



Frog Lake and Pines State Natural Area in Iron County

Northern Highlands

ecological landscape

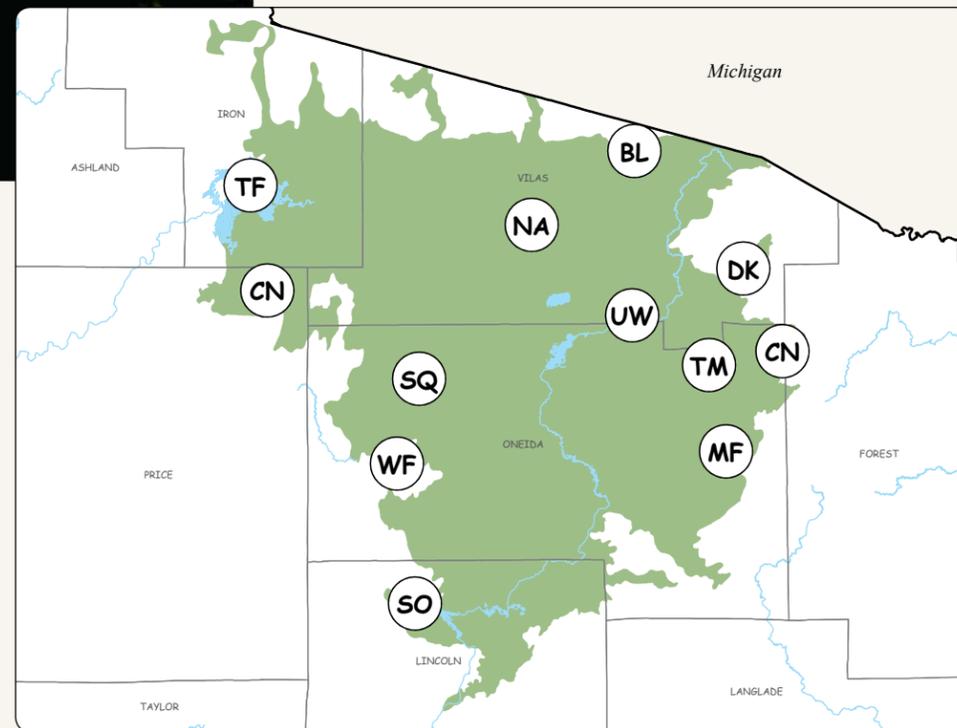
Attributes and Characteristics

Studded with thousands of mostly small kettle lakes, this area epitomizes for many residents the image of “going north” to sit on the shore of a quiet, cool lake under the shade of a majestic white pine. Viewed from an airplane, some areas in this landscape look more like a vast lake with many islands rather than upland with many lakes. This enormous concentration of lakes is a result of the pitted outwash plain left by glaciers and is believed to be the third highest concentration of lakes in the world.

The area’s other key characteristic is its forests. White and red pines, once forming the largest pine forests in the state, dominated the uplands. However, by the early 1900s, these great forests were largely harvested to feed the mills

supplying wood to cities further south. Aspen and other trees common to earlier succession forests are now common in many areas. Significant stands of older hemlock-hardwood forest occur in several parts of this ecological landscape.

Development pressure in this ecological landscape is intense and focused along lake shores and rivers. There are now more than 23,000 seasonal homes in Vilas and Oneida Counties, the overwhelming majority of which are located along lakes and flowages. Many are being converted to year-round residences. Land use in the uplands is largely oriented towards timber and pulp production; recreation is also important and contributes significantly to the local economy. Some of the wetlands in this ecological landscape are used for cranberry production.



