

## 17. Dead-Kelsey

### HEALTHY WATERS REPORT CARD

OFFSHORE	NA	ISLANDS	A
NEARSHORE	C	COASTAL WETLANDS	B
EMBAYMENTS & INSHORE	C	COASTAL TERRESTRIAL	A
TRIBUTARIES & WATERSHEDS	C	<b>OVERALL B</b>	

Report card denotes general condition/health of each biodiversity target in the region based on condition/stress indices. See introduction to the regional summaries.



<b>A</b> Very Good	<i>Ecologically desirable status; requires little intervention for maintenance</i>
<b>B</b> Good	<i>Within acceptable range of variation; may require some intervention for maintenance.</i>
<b>C</b> Fair	<i>Outside of the range of acceptable variation and requires management. If unchecked, the biodiversity target may be vulnerable to serious degradation.</i>
<b>D</b> Poor	<i>Allowing the biodiversity target to remain in this condition for an extended period will make restoration or preventing extirpation practically impossible.</i>
<b>Unknown</b>	<i>Insufficient information.</i>



*The Huron Mountains are a dominant feature in the Dead-Kelsey watersheds. Photo credit: NOAA.*

### Summary/ Description

The Dead-Kelsey region (HUC 04020105) extends from west of Baraga in the west to just beyond Marquette in the east. A small portion of the eastern Keweenaw Peninsula is included in this region, up to the Portage River Entry (the Keweenaw Waterway Lower Entrance). This regional unit is 3,151 km<sup>2</sup> in size, including the associated nearshore waters. A portion of the Keweenaw Bay Indian Community is located in this regional unit, while the rest of the community is in the Keweenaw Peninsula and Sturgeon regional unit. The Dead-Kelsey regional unit is part of the territory ceded in the Treaties of 1836 and 1842. The signatory tribes retain rights to hunt, fish, and gather within the regional unit (A. McCammon Soltis, pers. comm., January 5 2015). This regional unit is part of Subregion 0402 – Southern Lake Superior – Lake Superior. The Huron Mountains are located within this region. Mount Arvon, the highest natural point in Michigan is part of the Huron Mountains. The Dead-Kelsey regional unit contains one tertiary (HUC 8) watershed, Dead-Kelsey, and 6 quaternary (HUC 10) watersheds. The watersheds in this unit are dominated by forests. Coastal habitats include rocky shore, sand beaches and coastal wetlands. This region contains some of the most extensive coastal wetlands in Lake Superior.

**TABLE 17.1: Dead-Kelsey BY THE NUMBERS**

<b>Land and Water Cover</b>	<b>Region (km<sup>2</sup>)</b>	<b>Region %</b>	<b>Lake Superior Total (km<sup>2</sup>)</b>	<b>Notes</b>
Agriculture	45.62	1.29	1,441.07	
Developed	12.89	0.36	389.55	
Forest	2,082.44	58.90	107,747.13	
Associated Nearshore Waters	1,126.54	31.86	17,868.03	
Other	207.10	5.86	8,227.57	
Water (inland)	61.24	1.73	9,473.05	
<b>Total Area</b>	<b>3,535.82</b>	<b>100</b>	<b>145,146.40</b>	
<b>Coastal Features</b>	<b>Region</b>	<b>Region %</b>	<b>% of Lake Superior Total for Coastal Feature</b>	
Coastline (km)	247.51	NA	4.25	Based on SOLEC shoreline
Sand Beaches (km)	19.10	7.72	2.97*	*% of Lake Superior Total Sand Beaches
Coastal Wetlands ( km <sup>2</sup> )	105.46	26.54*	9.56**	*% of Regional Coastal Area ** % of Lake Superior Total Coastal Wetlands
Natural Cover in Coastal Zone	332.86	83.76*	5.39**	*% of Regional Coastal Area ** % of Lake Superior Total Natural Cover in Coastal Area
Number of Islands	47	NA	1.8	
<b>Condition</b>	<b>Region</b>	<b>Region %</b>	<b>% of Lake Superior Total</b>	
Population Density (persons/km <sup>2</sup> )	17.23	NA		
Road Density (km/km <sup>2</sup> )	0.46	NA		
Number of Dams and Barriers	1,262	NA	5.3	
Artificial Shoreline (km)	15.77	6.37	6.92	
<b>Land Ownership &amp; Protection</b>	<b>Region (km<sup>2</sup>)</b>	<b>Region %</b>	<b>Regional Area (km<sup>2</sup>)</b>	
Private	2,020.48	83.87	2,409.10	Regional area based on landmass
Public/Crown	140.70	5.84	2,409.10	
Tribes/ First Nations	236.04	9.80	2,409.10	
Parks & Protected Areas (total)	11.88	0.49	2,409.10	
Parks & Protected Areas (coast)	0.92	0.23*	397.39**	*% of Regional Coastal Area **Regional Coastal Area (km <sup>2</sup> )

