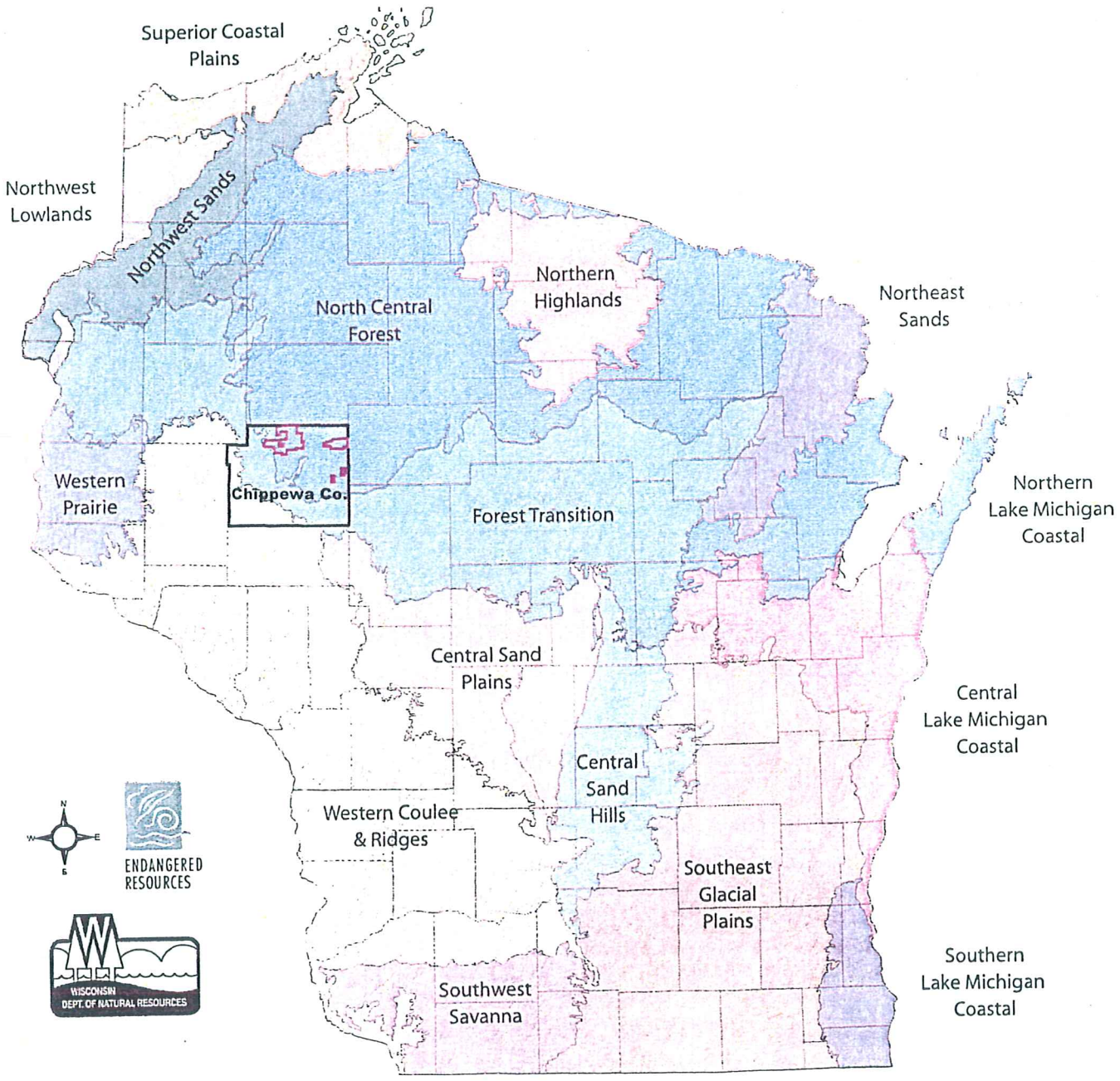
Figure 2

Ecological Landscapes of Wisconsin and the Chippewa County Forest Study Area.



WESTERN COULEE AND RIDGES

General Description

The Western Coulee and Ridges Ecological Landscape in southwestern and west central Wisconsin is characterized by its highly eroded, driftless topography and relatively extensive forested landscape. Soils are silt loams (loess) and sandy loams over sandstone residuum over dolomite. Several large rivers including the Wisconsin, Mississippi, Chippewa, Kickapoo and Black flow through or border the Ecological Landscape.