Legacy Places

- BL Border Lakes Region
- CN Chequamegon-Nicolet National Forests
- DK Deerskin River
- MF Monico Forest
- NA Northern Highland-American Legion State Forest
- SO Somo River
- SQ Squirrel and Tomahawk Rivers
- TM Thunder Marsh
- TF Turtle-Flambeau Flowage
- UW Upper Wisconsin River
- WF Willow Flowage

Key characteristics:

- » Exceptional density of glacial kettle lakes
- » Former enormous pinery with important stands of white and red pines remaining
- » Large peatlands (bogs and conifer swamps)
- » Intense development pressure along lakeshores
- » Very soft water lakes

Size:

- » 2,080 square miles
- » 1,331,000 acres (3.7% of Wisconsin)

Population:

- » 63,000 (1.2% of Wisconsin's population)

Notable species:

- » Black bear
- » Common loon, osprey and bald eagle
- » Blackburnian, Pine, and Nashville warblers
- » Muskellunge
- » Walleye
- » Mimic shiner
- » Wild rice
- » Calypso orchid
- » Swamp-pink
- » White and red pine

Natural communities:

(See Appendix B for descriptions)

- » Black spruce swamp
- » Bracken grassland
- » Emergent aquatic
- » Northern dry-mesic forest
- » Northern mesic forest
- » Northern sedge meadow
- » Northern wet-mesic forest
- » Northern wet forest
- » Open bog
- » Submergent aquatic
- » Tamarack swamp

Northern Highlands ecological landscape



Blueberry picking up north

Conservation Needs and Opportunities

The Northern Highlands ecological landscape was once the heart of Wisconsin's great white and red pine forests. Although these vast pine forests have been reduced to remnants, this landscape offers the best opportunity in the state to restore a functioning white-red pine forest, including significant patches of old-growth, within a broader forest complex. Conservation efforts will need to continue focusing on the breeding populations of Neotropical migrant birds that these forests harbor.

Although much of the private lakeshore has been intensively developed, some lakes remain largely or entirely undeveloped and continue to be important in maintaining loons, osprey, eagles, otters, and other species. Several lakes harbor important wild rice beds; others are small, sterile and support rare "rosette" flora and are particularly vulnerable to water quality changes.

Mixed within these pine forests and lakes are stands of hemlock-hardwood forest, bracken grasslands, and forested and open wetlands. The hemlock-hardwood forests are a mix of hemlock, white and red pine, yellow and paper birch, sugar and red maple, and red oak. The grasslands occur on the sandy till of the end moraines and are dominated by bracken fern, Pennsylvania sedge, blueberries, and Canada bluegrass. The vast wetlands scattered through the ecological

landscape form the headwaters of the Wisconsin, Manitowish, Flambeau, and Turtle Rivers. Soils are primarily acidic and unproductive due to low moisture-holding capacity and humus loss. Coldwater streams in the area support significant populations of brook, rainbow, and brown trout, while warmer waters support walleye, muskellunge, bass, and panfish.

Recreation Uses and Opportunities

Given the thousands of lakes, streams, and flowages here, it is not surprising that many of the recreation opportunities in this landscape are water oriented. Boating, paddling, and fishing attract visitors from around the Midwest. The 220,000-acre Northern Highland-American Legion State Forest offers a variety of recreation opportunities, now drawing over 2 million visitors a year to swim, hike, camp, boat, fish, or just watch the sunset across a lake. During the fall, visitors go to hunt and observe the changing colors. Winter brings skiers, snowmobilers, and ice fishing fans. Additional opportunities for off road biking, backbacking, canoe camping, and rustic tent camping in the more remote, large blocks of public land could be pursued to meet rising demand. Long distance and single day "loop" trails, both along abandoned rail corridors that connect small towns as well as trails in more challenging and varied terrain, are in demand here.

