientific values and with written consent of the MDNR", or for an easement
- Exploration or extraction of minerals.
- A commercial enterprise, utility or permanent road
- Any use of mechanical transport (includes bicycles and motorboats), except when necessary for an emergency - this is a misdemeanor offense
- Use of motorized equipment, except for MDNR approved management

Objective 2: Explore the expansion of the Natural Area protection to include the adjacent The Nature Conservancy lands and, with assistance from land conservancies explore conservation easements on other private lands.

Objective 3: Recommend natural community and rare species surveys northwest of the county road.

Objective 4: Any activities affecting Coastal Environmental Area on Snake Island need to be coordinated with DEQ.

**Goal 2: Maintain high quality Limestone cobble shore community, associated rare species and adjacent high quality natural communities.**

Objective 1: Control illegal ORV use on the lakeshore.

Task 1: Report RDR on the shoreline

Task 2: Maintain vehicle control signage.

Task 3: Continue to work with local law enforcement agencies to enforce vehicle restrictions.

Objective 2: Allow natural processes to operate unhindered.

Task 1: Work with resource protection staff to implement the intent of no suppression unless private structures are threatened. If necessary to suppress fire use natural fires breaks and suppress fire utilizing minimum impact suppression techniques - MIST.

Objective 3: Minimize known impacts to listed animals and plants.

Task 1: Explore possibility of special road barriers and signage for Massasauga rattlesnake protection with TNC and the DNR endangered species program.

Task 2: Be sure the DNR R/W permits to Presque Isle Electric Company for easement management protects the Hines Emerald Dragonfly habitat and strongly urges mechanical treatments over pesticide use.

Objective 4: Work with local wildlife biologist and sportsman's/conservation groups to explore management tactics that minimize herbivory on cedar regeneration within the natural area.

Task 1: Identify the extent of the problem to determine if measures are necessary to begin with.

Objective 5: Continue to work with TNC volunteers to monitor and control identified invasive species.

**Goal 3: Maintain unique recreation experience.**

Objective 1: Monitor recreation impacts to determine if corrective actions are required.

Task 1: Enforce state land use rules.

Objective 2: Maintain roadless, trail-less features of the landscape with exception of Bob-Lo Drive..

**Goal 4: Increase public awareness of the unique values of the entire areas.**

Objective 1: Explore development of interpretive materials for use at the area. I.e. brochures and/or signs

Task 1: Explore possibility of an ATV Educational Grant to develop.

**PART I: HCVA BASELINE INFORMATION , GOALS AND OBJECTIVES**

**SECTION 1: SITE INFORMATION**

**A: HCVA TYPE – CHECK ALL THAT APPLY**

- |  |   |
|--|---|
| <input type="checkbox"/> Critical Dune as defined by DEQ   | <input checked="" type="checkbox"/> <b>Coastal Environmental Area as defined by DEQ</b> |
| <input checked="" type="checkbox"/> Legally Dedicated State Natural Area – <b>Snake Island-Mud Lake Natural Area</b> | <input type="checkbox"/> State Natural or Scenic River                                  |
| <input checked="" type="checkbox"/> Ecological Reference Area: - <b>Limestone Cobble Shore</b>                       | <input type="checkbox"/> Quiet Area:  |
| Acres per MNFI data  | <input type="checkbox"/> Other:   |
| <input type="checkbox"/> Endangered Species Management Area  |   |
| <input type="checkbox"/> Kirtland Warbler  |   |
| <input type="checkbox"/> Piping Plover   |   |
| <input type="checkbox"/> Other:  |   |

**SPECIAL CONSERVATION AREA - LIST OTHER CATEGORIES BELOW**

Special Conservation Area – NLP MA1 - Great Lakes Island – Bois Blanc Island  
Special Conservation Area - State Natural Area/Administrative Recognition - The Nature Conservancy Registry Site  
The Nature Conservancy Bois Blanc Island Preserve - 203 acres plus 40 pending