Historical vegetation consisted of southern hardwood forests, oak savanna, scattered prairies, and floodplain forests and marshes along the major rivers. With Euro-American settlement, most of the land on ridgetops and valley bottoms was cleared of oak savanna, prairie, and level forest for agriculture. The steep slopes between valley bottom and ridgetop, unsuitable for raising crops, grew into oak-dominated forests after the ubiquitous presettlement wildfires were suppressed.

Current vegetation is a mix of forest (40%), agriculture, and grassland with some wetlands in the river valleys. The primary forest cover is oak-hickory (51%) dominated by oak species and shagbark hickory. Maple-basswood forests (28%), dominated by sugar maple, basswood and red maple, are common in areas that were not subjected to repeated presettlement wildfires. Bottomland hardwoods (10%) are common in the valley bottoms of major rivers and are dominated by silver maple, ashes, elms, cottonwood, and red maple. Relict conifer forests including white pine, hemlock and yellow birch are a rarer natural community in the cooler, steep, north slope microclimates.

There are no natural lakes in this Ecological Landscape, but there are a number of impoundments. Levels of stream and groundwater pollution are worse than average, according to Wisconsin DNR watershed rankings.

The total land area for the Western Coulees and Ridges Ecological Landscape is approximately 6.2 million acres, of which 38% is classified as timberland. Public land ownership includes only 3% of this Ecological Landscape.

Socioeconomic data are summarized based on county-level approximations of the Ecological Landscape (referred to as a "region"). Economic data are available only on a political unit basis with counties as the smallest unit. The counties included in this socioeconomic region are Buffalo, Crawford, Dane, Dunn, Eau Claire, Grant, Iowa, Jackson, LaCrosse, Monroe, Pepin, Pierce, Richland, Sauk, Trempeleau, and Vernon ("Western Coulees and Ridges Region"). Although less than 25% of Dane County, and none of the Madison Metropolitan area, lies within this ecological landscape, it was included in the socioeconomic region. Including Dane County may cause some discrepancies when analyzing the socioeconomic structure, however, the social and economic character of the ecological landscape and its residents may be significantly impacted by Madison's proximity.

Agriculture is an important part of the economy in the Western Coulees and Ridges Region. Compared to the other regions, it has the second highest percent of farmland acreage and ranks relatively high in both milk and corn production per acre. (Farmland is defined as all land under farm ownership, which includes cropland, pastureland and woodland.) Agriculture is primarily dairy and beef farms; pastures and Conservation Reserve Program areas are common. Wooded slopes are often managed for oak sawlog production. Recreational resources are abundant. The counties of the Western Coulees and Ridges Region have the highest number of state parks, forests and recreation areas, and the second highest number of state fishery and wildlife areas, as well as several federal wildlife refuges along the Mississippi River. Although it has the lowest percentage of timberland sold or diverted to other uses, a relatively high proportion of the agricultural land sold is being diverted to other uses.

The population density (76 persons/mi2) is less than that of the state as a whole (96 persons/mi2). Its population is decidedly young with the second lowest percentage elderly (over 65) and racially diverse with the third highest percentage of African Americans and Asians. Economically, this landscape is about average with relatively low unemployment. The proportion of government jobs in this region is second highest in the state with a below-average number of manufacturing jobs. (The demographic and economic information for this region is significantly impacted by including Dane County.)

Ecological Management Opportunities

- Restoration and maintenance of red and white oak as a cover type.

- Protection and maintenance of relict hemlock stands.
- Goat prairie restoration and maintenance.
- Grassland wildlife management.
- Preservation of cliff communities, along with cave and bat hibernacula.
- Management of floodplain forests and large southern upland forest tracts.
- Oak savanna restoration.
- Sand prairie and oak barrens restoration and maintenance (on terraces associated with the major rivers).
- Reforestation of marginal agricultural land to facilitate management of large forest blocks compared to other areas in southern Wisconsin.
- Protection of rare features found only in the Driftless Area, such as Algific Talus Slopes.
- Big river protection and maintenance. Some of these streams support especially rich or otherwise significant assemblages of fish, herptiles and aquatic invertebrates.
- Restoration and protection of spring-fed cold water streams.