Public Conservation Lands

| Map# | Property Name | Size (acres) ¹ |
|----------------------------------|---|---------------------------|
| State | | |
| 1 | Hay Creek-Hoffman Lake State Wildlife Area ² | 1,680 |
| 2 | Menard Island State Resource Area | 2,600 |
| 3 | Northern Highland-American Legion State Forest ² | 219,700 |
| 4 | Powell Marsh State Wildlife Area | 4,340 |
| 5 | Thunder Lake State Wildlife Area | 3,280 |
| 6 | Turtle-Flambeau Scenic Waters Area ² | 20,040 |
| 7 | Willow Flowage Scenic Waters Area ² | 7,720 |
| 8 | Woodboro Lakes State Wildlife Area | 2,470 |
| | Miscellaneous Lands ³ | 12,740 |
| Federal | | |
| 1 | Chequamegon-Nicolet National Forests ² | 47,100 |
| County Forest⁴ | | |
| 1 | Iron County Forest ² | 13,650 |
| 2 | Lincoln County Forest ² | 8,210 |
| 3 | Oneida County Forest ² | 25,270 |
| 4 | Vilas County Forest ² | 35,550 |
| TOTAL | | 404,350 |

¹ Actual acres owned in this Ecological Landscape.

² This property also falls within adjacent Ecological Landscape(s).

³ Includes public access sites, fish hatcheries, fire towers, streambank and non-point easements, lands acquired under statewide wildlife, fishery, forestry, and natural area programs, small properties under 100 acres, and properties with fewer than 100 acres within this Ecological Landscape.

⁴ Locations and sizes of county owned parcels enrolled in the Forest Crop Law are presented here. Information on locations and sizes of other county and local parks in this Ecological Landscape is not readily available and is not included here, except for some very large properties.

Figure 61: Land cover of the Northern Highlands

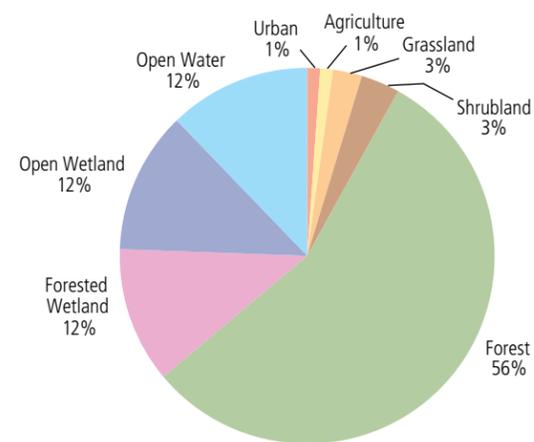


Figure 62: Public conservation and other land ownership in the Northern Highlands

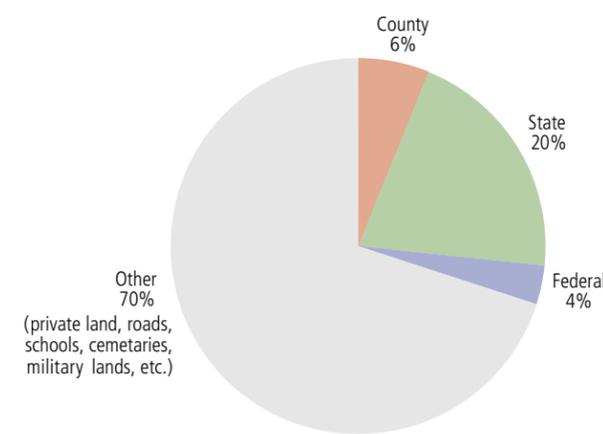
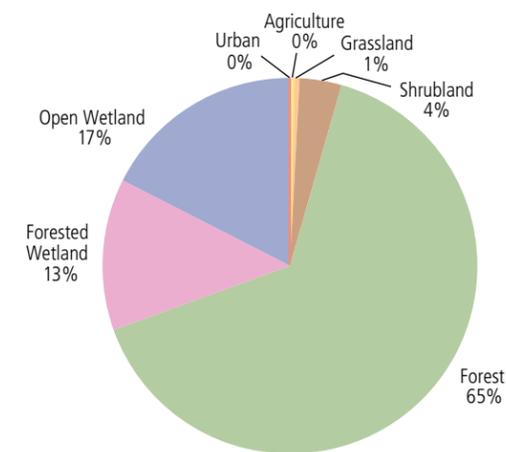