## **Important Biodiversity Features**

### **Nearshore and Inshore Waters**

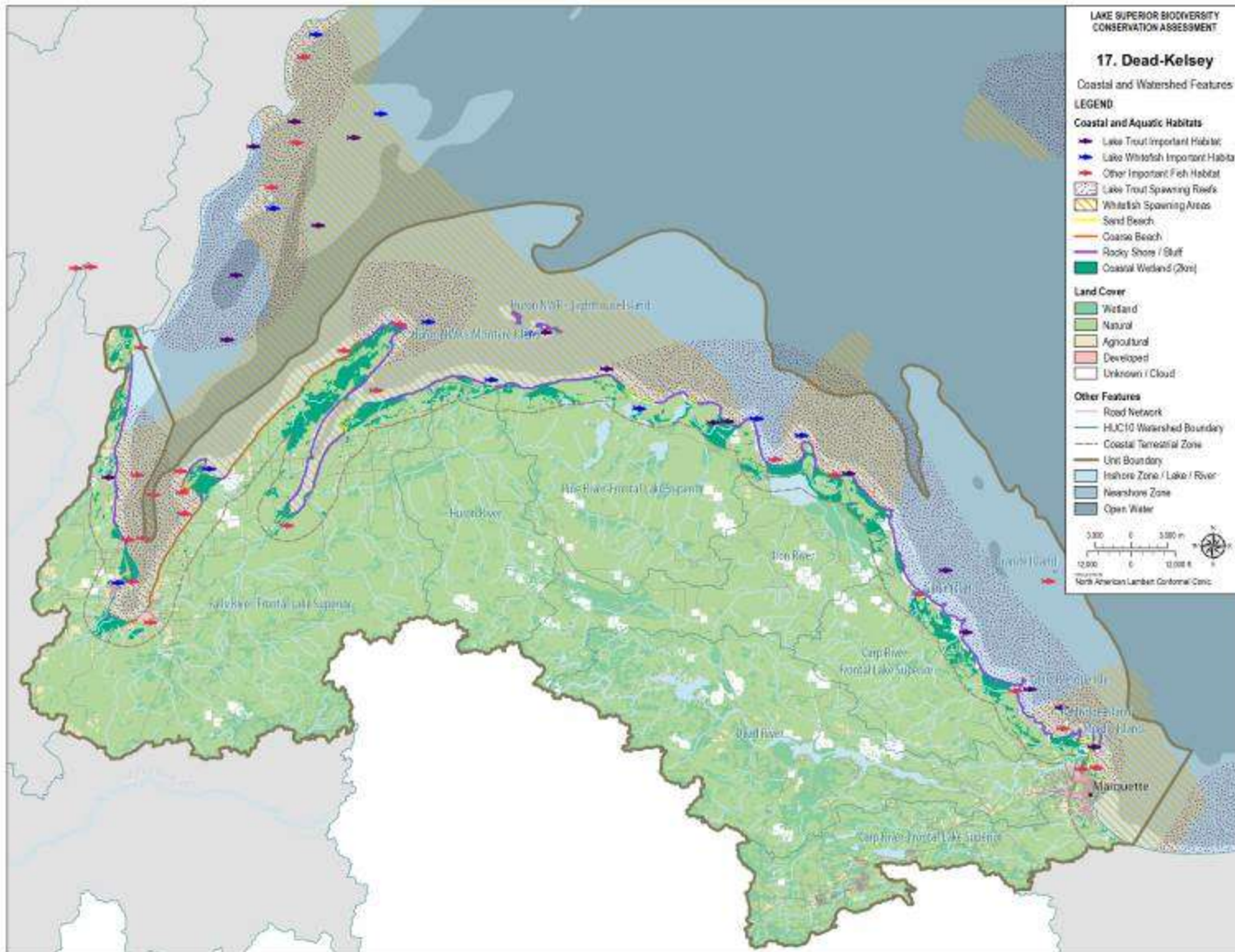
- The Dead-Kelsey regional unit contains a number of sites of Important Habitat for Lake Trout and Lake Whitefish. The Important Habitat Sites for both species are found in Keweenaw Bay (L'Anse Bay, Pequaming Bay, Sand Bay) as well as on the eastern side of Point Abbaye and along the shoreline to Marquette (Lake Superior Binational Program Habitat Committee 2006) (Figure 17.1).
- Keweenaw Bay and Huron Bay are noted as Lake Superior embayments which are important for Lake Sturgeon (Auer 2003). In the Dead-Kelsey regional unit these embayments and the nearshore zone, which provides corridors for movement, are identified as critical management areas for Lake Sturgeon in the Lake Superior basin (Auer 2003).

