

11. Beaver-Lester

HEALTHY WATERS REPORT CARD

OFFSHORE	NA	ISLANDS	A
NEARSHORE	D	COASTAL WETLANDS	C
EMBAYMENTS & INSHORE	D	COASTAL TERRESTRIAL	A
TRIBUTARIES & WATERSHEDS	C	OVERALL C	

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



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



Cliffs and rocky shores at Palisade Head and Shovel Point, Tettegouche State Park. Photo credit: [wikipedia.org/wiki/Portal: Minnesota/ Scenic](http://wikipedia.org/wiki/Portal:Minnesota/Scenic)

Summary/ Description

The Beaver-Lester region extends from just north of Silver Bay, Minnesota, to Duluth, Minnesota. The Beaver-Lester regional unit is 1,686.67km² in size, including the associated nearshore waters. This regional unit spans two Minnesota counties, with approximately 35% of the land-base of the regional unit in St. Louis County and approximately 65% of the regional unit land-base in Lake County (USDA NRCS No date b). The Beaver-Lester regional unit is part of the territory ceded in the Treaty of 1854. The signatory tribes retain rights to hunt, fish, and gather within the regional unit (A. McCammon Soltis, pers. comm., January 5 2015). The Beaver-Lester region is located in the Northern Lakes and Forest ecoregion, and the watershed is described as largely forested (USDA NRCS No date a, No date b). Communities in the area include Silver Bay, Two Harbors, Arnold, Knife River and Beaver Bay. The Beaver- Lester regional unit contains one tertiary (HUC 8) watershed, Beaver-Lester, and four quaternary (HUC 10) watersheds. Most of the region is forested. The coast is characterized by rocky shores and cliffs. Coastal wetlands are very rare, and concentrated in the Knife River area.

TABLE 11.1: Beaver-Lester BY THE NUMBERS

Land and Water Cover	Region (km²)	Region %	Lake Superior Total (km²)	Notes
Agriculture	7.78	0.41	1,441.07	
Developed	23.67	1.25	389.55	
Forest	1,516.26	80.23	107,747.13	
Associated Nearshore Waters	272.32	14.41	17,868.03	
Other	54.64	2.89	8,227.57	
Water (inland)	15.30	0.81	9,473.05	
Total Area	1,889.97	100	145,146.40	
Coastal Features	Region	Region %	% of Lake Superior Total for Coastal Feature	
Coastline (km)	117.57	NA	2.02	Based on SOLEC shoreline
Sand Beaches (km)	0.95	0.81	0.15*	*% of Lake Superior Total Sand Beaches
Coastal Wetlands (km ²)	7.32	3.57*	0.66**	*% of Regional Coastal Area ** % of Lake Superior Total Coastal Wetlands
Natural Cover in Coastal Zone	179.59	87.46*	2.91**	*% of Regional Coastal Area ** % of Lake Superior Total Natural Cover in Coastal Area
Number of Islands	12	NA	0.5	
Condition	Region	Region %	% of Lake Superior Total	
Population Density (persons/km ²)	39.46	NA		
Road Density (km/km ²)	0.71	NA		
Number of Dams and Barriers	933	NA	3.9	
Artificial Shoreline (km)	10.94	9.30	4.80	
Land Ownership & Protection	Region (km²)	Region %	Regional Area (km²)	
Private	1,298.14	80.30	1,616.55	Regional area based on landmass
Public/Crown	273.18	16.90	1,616.55	
Tribes/ First Nations	0.00	0.00	1,616.55	
Parks & Protected Areas (total)	45.22	2.80	1,616.55	
Parks & Protected Areas (coast)	23.44	11.41*	205.34**	*% of Regional Coastal Area **Regional Coastal Area (km ²)

Important Biodiversity Features

Nearshore and Inshore Waters

- Important habitat areas for Lake Trout are found in several locations along the coast, and one important habitat area for Lake Whitefish is noted between Duluth and Two Harbors (Lake Superior Binational Program Habitat Committee 2006) (Figure 11.1).

Coastal Zone and Islands

- The Beaver-Lester regional unit contains a number of areas identified as biologically important by the Lake Superior Binational Program Habitat Committee (2006). A number of Important Habitat

Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries

Sites are located along the Lake Superior shore, as well as in some inland areas. Much of the coastal area is an Important Habitat Area, as is Tettegouche State Park, a portion of which lies in both the Beaver-Lester and the Baptism-Brule regional units (Table 11.3, Figure 11.3).