NORTH CENTRAL FOREST

General Description

The North Central Forest Ecological Landscape occupies much of the northern third of Wisconsin. Its landforms are characterized by end and ground moraines with some pitted outwash and bedrock controlled areas. Kettle depressions and steep ridges are found in the northern portion. Two prominent areas in this Ecological Landscape are the Penokee-Gogebic Iron Range in the north extending into Michigan and Timm's Hill, the highest point in Wisconsin (1,951 feet) in the south. Soils consist of sandy loam, sand, and silts. The vegetation is mainly forest, with many wetlands and some agriculture, though the growing season is not as favorable as it is in southern Wisconsin. Lake Superior greatly influences the northern portion of the Ecological Landscape especially during the winter season, producing greater snowfall than in most areas in Wisconsin.

The historic vegetation was primarily hemlock-hardwood forest dominated by hemlock, sugar maple, and yellow birch. There were some smaller areas of white and red pine forest scattered throughout the Ecological Landscape, and individual white pines trees were a component of the hemlock-hardwood forest. Harvesting hemlock to support the tanneries was common at the turn of the century, and the species soon became a minor component of forests due to over-harvesting and lack of regeneration.

Currently, forests cover approximately 80% of this Ecological Landscape. The northern hardwood forest is dominant, made up of sugar maple, basswood, and red maple, and also including some scattered hemlock and white pine pockets within stands. The aspen-birch forest type group is also relatively abundant, followed by spruce-fir. A variety of wetland community types also are present, both forested and non-forested.

Many small drainages and lakes are found throughout this Ecological Landscape. Major rivers include the Chippewa, Flambeau, Wisconsin, Jump, Wolf, Pine, Popple, and Peshtigo. Several man-made flowages exist such as the Turtle-Flambeau, Gile, Pine and Mondeaux. Although the Ecological Landscape has one of the most favorable ratings by Wisconsin DNR for overall watershed quality, many lakes have mercury levels high enough to warrant a consumption advisory.

The North Central Forest Ecological Landscape contains 6.1 million acres of total land area and has the highest percentage of land area in timberland (77%) compared to other Ecological Landscapes. A high percentage (44%) is publicly owned, mostly in federal or county management.

Socioeconomic data are summarized based on county-level approximations of the Ecological Landscape (referred to as a "region"). Economic data are available only on a political unit basis with counties as the smallest unit. The counties included in this socioeconomic region are Ashland, Bayfield, Chippewa, Florence, Forest, Iron, Langlade, Lincoln, Price, Rusk, Sawyer, Taylor, and Washburn ("North Central Forest Region").

Agriculture is not a major contributor to the economy of the North Central Forest Region. In general, this region has a fairly low per capita income and average wage, as well as the third highest unemployment rate of all the regions. It has a substantial acreage in water, especially lakes, and a large number of fishery and wildlife areas.

Compared to the other regions of the state, the population of the North Central Forest Region is growing rapidly and, on average, is much older, less racially diverse, and less educated. The population density (21 persons/mi2) is slightly less than one-fourth that of the state as a whole (96 persons/ mi2). Interestingly, it had the fourth fastest-growing population from 1970-2000 with a high percentage of elderly (over 65) and a high median age. This region has the lowest percentage of minorities, with the exception of Native Americans. The percentage of high school and college graduates is below average. Economically, this region is less prosperous than other regions. It has the fourth lowest per capita income and average wage and the third highest rates of unemployment and child and adult poverty. Manufacturing jobs are quite important whereas service jobs are much less important than in other regions.

Ecological Management Opportunities

- Landscape scale forest management to retain or restore the compositional, structural, and functional attributes of northern forest ecosystems.
- Restoration of older successional stages and larger forest patches.
- Maintaining larger blocks of northern hardwood forest, especially those in public ownership, is important for forest-interior species such as the black throated-blue warbler, hermit thrush, and many other neotropical migrants.
- Restore the missing or diminished conifer component of forests, especially hemlock, white pine, and white cedar.
- Monitoring and research opportunities exist in areas with significant disturbance events such as windthrow, insect and disease, and other agents.
- Continue efforts to manage for uncommon species such as loons, eagles, ospreys and wolves, especially since these species have responded favorably to past management attention.
- Management for additional rare or otherwise sensitive species.
- Management and protection of kettle lakes, cedar swamps, and other wetlands that are especially important for their biotic components.
- Increase protection for the major rivers, to enhance water quality and maintain populations of sensitive aquatic organisms.
- Establish ecological linkages within this landscape along major river corridors. Some of these can be extended to adjacent Ecological Landscapes.
- Protect the extensive forests of the Penokee Range, and the unusual features associated with them, such as high-gradient, soft headwater streams, and open bedrock glades.