### **Coastal Zone and Islands**

- This region contains Important Habitat Areas and Important Habitat Sites (Lake Superior Binational Program Habitat Committee 2006) (Table 17.3, Figure 17.3).
- This region contains some of the most extensive coastal wetlands in Lake Superior.

### **Tributaries and Watersheds**

Figure 17.1: Dead-Kelsey - Coastal and Watershed Features



**TABLE 17.2: Dead-Kelsey CONDITION AND TRENDS**

Target (Data Source)	Condition	Trends
Offshore <sup>1</sup>	NA	
Nearshore <sup>1</sup>	C (0.52)	
Embayments and Inshore <sup>1,2</sup>	C (0.47)	
Coastal Wetlands <sup>2,3</sup>	B (0.632)	
Islands <sup>4</sup>	A	
Coastal Terrestrial <sup>3</sup>	A (0.955)	
Tributaries and Watersheds <sup>2</sup>	C (0.42)	

<b>A: Very Good</b>	<i>Ecologically desirable status; requires little intervention for maintenance</i>
<b>B: Good</b>	<i>Within acceptable range of variation; may require some intervention for maintenance.</i>
<b>C: Fair</b>	<i>Outside of the range of acceptable variation and requires management. If unchecked, the biodiversity target may be vulnerable to serious degradation.</i>
<b>D: Poor</b>	<i>Allowing the biodiversity target to remain in this condition for an extended period will make restoration or preventing extirpation practically impossible.</i>
<b>Unknown</b>	<i>Insufficient information.</i>