- Several small State Important Bird Areas (IBAs) are found along the coast in the Beaver-Lester regional unit (National Audubon Society 2013, 2012). These sites are some of the nine locations along Lake Superior that make up the 125 acre North Shore Peregrine Falcon Eyries IBA. These nine cliff areas are geographically separate and under different ownerships, but combined represent 70% of the recorded natural nest sites for Peregrine Falcons in Minnesota (Minnesota DNR 2013b). The Hawk Ridge Nature Reserve IBA is another State IBA located in the Beaver-Lester regional unit (National Audubon Society 2013, 2012). This IBA is noted as one of the best locations in North America for autumn hawk watching (Minnesota DNR 2013c).
- Arctic disjunct plant species, native plant communities occur along the coast (B. Carlson, pers. comm., March 20 2013).
- Minnesota Point is a freshwater sandbar and associated rare species, rare native plant communities (B. Carlson, pers. comm., March 20 2013).
- Knife Island is an important island for colonial nesting waterbirds (T. Kaspar, pers. comm., March 14 2013)

Tributaries and Watersheds

- Although the watersheds are characterized for forests, this region is highly fragmented by roads.

Figure 11.1: Beaver-Lester - Coastal and Watershed Features

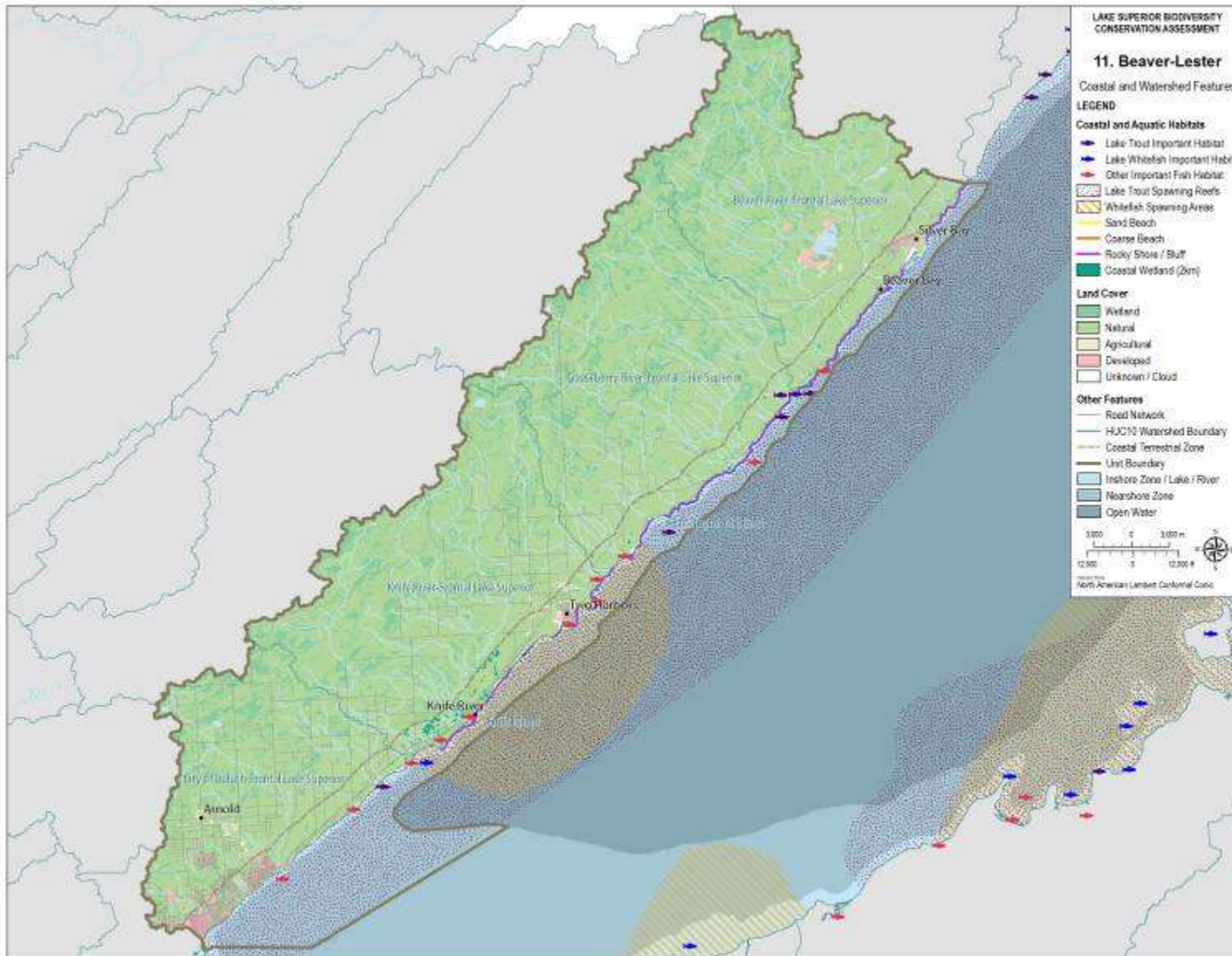


TABLE 11.2: Beaver-Lester CONDITION AND TRENDS

Target (Data Source)	Condition	Trends
Offshore ¹	NA	
Nearshore ¹	D (0.20)	
Embayments and Inshore ^{1,2}	D (0.31)	
Coastal Wetlands ^{2,3}	C (0.519)	
Islands ⁴	A	
Coastal Terrestrial ³	A (0.938)	Local experts feel a condition grade of B (Good) may accurately reflect local conditions in the Coastal Terrestrial target. The rationale for this condition is that the forest of this area, though extensive, is heavily dominated by relatively young forest of aspen and birch (with notable exceptions) and missing conifers and older age classes. It has also been fragmented by development near the shore (E. Perry, pers. comm., February 26 2013).
Tributaries and Watersheds ²	C (0.42)	

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