Figure 63: Land cover of public conservation lands in the Northern Highlands



Ice fishing in Wisconsin

Figure 64: Legacy Places and public conservation lands of the Northern Highlands

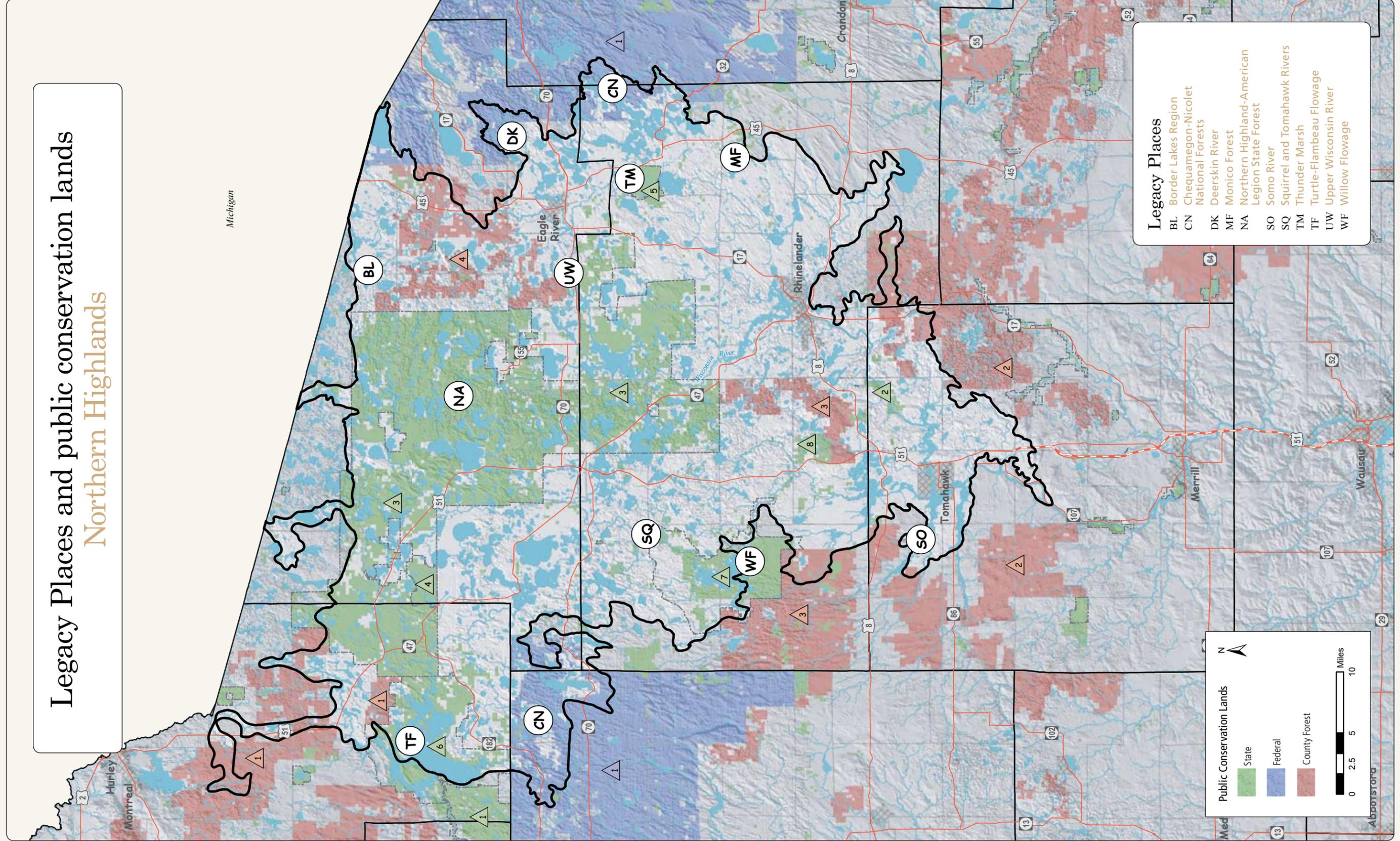
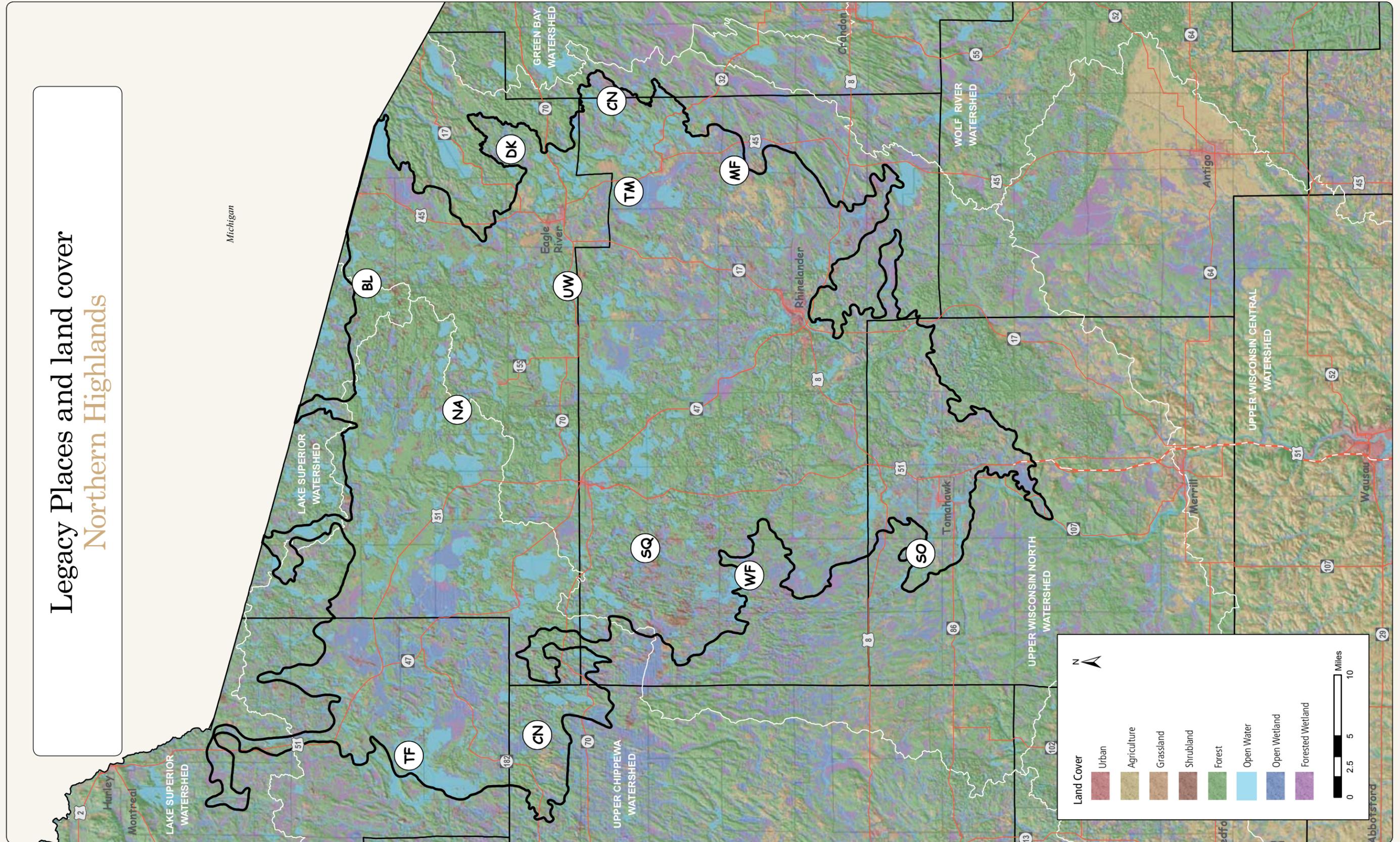