FOREST TRANSITION

General Description

The Forest Transition Ecological Landscape lies along the northern border of Wisconsin's Tension Zone, through the central and western part of the state, and supports both northern forests and agricultural areas. The central portion of the Forest Transition lies primarily on a glacial till plain deposited by glaciation between 25,000 and 790,000 years ago. The eastern and western portions are on moraines of the Wisconsin glaciation. The growing season in this part of the state is long enough that agriculture is viable, although climatic conditions are not as favorable as in southern Wisconsin. Soils are diverse, ranging from sandy loam to loam or shallow silt loam, and from poorly drained to well drained.

The historic vegetation of the Forest Transition was primarily northern hardwood forest. These northern hardwoods were dominated by sugar maple and hemlock, and contained some yellow birch, red pine and white pine.

Currently, over 60% of this Ecological Landscape is non-forested. Forested areas consist primarily of northern hardwoods and aspen, with smaller amounts of oak and lowland hardwoods. The eastern portion of the Ecological Landscape differs from the rest of the area in that it remains primarily forested, and includes some ecologically significant areas. Throughout the Ecological Landscape, small areas of conifer swamp are found near the headwaters of streams, and associated with lakes in kettle depressions on moraines. Ground flora show characteristics of both northern and southern Wisconsin, as this Ecological Landscape lies along the Tension Zone.

Small kettle lakes are common on the moraines in the western and eastern parts of the Ecological Landscape, but there are few lakes in the central glacial till plain. Several streams have their headwaters in the moraines. Many small creeks and rivers flow across the plain, in a dendritic pattern; these include the Big Rib, Little Rib, Trappe, St. Croix, and Wisconsin. This Ecological Landscape is near average in levels of watershed pollution, according to Wisconsin DNR rankings.

The Ecological Landscape's total land area is approximately 4.7 million acres, of which 43% is classified as timberland. About 6% of the Ecological Landscape is public land, including county, state, and federally managed areas.

Socioeconomic data are summarized based on county-level approximations of the Ecological Landscape (referred to as a "region"). Economic data are available only on a political unit basis with counties as the smallest unit. The counties included in this socioeconomic region are Barron, Chippewa, Clark, Langlade, Lincoln, Marathon, Menominee, Polk, Portage, Shawano, Taylor, Washburn, Waupaca and Wood ("Forest Transition Region").

The counties are quite diverse. Agriculturally, several counties stand out as top producers. Clark and Marathon lead in milk production, and Portage leads in potato, pea, and snap bean production. This region has the third highest number of fishery and wildlife areas compared with others in the state. Less timberland is sold or diverted to other uses as compared with the average for other regions in the state. There is a fairly high per capita water use, mostly for industrial and thermoelectric power generation.

Population density of the region is slightly less than half (44 persons/mi^2) than that of the state as a whole (96 persons/mi^2). The population is younger on average, less racially diverse, and less educated compared other regions. It has the second lowest percentage of high school and college graduates. Economically, it ranks near average for all indicators. The manufacturing sector has a relatively more important role, while the percentage of service and government jobs is somewhat below average.

Ecological Management Opportunities

Although this Ecological Landscape is not rich in rare natural communities, there are some significant opportunities to restore and preserve examples of natural community types that are relatively common but often occur in a degraded condition.

- Restoration and management of northern hardwood forests for age classes and structural diversity.
- Reforestation of marginal agricultural lands to reduce forest fragmentation, increase forested habitat, provide protection from erosion, and increase socioeconomic value.

- Preservation of Eastern hemlock on the western extent of its range, where it may have unusual genetic factors.
- Protection of the quartzite outcrop at Rib Mountain, which represents one of only a few such features in the
- Sustainable management of the Menominee Forest.
- Non-indigenous invasive plants are a particular problem in this Ecological Landscape due to the interspersion of land uses. They impact natural areas, wildlife forage, and forest regeneration.
- Wetland restoration.
- Preservation of lakes in the Lakewood area.
- Preservation and management of the St. Croix, Wolf, Chippewa and Black Rivers; all of which run through this ecological landscape.
- Prevention of nonpoint pollution in the river systems listed above.
- Management of the Wisconsin River corridor for movement of plant, animal, and aquatic species, which could be increasingly important in an era of climatic change. Consider restoration and dam removals.