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).
- The St. Louis River Area of Concern (AOC) is located in three regional units, including portions of the Beaver-Lester regional unit. The St. Louis River has faced issues of habitat loss and degradation, and pollution and contamination, especially in its lower reaches. The lower 39 miles (63 kilometres) of the St. Louis River are the main focus of the St. Louis River Remedial Action Plan (RAP) (U.S. EPA 2013c) and are designated as a Lake Superior Area of Concern (AOC). Nine beneficial use impairments were identified in the St. Louis River AOC (U.S. EPA 2013c).
- Thirty-three farms are noted to operate in this regional unit. Approximately two-thirds of those farms are less than 180 acres, while one-third of the farms are 180 to 1,000 acres (USDA NRCS No date b). Land within this regional unit is generally considered as poorly suited for agriculture (USDA NRCS No date b).
- Erosion, water quality and quantity, and management of shorelines, woodlands, stormwater and wetlands are noted in the Rapid Watershed Assessment as the main resource concerns in this regional unit (USDA NRCS No date b).
- Development pressure is noted to be moderate in this region (USDA NRCS No date b). The lakeshore and timberlands are two areas noted to be parceled out for new recreation, lake or country homes (USDA NRCS No date b).
- A number of waterbodies within the Beaver-Lester regional unit are listed as impaired. Reasons for impairment include mercury, pH, turbidity, low dissolved oxygen, absence of trout due to temperature and PCBs. Affected uses include aquatic consumption and aquatic life (USDA NRCS No date b).
- Over 50 species were listed as endangered or threatened (USDA NRCS No date b).
- The USGS lists a total of 13 records for Nonindigenous Aquatic Species in the Beaver-Lester region; 4 are classified as exotic, 8 as native, and 1 as native hybrid (USGS 2012b).
- Forest fragmentation as a result of housing development is an emerging concern in Minnesota. The forest that is present lacks much of its natural conifer component (E. Perry, pers. comm., February 26 2013).