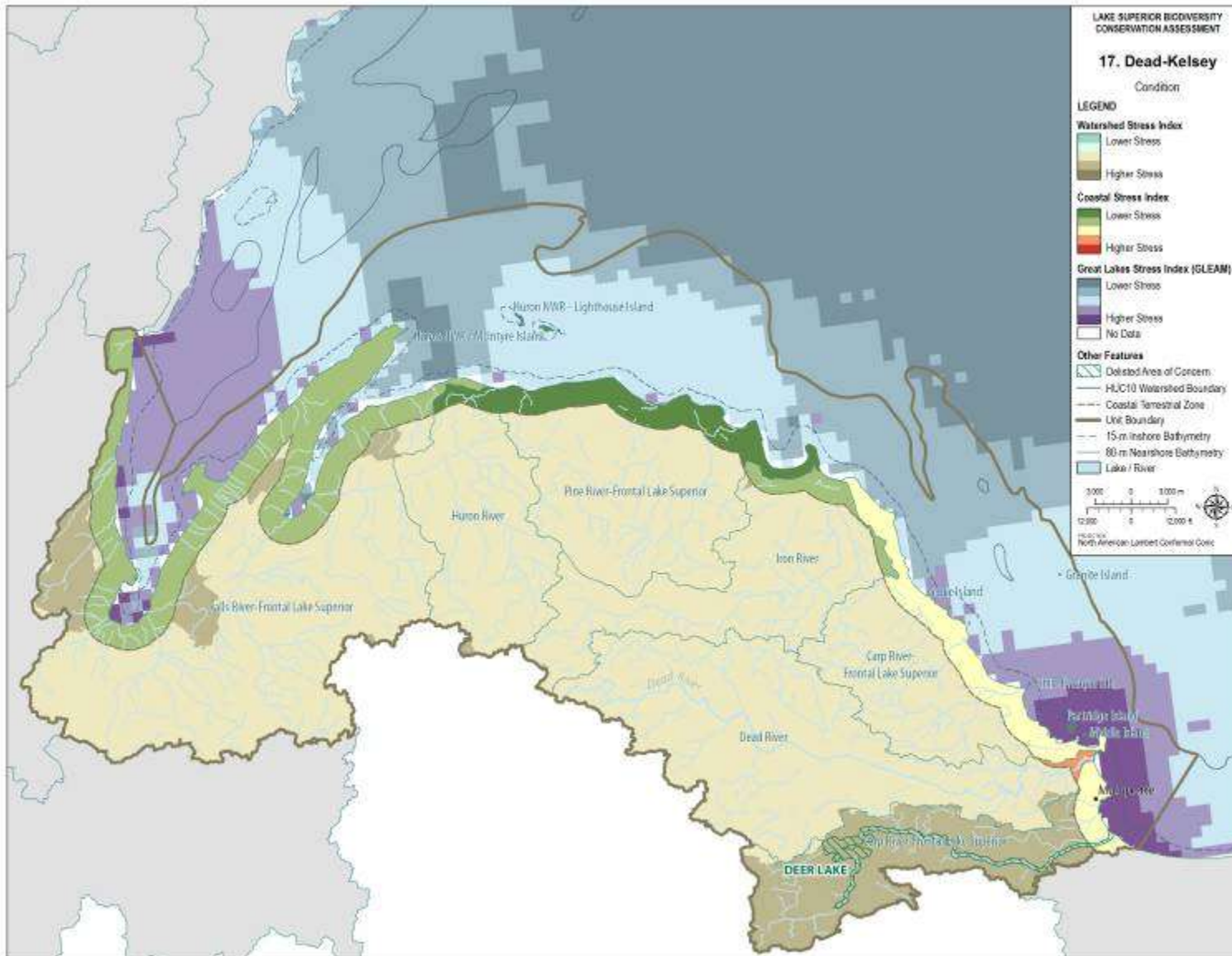
1: Great Lakes Cumulative Stress (GLEAM 2012, Allan et al. 2013)

2: Watershed Stress Index (GLEI 2013)

3: Coastal Condition Index (developed for this report)

4 : Island Condition Score (Henson et al. 2010)