**B: SITE, CONTACT AND ADMINISTRATIVE INFORMATION**

Site Name: <b>Snake Island – Mud Lake Natural Area</b>		Other Names: <b>Limestone Cobble Shore (Cobble Beach) ERA</b>	
ReportDate <b>Draft July 15, 2008</b>	Forest Mgt Unit <b>Gaylord</b>	Compartment Number(s) Stand Number(s) <b>Compt 221 Stands 13 – 30 2009 YOE</b>	<input checked="" type="checkbox"/> Map Attached <input type="checkbox"/> Shape File in OI/IFMAP GDSE File Location/Name
County(ies) <b>Mackinac</b>		Township(s) Range(s) Section(s) ¼ Sec. Optional if mapped <b>French Survey Section 26</b>	
Name of individual completing this form (first and last) <input checked="" type="checkbox"/> Check if DNR Employee <b>Kim Herman, Monitoring Specialist, Forest, Mineral, Fire Management Division (FMFMD)</b> <b>Ken Phillips, Forester, FMFMD</b> <b>Brian Mastenbrook, Wildlife Biologist, Wildlife Division</b> <b>Neal Godby, Fisheries Biologist, Fisheries Division</b>		Telephone <b>(906) 786-2351, Escanaba</b> <b>(231) 238-9314 ext 4741 Indian River</b> <b>(989) 732-3541 ext 5430</b> <b>(989) 732- 3541 ext 5071</b>	Email Address <b>hermank@michigan.gov</b> <b>phillikj@michigan.gov</b> <b>mastenbb@michigan.gov</b> <b>godbyn@michigan.gov</b>
Additional contact information Name of individual providing information (first and last), if applicable <b>Joyce Angel-Ling, Gaylord Forest Management Unit Supervisor</b> <b>John Pilon, Inventory and Planning Specialist, Gaylord OSC</b> <b>Dr. Sylvia Taylor</b>		Telephone <b>(989) 732-3541 ext 5440</b> <b>(989) 732-3541 ext 5042</b>	Email Address <b>angellij@michigan.gov</b> <b>pilonj@michigan.gov</b> <b>smtaylor@umich.edu</b>
Name of DNR/DEQ Program Contact if Applicable <b>Paige Perry, Trails Specialist/ORV, FMFMD</b>		Telephone <b>(989) 732- 3541 ext 5086</b>	Email Address <b>perrypa@michigan.gov</b>
<input checked="" type="checkbox"/> Volunteer (s) Number of Volunteers: Name of Group: <b>The Nature Conservancy</b> Contact Name: <b>Dr. Sylvia Taylor</b>		Telephone ( )	Email Address <b>smtaylor@umich.edu</b>
<input checked="" type="checkbox"/> Volunteer (s): Number of Volunteers: <b>Birder and Herp Interests</b> Name of Group: Contact Name: <b>Dick Wolinski</b>		Telephone <b>Work (517) 335-2633</b>	Email Address <b>Work - wolinskir@michigan.gov</b>

**C: OWNERSHIP INFORMATION - CHECK ALL THAT APPLY AND INCLUDE NAME OF THE UNIT:**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> State Forest Land: <b>Gaylord Forest Management Unit</b> | <input type="checkbox"/> State Game Area:  |
| <input type="checkbox"/> State Park/Recreation Area:   | <input checked="" type="checkbox"/> Other or Private Land (describe): <b>The Nature Conservancy and private lots</b> |

**D: CONSERVATION PARTNERS – FILL IN ALL KNOWN PARTNERS**

Name of Organization: <b>The Nature Conservancy</b> Contact Name: <b>Christine (Tina) Hall</b> Email Address: <b>chall@tnc.org</b> Telephone ( <b>906</b> ) <b>225-0399</b> ext 12	Name of Organization: <b>Bois Blanc Island Stewardship Institute - BISI</b> Contact Name: <b>Jessica Kidder, Director</b> Email Address: <b>BISI@wildblue.net</b> Telephone ( <b>517</b> ) <b>896-1843</b>
Name of Organization: <b>Mackinac County Sherrif</b> Contact Name: <b>Graham Whipple</b> Email Address: <b>gtwsr@juno.com - personal</b> Telephone: ( <b>231</b> ) <b>634-7354</b>	Name of Organization: <b>Michigan Natural Areas Council</b> Contact Name: <b>Phyllis Higman, Chair</b> Email Address: <b>Work - higmanp@michigan.gov -</b> Telephone: <b>Work – (517) 373-6983</b>