Conservation In Action

Parks & Protected Areas

- Tettegouche State Park

Existing Programs & Projects

- There are a number of Minnesota Biological Survey (MBS) Sites delineated in the Beaver-Lester regional unit, some of which have been ranked with Outstanding or High Biodiversity Significance, based on statewide ranking criteria. The Minnesota Department of Natural Resource's MBS systematically collects, interprets, and delivers data on the distribution and ecology of native plants, animals, native plant communities, and functional landscapes throughout the state. MBS conducts landscape assessments, field surveys and monitoring activities, and provides data and tools to guide conservation and management within *MBS Sites of Statewide Biodiversity Significance* (MBS Sites). Biodiversity information includes the location and biodiversity significance rank of MBS Sites, the location and status of rare

Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries

species populations, the type and condition of native plant communities, and, for selected sites, *MBS Ecological Evaluation* reports (Minnesota DNR 2013e, B. Carlson, pers. comm., March 20 2013). The MBS Sites located within the Beaver-Lester regional unit are Encampment Forest Area, Fault Line Ridges, Magney-Snively, Minnesota Point Pine Forest, Moose Mountain, Nopeming Unconformity and Tettegouche State Park (L. Gerdes, pers. comm., March 18 2013).

- The State of Minnesota specifies a policy goal of nondegradation for all waters, maintaining them in a natural and unpolluted state. There are three levels of protection for surface waters. The highest level of protection applies to Outstanding Resource Value Waters (ORVWs). Additionally, all surface waters in the Lake Superior basin are Outstanding International Resource Waters (OIRW) (MPCA 2012e).
- The Manitou Collaborative is a partnership which includes the United States Forest Service, the Minnesota Forest Resources Council, The Nature Conservancy, the Minnesota Department of Natural Resources, Wolf Ridge Environmental Learning Center and Lake County. The partnership of public and private landowners began in 2000, and collaboratively the partners manage 100,000 acres in northeastern Minnesota. One fifth of the Manitou Landscape area is classified as Outstanding for statewide biodiversity significance, and 200 miles of high quality streams are located within this area. Mutually agreed upon management objectives for the vegetation include mimicking the range of natural variability to restore diverse and multi-aged forests and promoting diverse forests of multiple growth stages, while supporting the local economy (The Manitou Collaborative No date, USDA Forest Service No date a).
- The North Shore Forest Collaborative is a combined effort of local, state and federal groups, along with public and private groups and individuals. Concentrated on the ecosystems along the North Shore of Lake Superior, the Collaborative agencies work together to restore and maintain native trees and forest communities for a healthy forest environment (North Shore Forest Collaborative No date).
- Sugarloaf: The North Shore Stewardship Association works to promote the protection and restoration of the North Shore of Lake Superior (Sugarloaf: The North Shore Stewardship Association No date).
- 12 Citizen-based Groups are noted to do work in the Beaver-Lester regional unit (U.S. EPA 2013d). Additional projects, plans, conservation districts, organizations and partners related to the Beaver-Lester regional unit are noted in the Rapid Watershed Assessment (USDA NRCS No date b).
- The Natural Resources Conservation Service (NRCS) Performance Results System (PRS) provides support for reporting the development and delivery of conservation programs (USDA NRCS No date d). From 1999 to 2007 plans were made for a total of 1,454 acres of Total Conservation Systems. From 1999 to 2007 the Total Conservation Systems Applied amounted to 656 acres. The activities which contributed the largest amount to the Total Conservation Systems Applied were Total Wildlife Habitat (350 acres), Erosion Control Total Soil Saved (99 tons/year), Tree and Shrub Establishment (250 acres) and Riparian Forest Buffers (48 acres). Additional activities involved prescribed grazing and wetlands (created, restored or enhanced) (USDA NRCS No date b).
- Shoreline Management of the North Shore Management Zone is described as local districts regulating and managing development density on and adjacent to shorelines, while giving priority to environmental protection and orderly growth (USDA NRCS No date b).