Figure 17.2: Dead-Kelsey - Condition



## Important Issues & Threats

- The ports of Two Harbors, Minnesota, Superior, Wisconsin-Duluth, Minnesota and Presque Isle-Marquette, Michigan have been identified as sites at high risk for invasion by aquatic invasive species, due to ballast water from laker traffic (Rup et al. 2010 as cited in International Joint Commission (IJC) Work Group on Aquatic Invasive Species Rapid Response 2011).
- Mining activities have impacted Lake Superior sediments in the Keweenaw Region; in the Keweenaw Peninsula area, the sediments contain copper enrichments (Kerfoot et al. 2009). Three large copper mills operated in the Keweenaw Bay area; two were located at Gay, Michigan, and one was north of Baraga, near Assinins, Michigan (Kerfoot et al. 2012). The Mass Mill discharged 2.7 teragrams (Tg) of stamp sands, equal to approximately 11% of the total stamp sands discharged into the Keweenaw Bay area (Kerfoot et al. 2012). Investigations have revealed a metal-rich area around the Keweenaw Peninsula, and in the Gay area the copper tailings have drifted from their original sources (Kerfoot et al. 2012). Stamp sands in the Dead-Kelsey region are only found in western lower Keweenaw Bay, north of Baraga (W. Taft, pers. comm., February 25, 2013), which is consistent with the location of the Mass Mill operation.
- The Eagle Mine, a nickel and copper mining operation, is located near the headwaters of the Salmon-Trout River.
- The former Deer Lake Area of Concern (AOC) is located in the Dead-Kelsey regional unit, in Michigan's Marquette County. Two known industrial sources of mercury and untreated wastewater contributed to negative environmental impacts in the AOC. The three beneficial use impairments identified in this AOC were Restrictions on Fish and Wildlife Consumption, Bird or Animal Deformities or Reproductive Problems, and Eutrophication or Undesirable Algae. In October 2014, this AOC was removed from the list of AOCs, the third such delisting on the U.S. side (See Existing Programs and Projects section) (U.S. EPA 2013s, Michigan DEQ 2014, Michigan DEQ 2013e).
- Forest fragmentation through real estate development is an emerging concern in the Upper Peninsula Lake Superior watersheds. Large tracts of forest lands owned by corporate land holders are being sold to companies which run real estate investment trusts; smaller parcels are then developed (W. Taft, pers. comm., February 25, 2013).

## Conservation In Action

### Parks & Protected Areas

- Ottawa National Forest
- Baraga Plains State Waterfowl Management Area
- Baraga State Park
- Little Presque Isle Natural Area
- Rocking Chair Lakes Natural Area
- State Forest – Baraga & Gwinn Management Units
- Sugarloaf Mountain Natural Area
- Huron Mountain Club (Private)
- McCormick Wilderness Area

### Existing Programs & Projects

- Under the Michigan Water Quality Standards (WQS), portions of the Yellow Dog River (Marquette County) are designated as Outstanding State Resource Waters (OSRW). Surface waters of the Lake Superior basin that are not identified as OSRWs are designated as Lake Superior basin - Outstanding

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International Resource Waters (LSB-OIRW). Under the above designations, additional anti-degradation controls are applied for new or increased pollutant loadings (Michigan DEQ 2013a).