**E: OTHER DOCUMENTS RELATED TO THIS HCVA – CITATION AND LOCATION WHERE STORED**

- Albert, D.A. 2007. Natural community abstract for Great Lakes Limestone cobble shore. Michigan Natural Features Inventory, Lansing, MI. 6 pp. Updated 2008.
- Cohen, J. 2008 DRAFT Natural Community Surveys of Potential Ecological Reference Areas on State Forest Lands. Michigan State University Extension, Michigan Natural Features Inventory, Lansing, MI. page 124 of 276 pages
- Phillips K. 2007 & 2008 Field Survey Data. Forest Mineral Fire Management Division Operations Inventory Field Surveys database
- Taylor, S. 1981. July 9 - MNFI Site Survey Summary for Bois Blanc Island Site # 114 Ecological Summary
- Taylor, S. Nov. 8, 2007. 2007 Monitoring & Stewardship Report for Snake Island Preserve, Bois Blanc Island. The Nature Conservancy, Michigan Chapter.
- Part 323, Shorelands Protection and Management, of Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. <http://www.deq.state.mi.us/documents/deq-ess-caap-manufguide-chap8.pdf>
- Part 351, Wilderness and Natural Areas, of the Natural Resources and Environmental Protection Act of 1994 <http://legislature.mi.gov/doc.aspx?mcl-451-1994-iii-1-land-habitats-351>

Add SNA administrative rule citation

**SECTION 2: CONSERVATION VALUES/TARGETS - CHECK ALL THAT APPLY**

**A: BIODIVERSITY VALUES**

There are a number of ways to describe biodiversity values - check all that apply.

1. **Natural Communities** – Based on Michigan Natural Features Inventory Community Classification.

GO to: [http://web4.msue.msu.edu/mnfi/data/MNFI\\_Natural\\_Communities.pdf](http://web4.msue.msu.edu/mnfi/data/MNFI_Natural_Communities.pdf); <http://web4.msue.msu.edu/mnfi/pub/abstracts.cfm>

Quality Rank comes from specific MNFI Element Occurrence Records (EOR) in the FMFM IFMAP Biodiversity Data Layer.

Chk Box	Community Name	State Rank	Global Rank	Quality Rank A,B,C,D
<input checked="" type="checkbox"/>	Limestone Cobble Shore [Cobble Beach]	S3	G2G3	B

2. **Other information if known.**

**Ecological Systems** .Check Applicable Regional Landscape Ecosystem (Section), Subsection, and Sub-subsection from Albert, Dennis A. 1995. Regional landscape ecosystems of Michigan, Minnesota, and Wisconsin: a working map and classification. Gen. Tech. Rep. NC-178. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 250 pp

Check all that apply	Name	Section Number	Subsection Number	Sub-subsection Number
<input checked="" type="checkbox"/>	Section VIII. Northern Lacustrine-Influenced Upper Michigan and Wisconsin	8		
<input checked="" type="checkbox"/>	Subsection VIII.1. Niagaran Escarpment and Lake Plain	8	1	
<input checked="" type="checkbox"/>	Sub-subsection VIII.1.1. St. Ignace	8	1	8.1.1.

## Ecological Systems

### List name(s) of Ecosystems/Natural Communities (based on MNFI Community Classification):

Limestone Cobble Shore (previously classified as Cobble Beach)

Overview from Albert 2007: Limestone cobble shore is characterized by less than 5 percent cover of herbs, shrubs, or small trees growing between limestone or dolomite (dolostone) cobbles along the Great Lakes shore. Vegetation is typically sparse, both because cobbles cover most of the surface and because storm waves prevent the development of a diverse, persistent plant community.



### Bois Blanc Island Site Description from Cohen 2008:

Rank: G2G3/S3, critically imperiled to rare globally and rare to local in the state

Element Occurrence Rank: B

Location: Gaylord Forest Management Unit, Compartment 221, and Private Lands

Element Occurrence Identification Number: 4632

This limestone cobble shore occurs on level lakeplain with dolomite boulders and cobble with alkaline (pH 8.0-8.5) sands and muck mixed within and between the cobble. Areas of 10 to 20 cm of wet sand over cobble support interdunal wetlands.