TABLE 11.3: Beaver-Lester IMPORTANT HABITAT SITES AND AREAS

<i>Code</i>	<i>Site/ Area</i>	<i>Important Habitat Site/Area Name</i>	<i>Key Features</i>
MN-001	Site	Agate Bay	Colonial waterbird nesting, waterfowl concentrations
MN-007	Site	Beaver Bay	Waterbird concentrations, Upland White Cedar Forest
MN-008	Site	Beaver Island	Arctic disjunct plant community, rare plant habitat, colonial waterbird nesting habitat
MN-014	Site	Burlington Bay	Colonial Waterbirds, waterfowl concentrations
MN-020	Site	Cathedral Grove	Great Lakes pine forest, old growth forest
MN-025	Site	Crow Creek Bluff	Rare animal habitat
MN-029	Site	Duluth 8	Rare animal habitat
MN-030	Site	Flood Bay	Colonial waterbird nesting habitat, shorebird migratory habitat, geomorphic feature
MN-036	Area	Gooseberry Falls State Park	Conifer, aspen and birch forests, fish spawning habitat, rare plant and animal habitat
MN-053	Site	Knife River	Rare plant habitat, anadromous fish habitat, geomorphic features
MN-054	Site	Lafayette Bluff and Encampment Island	Colonial waterbird nesting habitat
MN-056	Area	Lake Superior Highlands	Extensive natural communities and high biodiversity, rare plant and animal habitat
MN-057	Site	Lester Park Waterworks	Rare plant habitat
MN-059	Site	Lighthouse Point	Rare plant habitat
MN-067	Site	Marble Lake Lookout Tower	Northern Hardwoods forest, rare plant habitat
MN-072	Area	Moose Mountain SNA	Old growth Northern Hardwoods forest, rare plant habitat
MN-076	Site	Normanna 18	Rare animal habitat
MN-086j	Area	St. Louis Estuary	Great Lakes freshwater estuary, rare plant and animal habitat, colonial waterbird nesting habitat
MN-092	Area	Split Rock Lighthouse State Park	Rare plant and animal habitats, colonial waterbird nesting habitat, geomorphic feature, waterbird concentrations
MN-094	Site	Stony Point	Rare plant habitat, arctic disjunct plant community, waterbird concentrations
MN-100	Area	Tettegouche State Park	Lake Superior pebble and bedrock beaches, exposed cliffs, Northern Hardwood-Conifer Forest, Northern Oak Forest, Upland White Cedar Forest
MN-110	Area	Devils Track Falls State Park	Rare plant habitat