- A four mile segment of the Yellow Dog River from its source at the Bulldog Lake Dam to the Ottawa National Forest boundary is designated as Wild through the National Wild and Scenic Rivers System (Interagency Wild & Scenic Rivers Council 2012, USDA Forest Service 2007a). This four mile section is entirely within the McCormick Wilderness, and the management plan states that it will be managed consistent with the wilderness values (USDA Forest Service 2007a).
- The State of Michigan has identified exceptional areas of fish and wildlife habitat along its coastline, connecting waterways, and rivermouths. Designated as Environmental Areas (EAs), certain uses within these areas require state review and approval (Michigan DEQ 2013b). Five of these EAs are located in Baraga and Marquette counties, in the Dead-Kelsey regional unit. The three Baraga County EAs are located in Arvon and L'Anse Townships, and the two Marquette County EAs are located in Powell Township (Michigan DEQ 2013c, 2013d).
- A number of State Important Bird Areas (IBAs) are located in the Dead-Kelsey regional unit. These IBAs are Yellow Dog Plains IBA, Peshekee Highlands LTA IBA and Baraga Plains IBA (National Audubon Society 2013, 2012).
- A significant amount of work was completed in the Deer Lake AOC to achieve delisting. Fish mercury levels have declined and there are no longer regular algal blooms on Deer Lake (S. Swart, pers. comm., October 31 2014). The final action in the AOC was a Great Lakes Restoration Initiative project with the City of Ishpeming to divert Partridge Creek from old mine workings below the city and back into the storm water system (City of Ishpeming 2011). Continued monitoring of the site will be undertaken by Cliffs Natural Resources, the Michigan Department of Environmental Quality, the Michigan Department of Natural Resources, and the Deer Lake Public Advisory Council.
- In this region, several individual watersheds have state-approved watershed management plans, including the Lower Dead River, Partridge Creek, Salmon Trout River, and the Whetstone Brook and Orianna Creek watershed. These plans serve as guides for communities to protect and improve water quality (M. Preisser, pers. comm., May 31 2013).
- Two Cooperative Weed Management Areas (CWMA), the Keweenaw Invasive Species Management Area and the Central Upper Peninsula CWMA, cover the counties of this region, including the Ottawa and Hiawatha National Forests. These groups facilitate cooperation and education among federal, state, tribal, local groups and landowners in prevention and management of invasive species (M. Preisser, pers. comm., May 31 2013).
- The private Huron Mountain Club owns 13,000 acres of lands in the Huron Mountains. Approximately 10,000 acres of these lands are old-growth forest, and several lakes are also located in the land holdings. The club has a limited membership of 50 partners, and in 1938 Aldo Leopold created a preservation plan for the area (Wikipedia contributors No Date).
- The Huron Mountain Wildlife Foundation research center is located in the Huron Mountains and supports the scientific study of the Lake Superior region ecosystems. Established in 1955, sponsorship by this group has produced over 200 publications, including theses and peer-reviewed publications. Approved researchers are able to access the private Huron Mountain Club reserve (Huron Mountain Wildlife Foundation No date).



**TABLE 17.3: Dead-Kelsey IMPORTANT HABITAT SITES AND AREAS**

<i>Code</i>	<i>Site/ Area</i>	<i>Important Habitat Site/Area Name</i>	<i>Key Features</i>
MI-027	Site	Mulligan Creek	Rare plant habitat
MI-035	Site	Presque Isle	Bedrock beach, dry-mesic northern forest, rare plant habitat, geographical features
MI-036	Site	McCormick	Mesic northern forest, rare plant habitat
MI-037	Area	Lake Independence	Great Lakes marsh, geologic features, rare animal habitat, high biodiversity
MI-038	Area	Huron Mountain	Rare plant and animal habitat, mesic northern forest, dry-mesic northern forest, bedrock glade
MI-039	Site	Pequaming Marsh	Great Lakes marsh, rare animal habitat, geologic feature
MI-049	Site	Huron National Wildlife Refuge	The refuge was established for the protection of migratory birds, specifically, a large nesting colony of herring gulls.

Figure 17.3: Dead-Kelsey - Important Habitat Sites and Areas



**TABLE 17.4: Dead-Kelsey LIST OF SPECIES AND COMMUNITIES OF CONSERVATION CONCERN**

At least 83 species and communities of conservation concern have been documented in the regional unit. 60 of these have viability rankings which indicate the species or community is currently present, or was at the date of last sampling. The viability rankings of these species varies from A to E (A – Excellent predicted viability, B – Good predicted viability, C – Fair predicted viability, D – Probably not viable, E – Verified extant). 23 species and communities were once known to occur here, but have current conservation ranks of H (Historical).<sup>21</sup>