This limestone cobble shore is characterized by low levels of herbs and shrubs that are primarily growing between the cobble. Prevalent species include shrubby cinquefoil (*Potentilla fruticosa*), silverweed (*P. anserina*), Ohio goldenrod (*Solidago ohioensis*), and sedge (*Carex viridula*). Areas of interdunal wetland are more densely vegetated and are dominated by Baltic rush (*Juncus balticus*). Species composition and structure along the shore is patterned by wave and wind action. Eastern massasagua (*Sistrurus c. catenatus*) are known to occur within this site.

In the last ? 20 years Snake Island was a true island due to higher Great Lakes levels. Today the "island" is part of a peninsula created as the lake levels have gone down.

**Ecological processes** – such as connectivity, hydrology, fire, wind events, flooding, pest and disease cycles;  
Describe: Excerpted from Albert 2007. Cobble beaches form in a dynamic environment of storm wind and waves. Storm waves regularly disturb the beaches, reconfiguring the substrate and removing fine sediments. During the winter, shoreline ice freezes to the bottom sediments and is plucked loose during storms, further eroding and modifying the lake bottom. Wave action results in the removal of finer clay, silt, and sand particles from fine textured tills, resulting in the formation of a cobble layer (lag) underlain by finer till. Angular cobbles also form when weathering releases rock fragments from the underlying bedrock; on some bedrock beaches the observer can see the entire sequence of recently eroded, angular rocks to rocks rounded by years of wave action. Limestone and dolomite are also readily dissolved by rain water, and many limestone cobbles on the shoreline contain large numbers of small solution cavities. But resistance to dissolution is variable, with much less sign of dissolution on limestone rocks that contains abundant sand, silt, or clay impurities derived from the terrestrial environment adjacent to the ancient shallow seas.

**Underlying environmental features** – such as soils, geology, topography, headwaters;  
Describe: Excerpted from Albert 2007: The bedrock of the Niagaran Cuesta is Silurian-age limestone formed from marine reefs that were common in shallow portions of the Michigan Basin (Dorr and Eschman 1970, Ehlers 1973, Reed and Daniels 1987). While most of the beach surface consists of cobbles of varying size, the underlying parent material is either limestone bedrock or

fine-textured till. Between the cobbles is rock, mineral soil, or organic soil. Soil texture is typically heavy clay or loam, but in some areas these fine-textured soils are overlain with a thin veneer of sand. Organic sediments accumulate to 5 or more cm in protected inner portions of the shore. Regardless of the soil texture, pH is mildly to moderately alkaline (7.4 to 8.4).

**Environmental gradients** – such as elevation, precipitation, temperature;  
Describe:

**Species and/or community structure** – using during migration, during different life stages, or gradual species turnover across environmental gradients.  
Describe:

**Nested large and small natural communities linked by functional or restorable ecosystems:**  
Describe: Inland to the limestone cobble shore the inland swell and swale topography reflects formed lake levels, and results in numerous swamps, marshes and ponds separated by gravelly forested ridges. (Taylor, 1981). MNFI site summary (Cohen, 2008) notes interdunal wetlands within the limestone cobble shore community.

Four lakes plus shares a shore line with Thompson Lake. Mud Lake is named and three other smaller ponds are not. The four Lakes within the natural area boundary are very shallow with emergent and wetland vegetation. Since 1998, the aerial photos show the lake size has decreased due to low water tables (low precipitation). Thompson Lake is used recreationally by small boats – canoes, kayaks, and small motors and used by duck hunters and fisherman. (Phillips, personal communication 2008)

**High quality natural communities nearby:**  
Describe: Inland from the shoreline and within the Snake Island-Mud Lake Natural Area there inland swell and swale topography reflects formed lake levels, and results in numerous swamps, marshes and ponds separated by gravelly forested ridges. Per June 2007 Ken Phillips Operations Inventory date, the inland portions are predominately northern white cedar on the cobble uplands, the wetlands are marshes with pitcher plants.

**Large Block Size:**  
**General Shape and Acres:**

3. **Species Assemblages** – List types of species assemblage targets.

**Major groupings of species** – share common natural processes or have similar conservation requirements (e.g., freshwater mussels, forest-interior birds, essential pollinators).