Figure 65: Legacy Places and land cover of the Northern Highlands



Legacy Places and land cover
Northern Highlands

Legacy Places



Birch trees in Oneida County

ROBERT QUEEN

BL Border Lakes Region

Size Large
Protection Initiated Moderate
Protection Remaining Moderate
Conservation Significance ★★★★★
Recreation Potential ★★

Vilas, Oneida, and Iron Counties harbor one of the highest concentrations of lakes in the world. Although most of the privately owned lake shoreline in these counties is developed, a pocket of mostly undeveloped or lightly developed lakes exists along the border with Michigan's Upper Peninsula. These lakes support an unusually diverse and high quality assemblage of aquatic natural communities.

The Border Lakes Region is flanked by the Northern Highland-American Legion State Forest, several large County Forest properties, the Nicolet National Forest and Michigan's Ottawa National Forest (home of the Sylvania Wilderness Area). The area harbors a high quality forest complex with several patches of old-growth. Numerous rare species are known to occur here, particularly birds and plants.

The Border Lakes Region probably represents the last opportunity in Wisconsin to protect a reasonably large cluster of lakes. Lying at the heart of several large blocks of public property, the area is also among the last places to provide a variety of recreation activities in a very remote setting. Several portions of this area are under large ownership blocks that have been integral in maintaining the character of the area. Some of the lakes currently receive minimal fishing pressure and, as such, offer an opportunity for a variety of research studies.

Protection of this unique mosaic of lakes, wetlands, and upland forests—with its significant water quality, fisheries, wildlife and forestry resources—is important to maintaining the biological diversity and recreational opportunities of northern Wisconsin.

CN Chequamegon - Nicolet National Forests

See the North Central Forest ecological landscape.

DK Deerskin River

Size Small
Protection Initiated Moderate
Protection Remaining Limited
Conservation Significance ★★★
Recreation Potential ★

The Deerskin River is a cold water stream containing Class I and Class II trout waters in different reaches. Much of the upper part of the river goes through the Nicolet National Forest. The middle and lower reaches of the Deerskin flow through private parcels. The river corridor includes impoundments at Long Lake and Scattering Rice Lake. A dam, which held the former Deerskin Flowage, has recently been removed, restoring wetlands and the natural streambed.

MF Monico Forest

Size Medium
Protection Initiated Limited
Protection Remaining Substantial
Conservation Significance ★★
Recreation Potential ★★

This large block of woods sits between the Nicolet National Forest, Northern Highland-American Legion State Forest, and a large block of county forest. These and adjoining woods support a diverse set of forest interior birds, many uncommon. Although many large wetlands are present, the area could support a range of recreation activities.

NA Northern Highland-American Legion State Forest

Size Large
Protection Initiated Substantial
Protection Remaining Limited
Conservation Significance ★★★★★
Recreation Potential ★★★★★

Established in 1925 to protect the stream flow at the headwaters of the Wisconsin, Flambeau, and Manitowish Rivers, the 220,000-acre Northern Highland-American Legion (NHAL) State Forest is characterized by its abundance of scenic lakes and streams and expansive forests. Over 900 lakes lie within the forest boundary and are a significant reason that the forest is the most visited state property in Wisconsin. The State Forest supports



Northern Redbelly Snake (*Storeria occipitomaculata*)

A. B. SHELDON

an extraordinary array of outdoor activities including camping (over 900 campsites), swimming, boating, hiking, biking, fishing, hunting, cross-country skiing, and snowmobiling.