<i>Present Records (Viability Rankings of A to E)</i>	
Scientific Name	Common Name
<i>Armoracia lacustris</i>	Lake cress
Boreal Forest	
<i>Botrychium mormo</i>	Goblin moonwort
<i>Botrychium pallidum</i>	pale moonwort
<i>Caltha natans</i>	Floating marsh marigold
<i>Clematis occidentalis</i>	Purple clematis
<i>Collinsia parviflora</i>	Small blue-eyed Mary
<i>Coregonus artedi</i>	Lake herring or Cisco
<i>Coregonus kiyi</i>	Kiyi
<i>Coregonus zenithicus</i>	Shortjaw cisco
<i>Cottus ricei</i>	Spoonhead sculpin
<i>Crataegus douglasii</i>	Douglas's hawthorn
<i>Cypripedium arietinum</i>	Ram's head lady's-slipper
<i>Cystopteris laurentiana</i>	Laurentian fragile fern
<i>Dendroica kirtlandii</i>	Kirtland's warbler
<i>Draba arabisans</i>	Rock whitlow grass
Dry Northern Forest	Dry Woodland, Upper Midwest Type
Dry-mesic Northern Forest	
<i>Dryopteris filix-mas</i>	Male fern
<i>Dryopteris fragrans</i>	Fragrant cliff woodfern
<i>Elymus glaucus</i>	Blue wild-rye
<i>Falciennis canadensis</i>	Spruce grouse
<i>Falco peregrinus</i>	Peregrine falcon
<i>Gavia immer</i>	Common loon
<i>Gentiana linearis</i>	Narrow-leaved gentian
<i>Glyptemys insculpta</i>	Wood turtle
Granite Bedrock Glade	
Granite Bedrock Lakeshore	
Granite Cliff	
Granite Lakeshore Cliff	
Great Blue Heron Rookery	Great Blue Heron Rookery
Great Lakes Marsh	
<i>Haliaeetus leucocephalus</i>	Bald eagle
Hardwood-Conifer Swamp	
Interdunal Wetland	Alkaline Shoredunes Pond/marsh, Great Lakes Type
<i>Leymus mollis</i>	American dune wild-rye

<sup>21</sup> Data included here were provided by the Michigan Natural Features Inventory of Michigan State University, and were current as of August 1 2014. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present.

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Mesic Northern Forest	
Moehringia macrophylla	Big-leaf sandwort
Myriophyllum alterniflorum	Alternate-leaved water-milfoil
Myriophyllum farwellii	Farwell's water milfoil
Northern Shrub Thicket	Wet Scrubland, Upper Midwest Type
Northern Wet Meadow	Wet Meadow, Upper Midwest Type
Nuphar pumila	Small yellow pond lily
Opuntia fragilis	Fragile prickly pear
Pinguicula vulgaris	Butterwort
Poor Conifer Swamp	
Pterospora andromedea	Pine-drops
Ribes oxycanthoides	Northern gooseberry
Rich Conifer Swamp	
Sand and Gravel Beach	
Sandstone Bedrock Lakeshore	
Sandstone Cobble Shore	
Sandstone Lakeshore Cliff	
Scirpus clintonii	Clinton's bulrush
Submergent Marsh	
Tanacetum huronense	Lake Huron tansy
Trisetum spicatum	Downy oat-grass
Vaccinium cespitosum	Dwarf bilberry
Wooded Dune and Swale Complex	
Woodsia alpina	Northern woodsia
<b>Historical Records</b>	
<b>Scientific Name</b>	<b>Common Name</b>
Adlumia fungosa	Climbing fumitory
Amerorchis rotundifolia	Small round-leaved orchis
Calamagrostis lacustris	Northern reedgrass
Calypso bulbosa	Calypso or fairy-slipper
Carex atratiformis	Sedge
Cerastium brachypodium	Shortstalk chickweed
Cincinnatia cincinnatiensis	Campeloma spire snail
Coregonus hubbsi	Ives lake cisco
Dermatocarpon moulinii	Lichen
Drosera anglica	English sundew
Erebia discoidalis	Red-disked alpine
Galearis spectabilis	Showy orchis
Gymnocarpium jessoense	Northern oak fern
Gymnocarpium robertianum	Limestone oak fern
Juncus stygius	Moor rush
Oryzopsis canadensis	Canada rice grass
Pandion haliaetus	Osprey
Planorbella multivolvis	Acorn ramshorn
Rallus elegans	King rail
Salix pellita	Satiny willow
Sphaerium fabale	River fingernail clam
Umbilicaria torrefacta	Lichen
Woodsia obtusa	Blunt-lobed woodsia