Spring migrations of warblers feed heavily on the midges that settle in the northern white-cedar that ring the shoreline. (Albert 2007)

**Globally significant species aggregations** (e.g. migratory shorebird aggregation).

Common terns nested on a small off shore island over a mile to the southeast as of 1999 per MNFI database. Historical site summary (Taylor 1981) references a colony of herring gulls on Snake Island. Cormorants may be using snake island (Ken Phillips personal communication 2008), though nesting habitat does not occur there (Tina Hall, personal communication 2008).

4. **Species** – List types of species by common and scientific name.:

**Focal species** – keystone, wide-ranging (regional), providing linkages between ecosystems, and umbrella species.

Species:

**Globally imperiled or state endangered or threatened native species** – Ranked G1, G2, G3 by NatureServe, and S1, S2 by MNFI, state and/or federally listed or proposed for listing as Threatened or Endangered (MI and U.S.), and on the IUCN Red List (International).

Species:

Hines Emerald Dragonfly - *Somatochlora hineana* Williamson- MNFI EO Number 7  
Status: Federal and State Endangered  
Global and State Rank G1/S1  
Last Observed 2006

**Common Loon – *Gavia immer* MNFI EO Number 744**

Status: State Threatened  
Global and State Rank G5/S3S4  
Last Obsv 2000

**Pitcher's thistle –*Cirsium pitcheri* EO Number 96**

Status: Federal and state threatened  
Global and State Rank G3/S3  
EO Rank C  
Last Obsv 2002

**Dwarf lake iris- *Iris lacustris* MNFI EO Number 44**

Status: Federal and state threatened  
Global and State Rank G3/S3  
EO Rank A  
Last Obsr 1997 (2007)

**Houghton's goldenrod - *Solidago houghtonii* MNFI EO Number 39**

Status - Federal and state threatened  
Global and State Rank G3/S3  
EO Rank B  
Last Obsv 1981

**Lake Huron Tansy - *Tanacetum huronense* MNFI EO Num 45**

Status - State threatened  
Global and State Rank G5T4T5/S3  
EO Rank C  
Last Obsv 1998

Bald eagle roosting during spring sucker run on Moon Bay (Taylor, 1981)

Osprey are commonly seen in the area (Taylor, 1981)

- Species of Special Concern – Due to vulnerability, declining trends, disjunct distributions, or endemic status;  
Ranked S3 by MNFI

Species:

**Eastern Massasauga Rattlesnake - *Sistrurus c. catenatus* MNFI EO Number 37**

Status: federal candidate species and State Special Concern  
Global and State Rank G3G4T3T4/S3S4  
EO Rank AB  
Last Observed 2005

**Prairie Indian-plantain - *Cacalia plantaginea* MNFI EO Number 14**

Status - state special concern  
Global and State Rank G4G5/S3  
EO Rank B  
Last Obs 1997

**Beauty sedge *Carex concinna***

**Douglas hawthorn – *Crateagus douglassii***

Status - state special concern - General Records for Bois Bland Island

- Other species of greatest conservation need –

**Species B: KNOWN SOCIAL/ECONOMIC VALUES**

**C: EXISTING INFRASTRUCTURE/FACILITIES:**

- Archaeological
- Historical:
- Recreational:
  - Camping : **dispersed**
  - Canoeing/Kayaking
  - Fishing:
  - Hiking/Backpacking:
  - Hunting: **Duck hunting on lakes, fishing on Thompson Lake,**
  - Photography – **many unique wildflowers**
  - Scenic: **Great Lakes Shoreline**
  - Water (lake, river, stream) : **4 small lakes within Natural Area**
  - Wildlife Viewing: **Bird Watching**
  - Cross Country Skiing
  - Other :
- Restorative/Spiritual
- Traditional Use/Gathering

- American Disability Accessibility (ADA) Considerations
- Boat Launch(es)
- Bridge(s):
- Campground(s):
- Interpretive Displays:
- Marked boundaries
- Parking lot(s): **2 vehicles**
- Posted use rules
- Scenic Overviews
- Toilet(s)
- Trails/Boardwalks: - **No developed trails, TNC has one trail on south property.**
- Other: **Natural Area Sign and No motorized vehicle signs**