The abundant trails throughout the property provide an excellent way to listen to a variety of birds, view wildlife, and observe the diverse plant species found here. A wide variety of wildlife and bird species that occur in northern Wisconsin can be found within the forest. Common wildlife that can be seen include deer, beaver, otter, fox, coyote and black bear. Northern goshawk, raven, yellow-bellied sapsucker, evening grosbeak and hermit thrush are just a few of the hundred or more bird species that can be seen or heard in the forest. The State Forest is a critical component of efforts to restore some functional white-red pine forest reminiscent of the enormous pinery of the past. Forest management on the NHAL is also an important component of the local and regional economies.

SO Somo River

Size Medium
Protection Initiated Moderate
Protection Remaining Moderate
Conservation Significance ★
Recreation Potential ★★

This river complex comprises the Big Somo and Little Somo Rivers, along with Hay Creek. All eventually flow into Lake Mohawksin at Tomahawk. These good quality streams harbor



Turtle-Flambeau Flowage

STEVEN LEWIS

trout in their headwaters and the watersheds are wooded and quite wild. Numerous riffles and rapids exist in the rivers and help support a variety of aquatic life. Protection of the river corridor could connect several County Forest properties.

SQ Squirrel and Tomahawk Rivers

Size Medium
 Protection Initiated Moderate
 Protection Remaining Moderate
 Conservation Significance ★★★
 Recreation Potential ★★

These rivers range from cool to warm water and provide excellent fisheries for walleye, muskellunge, northern pike and bass. The Squirrel River is a tributary to the Tomahawk River, which in turn empties into the Wisconsin River at Tomahawk. These wild, natural rivers connect industrial forest lands, the Northern Highland State Forest, and the Willow Flowage. The rivers also meander between two state natural areas that feature excellent examples of old-growth pine. These river corridors contain significant wildlife habitat for a host of game and non-game species, including two state-Threatened species of turtles. Many eagle nests are found along these rivers.

TM Thunder Marsh

Size Medium
 Protection Initiated Substantial
 Protection Remaining Limited
 Conservation Significance ★★★
 Recreation Potential ★

The Thunder Marsh area is a very large peatland complex containing open bogs, sedge meadows, forested wetlands, and five small, shallow lakes. Several uplands scattered through the marsh harbor forests with old growth characteristics. The 3,100-acre Thunder Marsh Wildlife Area encompasses almost all of the marsh. Adjacent are a 1000-acre tract owned by the Board of Commissioners of Public Lands (BCPL) and a 1200-acre industrial forest property. Together, these tracts encompass a large area of open wetlands, lakes, and forested wetlands that connect the Northern Highland-American Legion State Forest with the Nicolet National Forest.

TF Turtle-Flambeau Flowage

Size Large
 Protection Initiated Substantial
 Protection Remaining Limited
 Conservation Significance ★★★★★
 Recreation Potential ★★★★★

Created by a dam at the confluence of the Turtle and Flambeau Rivers, this 14,000-acre flowage is one of northern Wisconsin's most popular backcountry destinations. Surrounding the flowage are over 18,000 acres of state-owned land that support forests of aspen, birch, maple, and other northern hardwoods. Scattered through the area are small pockets of old growth hemlock and pine that provide excellent nesting habitat for eagles and osprey. Many grass openings have been created and maintained to increase the variety of wildlife in the area—particularly game species. In addition to deer, bear, fisher, beaver, and otters, wolves and moose are occasionally seen on the property. The flowage has the highest density of breeding pairs of eagles, ospreys, and common loons in Wisconsin. State ownership includes 114 miles of shoreline and 195 islands. With 60 campsites accessible by boat only, the flowage offers a unique, remote setting for boaters and paddlers. Fishing for black crappie, smallmouth bass, muskellunge, and in particular walleye, is excellent throughout the flowage.