Figure 11.3: Beaver-Lester - Important Habitat Sites and Areas

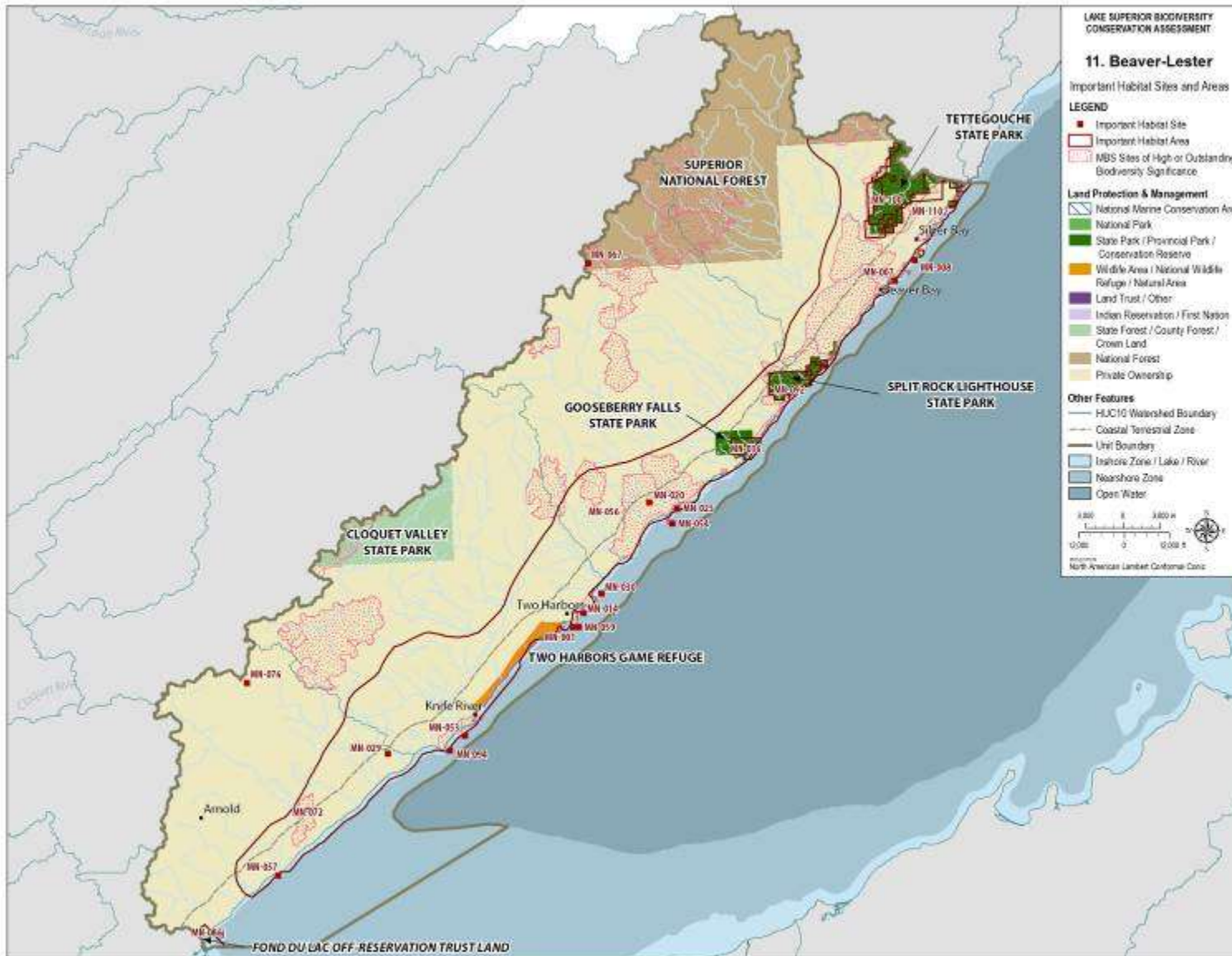


TABLE 11.4: Beaver-Lester LIST OF SPECIES AND COMMUNITIES OF CONSERVATION CONCERN

At least 96 species and communities of conservation concern have been documented in the regional unit. 46 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). 9 species and communities were once known to occur here, but have current conservation ranks of F (Failed to find) or H (Historical). A further 41 species and communities of conservation concern are known to occur in this regional unit, but are currently not ranked for viability.¹²

<i>Present Records (Viability Rankings of A to E)</i>	
Scientific Name	Common Name
<i>Accipiter gentilis</i>	Northern Goshawk
<i>Allium schoenoprasum</i>	Chives
<i>Artemisia campestris</i>	Canadian Wormwood
<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i>	Maidenhair Spleenwort
Bat Colony	Bat Concentration
<i>Bistorta vivipara</i>	Alpine Bistort
<i>Boechera retrofracta</i>	Holboell's Rock-cress
<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Lanceleaf Grapefern
<i>Botrychium mormo</i>	Goblin Fern
<i>Botrychium pallidum</i>	Pale Moonwort
<i>Botrychium simplex</i>	Least Moonwort
<i>Calamagrostis lacustris</i>	Marsh Reedgrass
<i>Callitriche heterophylla</i>	Larger Water-starwort
<i>Carex garberi</i>	Garber's Sedge
<i>Carex novae-angliae</i>	New England Sedge
<i>Carex ormostachya</i>	Necklace Spike Sedge
<i>Carex pallescens</i>	Pale Sedge
<i>Carex rossii</i>	Ross' Sedge
<i>Carex scirpoidea</i>	Northern Singlespike Sedge
<i>Coregonus zenithicus</i>	Shortjaw Cisco
<i>Crataegus douglasii</i>	Black Hawthorn
<i>Eleocharis nitida</i>	Neat Spike-rush
<i>Euphrasia hudsoniana</i> var. <i>ramosior</i>	Hudson Bay Eyebright
<i>Falco peregrinus</i>	Peregrine Falcon
<i>Glyptemys insculpta</i>	Wood Turtle
<i>Huperzia appalachiana</i>	Appalachian Fir-clubmoss
<i>Huperzia x bartleyi</i>	A hybrid Clubmoss
<i>Hydroptila novicola</i>	A Caddisfly
Igneous intrusion (middle proterozoic)	Igneous Intrusion (Middle Proterozoic)
<i>Luzula parviflora</i>	Small-flowered Woodrush
<i>Myotis septentrionalis</i>	Northern Myotis
Native Plant Community, Undetermined Class	Native Plant Community, Undetermined Class
<i>Perimyotis subflavus</i>	Tricolored Bat

¹² Data included here were provided by the Division of Ecological and Water Resources, Minnesota Department of Natural Resources (DNR), and were current as of December 3 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.

Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries

Pinguicula vulgaris	Butterwort
Sagina nodosa ssp. borealis	Knotty Pearlwort
Saxifraga paniculata	Encrusted Saxifrage
Scirpus pedicellatus	Woolgrass
Sorex fumeus	Smoky Shrew
Sugar Maple - Basswood - (Bluebead Lily) Forest Type	Sugar Maple - Basswood - (Bluebead Lily) Forest
Torreyochloa pallida var. fernaldii	Pale Manna Grass
Trisetum spicatum	Narrow False Oats
Tsuga canadensis	Eastern Hemlock
Upland White Cedar Forest Type	Upland White Cedar Forest
Viola lanceolata var. lanceolata	Lance-leaved Violet
White Cedar - Yellow Birch Forest Type	White Cedar - Yellow Birch Forest
White Pine - Red Pine Forest Type	White Pine - Red Pine Forest
Historical or Failed to Find Records	
Scientific Name	Common Name
Adlumia fungosa	Climbing Fumitory
Agrostis scabra	Rough Bentgrass
Anaptychia crinalis	Hanging fringe lichen
Coregonus kiyi	Kiyi
Cystopteris laurentiana	Laurentian Bladder Fern
Huperzia porophila	Rock Clubmoss
Listera auriculata	Auricled Twayblade
Shepherdia canadensis	Canada Buffaloberry
Woodsia glabella	Smooth Woodsia
Unranked Records	
Scientific Name	Common Name
Acipenser fulvescens	Lake Sturgeon
Actaea pachypoda	White Baneberry
Adoxa moschatellina	Moschatel
Alder - (Maple - Loosestrife) Swamp Type	Alder - (Maple - Loosestrife) Swamp
Arethusa bulbosa	Dragon's-mouth
Arnica lonchophylla	Long-leaved Arnica
Black Spruce - Jack Pine Woodland; Black Spruce - Feathermoss Subtype	Black Spruce - Jack Pine Woodland, Black Spruce - Feathermoss Subtype
Botaurus lentiginosus	American Bittern
Botrychium matricariifolium	Matricary Grapefern
Buteo lineatus	Red-shouldered Hawk
Carex flava	Yellow Sedge
Carex gynandra	A Species of Sedge
Carex media	Intermediate Sedge
Claytonia caroliniana	Carolina Spring-beauty
Colonial Waterbird Nesting Area	Colonial Waterbird Nesting Site
Draba arabisans	Rock Whitlow-grass
Emydoidea blandingii	Blanding's Turtle
Haliaeetus leucocephalus	Bald Eagle
Igneous composition (middle proterozoic)	Igneous Composition (Middle Proterozoic)
Igneous unit or sequence (middle proterozoic)	Igneous Unit or Sequence (Middle Proterozoic)
Juniperus horizontalis	Creeping Juniper
Lake and wetland composite (quaternary)	Lake and Wetland Composite (Quaternary)
Lake Superior Rocky Shore Class	Lake Superior Rocky Shore
Lobaria quercizans	Smooth lungwort
Microtus chrotorrhinus	Rock Vole
Parmelia stictica	A Species of Lichen

Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries

Platanthera clavellata	Club-spur Orchid
Poa wolfii	Wolf's Bluegrass
Potamogeton oakesianus	Oakes' Pondweed
Potamogeton vaseyi	Vasey's Pondweed
Pyrola minor	Small Shinleaf
Red Oak - Sugar Maple - Basswood - (Bluebead Lily) Forest Type	Red Oak - Sugar Maple - Basswood - (Bluebead Lily) Forest
Rhynchospora fusca	Sooty-colored Beak-rush
Salix pellita	Satiny Willow
Setophaga caerulescens	Black-throated Blue Warbler
Sparganium glomeratum	Clustered Bur-reed
Stream erosion (quaternary)	Stream Erosion (Quaternary)
Sugar Maple Forest (North Shore) Type	Sugar Maple Forest (North Shore)
Torreyochloa pallida	Torrey's Manna-grass
Waldsteinia fragarioides var. fragarioides	Barren Strawberry
Woodsia alpina	Alpine Woodsia