**SECTION 3: CURRENT CONDITIONS**

**D. CURRENT STATUS/VIABILITY OF CONSERVATION VALUE/TARGET (FROM TNC CAP TOOL KIT)**

STATUS DEFINITIONS – POOR - IMMINENT LOSS, FAIR – VULNERABLE, GOOD – MINIMUM INTEGRITY, VERY GOOD – OPTIMAL INTEGRITY

LIST CONSERVATION VALUE/TARGET FROM SECTION 2 – A, B OR C	LIST CATEGORY OF SIZE, CONDITION, OR LANDSCAPE CONTEXT	LIST KEY ATTRIBUTE	LIST INDICATOR	LIST CURRENT STATUS POOR, FAIR, GOOD, OR VERY GOOD
LIMESTONE COBBLE SHORE	CONDITION	NATURAL COMMUNITY FLUCTUATING WIND AND WAVES	LACK OF ORV DAMAGE	FAIR TO GOOD
INTERDUNAL WETLAND	CONDITION	SPECIES RICHNESS	HIGH FLORISTIC QUALITY	VERY GOOD
BOREAL FOREST/RICH CONIFER SWAMP	CONDITION	ECOSYSTEM PROCESS	THICKNESS AND DENSITY OF CEDARS	VERY GOOD
SWELL & SWALE	CONDITION	SPECIES RICHNESS	FLORISTIC QUALITY	UNKNOWN
HINES EMERALD DRAGON FLY	SIZE AND CONDITION OF THE POPULATION	INTERDUNAL WETLAND HABITAT	COOPERATIVE MANAGEMENT WITH UTILITY	VERY GOOD?
MASSASAUGA RATTLE SNAKE	POPULATION SIZE	LARGE POPULATION ON ISLAND	PRESENCE	VERY GOOD
GREAT LAKES SHORE LINE ENDEMIC PLANTS	CONDITION AND POPULATION SIZE	SHORELINE HABITAT	PRESENCE OF FLOWERING AND FRUITING PLANTS LACK OF ORV DAMAGE	FAIR - VERY GOOD (VARIES WITH SPECIES)
RECREATION	SCENIC AND RESTORATIVE QUALITY	SNAKE ISLAND – MUD LAKE NATURAL AREA	LACK OF USER DAMAGE	FAIR ON SHORELINE GOOD INTERIOR
RECREATION	SCENIC AND RESTORATIVE QUALITY	DIVERSITY OF PASSIVE USES	PRESENCE OF THE UNIQUE FLORA, FAUNA AND NATURAL COMMUNITIES	GOOD

**E. : INITIAL PRIMARY THREATS ASSESSMENT TO ESTABLISH BASELINE CONDITION**

**CHECK ALL THAT THERE IS ACTUAL EVIDENCE FOR AND DESCRIBE THE EVIDENCE BRIEFLY AND/OR ATTACH PHOTOS**

**DO THIS INITIALLY FROM AERIAL PHOTOS, LOCAL KNOWLEDGE, AND EXISTING DATA FOLLOWED BY A SITE VISIT.**

**A. Habitat Conversion & Degradation** – Complete or substantial **loss of or damage** to natural habitats.

- Altered Fire Regime -*suppression or increase in fire frequency and/or intensity outside of its natural range of variation:*
- Altered Hydrologic Regime Changing water flow patterns outside their natural range of variation (*surface water diversion, groundwater pumping, dam operations*)
- Commercial & Industrial Development: *factories, stand-alone shopping centers, office parks, train yards, docks, ship yards, airports, landfills)*
- Farms & Plantations Agricultural operations - *commercial farms, industrial plantations, feed lots, aquaculture*
- Housing & Urban Development Expansion of cities, towns, settlements, non-housing development - *urban areas, suburbs, villages, homes, shopping areas, offices, schools, hospitals* **Private land along shore on north and south is subdivided. Minor impact at moment.**
- Military Activities Actions by formal or paramilitary forces (*military bases, defoliation, munitions testing* :
- Natural System Modifications Actions that convert or degrade habitat to “managing” natural systems for human welfare - *dam construction, land reclamation, wetland filling, rip-rap along shoreline, levees and dikes*
- Recreation Areas Recreation sites with a substantial footprint *ski areas, golf courses, resorts, county parks*
- Other:

**B. Transportation Infrastructure** – Long narrow corridors **altering, fragmenting, and disturbing** natural habitat and species, including soil erosion/sedimentation, and providing routes for invasive or problematic species.