UW Upper Wisconsin River

Size Large
 Protection Initiated Moderate
 Protection Remaining Moderate
 Conservation Significance ★★★
 Recreation Potential ★★★

From its cool headwaters to its wide confluence with the Mississippi, the Wisconsin River is one of the state's defining features. In its upper reach, from Lac Vieux Desert to Merrill, the river provides good recreation opportunities and conservation values.

At its headwaters, the Wisconsin River flows through a landscape of scattered drainage and seepage lakes and vast wetlands. Along with the lakes, the wetlands are the source of the Upper Wisconsin's excellent water quality. The wetlands drained by Haymeadow Creek contain large open muskeg and sedge meadow. Between Eagle River and Merrill, the river gains considerable flow.

Northern Highlands
ecological landscape



Bald Eagle (*Haliaeetus leucocephalus*) chicks at Kentuck Lake



Swamp-pink (*Arethusa bulbosa*)

Although eight impoundments occur between these two cities, the river maintains excellent water quality and supports numerous rare fish and insects. A significant portion of the river corridor remains undeveloped and hosts high quality forest and wetland communities. Wild rice occurs in several spots along the river. Of particular note is the high-quality Munninghoff wetland complex near McNaughton. The river and adjacent lands act as an ecological corridor for many species. Protecting lands along the main stem and the numerous high quality streams that drain into the river would ensure that it remains a natural travel corridor for a host of species, including large mobile species such as bears and wolves.

The free flowing stretches of the river as well as the flowages attract many recreationists. Popular activities include fishing, paddling, motor boating, hiking, and wildlife watching. The state owns a considerable portion of river frontage within the Northern Highland-American Legion State Forest. The Upper Wisconsin River and its major tributaries are all under significant pressure from changing land uses. Increased efforts to protect water quality, wildlife habitat and fisheries resources would have multiple benefits.

WF Willow Flowage

| | |
|-------------------------------------|-------------|
| Size | Medium |
| Protection Initiated | Substantial |
| Protection Remaining | Limited |
| Conservation Significance | ★★ |
| Recreation Potential | ★★★★ |

Surrounded by swamps, bogs, and other watery lowlands, the Willow Flowage is isolated from roads and development. Although past management practices on surrounding lands have resulted in a relatively young forest dominated by aspen, a narrow buffer of more mature trees was left around portions of the shoreline giving the flowage a wild, scenic appearance from the water. Much of this area is now managed to create a mixture of aspen, pine, and mid-successional species such as red oak, fir, spruce, and red maple to provide important deer and grouse habitat as well as timber for harvesting. Three packs of gray wolves inhabit the forests surrounding the reservoir. The flowage also provides nesting and feeding habitat for many species of waterfowl.

The Willow Flowage provides excellent fishing opportunities. Walleye, the most common gamefish, find fertile habitat among the rocks, gravel, and stumps of the flowage. Northern pike and panfish are also abundant. In order to maintain the flowage's remote character, public boat access is limited to three locations. Remote, semi-primitive campsites are maintained by the state and are accessible only by water. This 6,400-acre, irregularly shaped reservoir contains 117 islands.

Other Areas of Interest

Big Pine Creek
(Lincoln County)

Originating on the north side of Harrison Hills, this good quality trout stream flows through some Lincoln County Forest in its headwaters before turning west and entering Lake Alice. Good populations of brook trout are present.

Tamarack Creek
(Vilas County)

This high quality tributary to the Wisconsin River flows through a variety of northern forest types. Although the lower stretches are within Vilas County Forest, the upper reaches are unprotected.

Pickrel Creek
(Vilas County)

This is a warmwater stream that flows through a large wetland complex between Pickrel Lake and Boot Lake. The western end of the three-mile stream has public ownership by the State of Wisconsin and Vilas County Forest.

Mishonagon Creek
(Vilas County)

This is a Class I Trout stream with a native brook trout population and is a tributary to the Tomahawk River. The upper reaches of the stream are within the Northern Highland-American Legion State Forest.