- Flight Paths :
- Railroads:
- Roads and Trails: **Bob Lo Drive bisects natural area. Main route around the island. The south shore of the island is the developed shores and the road gets a lot of local use. County maintains the road year round. rattlesnake road kills. In Spring the snakes tend to leave the wetlands to bask on the warm shore line road. Folks drive over them deliberately for the rattles and to show off to their friends**
- Shipping Lanes:
- Trails:
- Utility Lines. **Overhead electric line parallels the road, maintained periodically by power company with herbicides. The power company is Presque Isle Electric Co-op. They were issued an easement in 1965 pre-dating the Natural Area designation.**
- Stream Crossings - *culverts, bridges* :
- Other:

**C. Energy & Mining** – Production of non-biological resources **having negative impacts** to conservation values.

- Mining – *Exploring, developing, and producing* – **State of Michigan owns all minerals**
- Oil & Gas Drilling -**none known in area**
- Renewable Energy – *Exploring, developing, and producing.*

**D. Biological Resource Harvesting** –Over or under consumption of “wild” resources **resulting in loss** of conservation values.

- Gathering – *Harvesting plants, fungi, and other non-timber/non-animal products for commercial, recreation, or subsistence purposes.*
- Grazing
- Hunting, Trapping & Fishing:
- Timber Harvesting:

**E. Recreation & Research** – Non-consumptive uses of biological resources **resulting in damage** to natural resources.

- Human-Powered Recreation – *mountain bikes, hikers, backpackers, cross-country skiers, rock climbers, canoeists, kayakers, hang-gliders, birdwatchers, photographers*
- Motor-Powered Recreation - *Traveling outside of established transport corridors: off-road vehicles, motorcycles, motorboats, jet-skis, snowmobiles, ultra-light planes.*  
**Illegal ATV use is the most significant threat to the Limestone Cobble Beach and associated plants. “In Mackinac Co. State land is open unless posted closed.” The primary threat to this site is off-road vehicle damage, which could lead to the introduction of invasive species and the erosion of wetland soils and vegetation. An off-road vehicle trail out to Snake Island and along the shoreline has resulted in soil compaction and limited vegetation establishment along the tracks. (Draft MNFI Site Summary, 2008)**
- Scientific Research – *Ecosystem manipulations*

E. : INITIAL PRIMARY THREATS ASSESSMENT TO ESTABLISH BASELINE CONDITION

**CHECK ALL THAT THERE IS ACTUAL EVIDENCE FOR AND DESCRIBE THE EVIDENCE BRIEFLY AND/OR ATTACH PHOTOS**

**DO THIS INITIALLY FROM AERIAL PHOTOS, LOCAL KNOWLEDGE, AND EXISTING DATA FOLLOWED BY A SITE VISIT.**

F. **Pollution** – Introduction of exotic and/or excess materials from point and non-point sources with **evidence of resource damage.**

- Chemicals & Toxins
- Greenhouse Gasses –*CO<sub>2</sub>, methane*
- Light Pollution
- Noise Pollution
- Nutrient Loads
- Radioactive Materials
- Salt/Brine
- Solid Waste – *garbage, litter* **Very little litter problem**
- Thermal Pollution
- Waste & Residual Materials – *dredge spoil, water treatment residuals, slash, mine tailings, excess sediment loads.*

G. **Invasive & Other Problematic Species & Genes** – Aquatic or terrestrial non-native and native species or genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread and/or increase in abundance.

List species, extent of infestation and fill out Forest Health Form.

- Introduced Genetic Material
- Invasive Species: **Common mullien, Verbascum thapsus – minor issue at moment.**
- Problematic Native Species: **Deer browse on cedar regeneration.**
- Hybrid Species

H. **Climate Change** – Evidence of impacts from long-term changes linked to global warming and other climate issues.

- Climate Variability – Intensification and/or alteration of normal weather patterns - *droughts, high wind or rain event.*  
**Recent warming trends and lowering great lakes water levels are affecting water tables in inland ponds/lakes and Interdunal wetlands which are habitat for listed species.**
- Habitat Shifting & Alteration: **Snake Island is now part of the mainland as lake levels have receded over last 10 – 15 years.**  
**Wetlands are drying out and previously open areas becoming colonized with woody vegetation.**

I. **Other**

**SECTION 4: RECOMMENDED MANAGEMENT GOALS AND ACTIVITIES**

**LIST GOAL(S), FOR EACH VALUE, RELATED THREAT ABATEMENT, MAINTENANCE OR ENHANCEMENT NEED IDENTIFIED IN SECTIONS 2 AND 3 REPEATED AT FRONT OF DOCUMENT**

**CHECK ALL GOAL CATEGORIES THAT APPLY**

- NATURAL COMMUNITY MAINTENANCE OR ENHANCEMENT GOALS
- ECOLOGICAL SYSTEMS MAINTENANCE OR ENHANCEMENT GOALS
- SPECIES MAINTENANCE OR ENHANCEMENT GOALS
- SPECIES RESTORATION GOALS
- SOCIAL ECONOMIC GOALS
- INFRASTRUCTURE/FACILITIES GOALS
- ADMINISTRATIVE GOALS— PROTECTION STATUS; CAPACITY BUILDING; FUNDING, VOLUNTEERS

**GOAL# AND DESCRIPTION FROM SECTIONS 2 AND 3**

**Goal 1: Manage according to Public Act 451 of 1994 Part 351 WILDERNESS AND NATURAL AREAS**

Sec. 35105. prohibits the following activities:

- "Removing, cutting, picking, or otherwise altering vegetation, except as necessary for appropriate public access, the preservation or restoration of a plant or wildlife species, or the documentation of scientific values and with written consent of the MDNR", or for an easement
- Exploration or extraction of minerals.
- A commercial enterprise, utility or permanent road
- Any use of mechanical transport (includes bicycles and motorboats), except when necessary for an emergency - this is a misdemeanor offense
- Use of motorized equipment, except for MDNR approved management

Objective 2: Explore the expansion of the Natural Area protection to include the adjacent The Nature Conservancy lands and, with assistance from land conservancies explore conservation easements on other private lands.

Objective 3: Recommend natural community and rare species surveys northwest of the county road.

Objective 4: Any activities affecting Coastal Environmental Area on Snake Island need to be coordinated with DEQ.

**Goal 2: Maintain high quality Limestone cobble shore community, associated rare species and adjacent high quality natural communities.**

Objective 1: Control illegal ORV use on the lakeshore.

Task 1: Report RDR on the shoreline

Task 2: Maintain vehicle control signage.

Task 3: Continue to work with local law enforcement agencies to enforce vehicle restrictions.

Objective 2: Allow natural processes to operate unhindered.

Task 1: Work with resource protection staff to implement the intent of no suppression unless private structures are threatened. If necessary to suppress fire use natural fires breaks and suppress fire utilizing minimum impact suppression techniques - MIST.

Objective 3: Minimize known impacts to listed animals and plants.

Task 1: Explore possibility of special road barriers and signage for Massasauga rattlesnake protection with TNC and the DNR endangered species program.

Task 2: Be sure the DNR R/W permits to Presque Isle Electric Company for easement management protects the Hines Emerald Dragonfly habitat and strongly urges mechanical treatments over pesticide use.

Objective 4: Work with local wildlife biologist and sportsman's/conservation groups to explore management tactics that minimize herbivory on cedar regeneration within the natural area.

Task 1: Identify the extent of the problem to determine if measures are necessary to begin with.

Objective 5: Continue to work with TNC volunteers to monitor and control identified invasive species.

**Goal 3: Maintain unique recreation experience.**

Objective 1: Monitor recreation impacts to determine if corrective actions are required.

Task 1: Enforce state land use rules.

Objective 2: Maintain roadless, trail-less features of the landscape with exception of Bob-Lo Drive..

**Goal 4: Increase public awareness of the unique values of the entire areas.**

Objective 1: Explore development of interpretive materials for use at the area. ie brochures and/or signs

Task 1: Explore possibility of an ATV Educational Grant to develop.