

POLK COUNTY FOREST COMPREHENSIVE LAND USE PLAN

TABLE OF CONTENTS

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CHAPTER 300

DESCRIPTION OF FOREST AND MANAGEMENT PLANNING

<u>Section</u>	<u>Subject</u>	<u>Page</u>
300	DESCRIPTION OF FOREST	2
300.1	COUNTY FOREST OWNERSHIP	2
300.2	NATURAL FEATURES	2
300.2.1	Topography	2
300.2.2	Geography	2
300.2.3	Geology & Soils	3
300.2.4	Ecological Landscapes	3
300.2.4.1	Land Type Associations	4
300.2.5	Vegetative Cover Types	5
300.2.6	Fish and Wildlife	15
300.2.7	Rare and Endangered Resources	15
300.2.8	Water	16
300.3	CULTURAL FACTORS	16
300.3.1	Economy	16
300.3.2	Education and Research	20
300.4	OTHER PUBLIC LANDS OWNERSHIP	20

Tables

300-1	Polk County Forest Cover Types	6
300-2	Polk County Forest Scrub Oak Age Distribution	7
300-2	Polk County Forest Aspen Age Distribution	8
300-2	Polk County Forest Oak Age Distribution	9
300-2	Polk County Forest Jack Pine Age Distribution	10
300-2	Polk County Forest Red Pine Age Distribution	11
300-2	Top five Industries Polk County	20

Figures

300-1	Ecological Landscapes of Wisconsin	4
300-2	Polk County Forest Cover Types by acreage	6
300-3	Polk County Forest Scrub Oak age Distribution	7
300-4	Polk County Forest Aspen Oak age Distribution	8
300-5	Polk County Forest Oak age Distribution	9
300-6	Polk County Forest Jack Pine age Distribution	10
300-7	Polk County Forest Red Pine age Distribution	11
300-8	Polk County Forest Cover Types Past Present Future	12
300-9	Forestry Economic Impact Polk County	18
300-10	Visitor Spending by County	19

300 DESCRIPTION OF FOREST

300.1 COUNTY FOREST OWNERSHIP

The Polk County Forest is composed of 34 management compartments ranging in size from 36 acres to nearly 1235 acres. Within the Sterling County forest block approximately 50 percent of the land is county owned, the remaining 50 percent consist of Town, State and small private holdings. Within the Northeast County forest block. 61 percent of the land is county owned and the remaining 39 percent is in small private in holdings. A Block map of these compartments can be found in Chapter 1000

300.2 NATURAL FEATURES

300.2.1 Topography

The Polk County Forest, located in the Northwest part of the state, lies entirely within the Central plain physiographic region of Wisconsin. Polk County has a diverse landscape ranging from broad nearly level outwash plains in the Town of Sterling to rough glacial moraines in the NE. The moraines are rough broken, having abrupt hills and short steep ridges interspersed with depressions, many which have no outlets. The topography of the forest and surrounding area has glacial origin. The glaciers eroded hilltops and filled valleys, thus reducing relief. Elevations range from 800 to 900 feet above sea level in the Sterling Forest and 900 to 1250 feet in the Northeast part of the County Forest. The terrain ranges from gently rolling to hilly. The Northwest corner of the county, which includes the largest units of the county forest is part of a large outwash plain, which extends into Burnett, Douglas and Bayfield Counties.

300.2.2 Geography

Polk County has a land area of approximately 619,520 acres, including 23,000 acres of water of lakes and streams. Approximately 44 percent of the land in the county is classified as forest land. The County Forest contains approximately 17,182 acres. The Polk County Forest is the 24th largest County Forest out of 30 County Forest in the State. Chapter 1000 contains maps showing the location of the County Forest.

300.2.3 Geology and Soils

The soils of Polk County have been derived largely from the weathering of the glacial drift deposits and show a great variation within relatively short distances. Since the glacial period, the soils have been modified by water action, wind, and the accumulation and incorporation of organic material. Soil types on the County Forest range from grayling sands in Sterling Township and the rolling Rosholy, Cromwell and Menahga soils in Lorain and Mckinley Townships. The county forest lies primarily on upland sites but includes imperfectly drained loams, muck and peat on lowland sites. A generalized soil map can be found in the Chapter 1000. Detailed soils information is available from the USDA Web Soil Survey (websoilsurvey.nrcs.usda.gov).

300.2.4 Ecological Landscapes

Ecological Landscapes are regions in Wisconsin containing similar ecology and management opportunities. Each landscape can present unique management opportunities and challenges. These landscapes are essentially based on the National Hierarchical Framework of Ecological Units (NHFUE) (Cleland et al. 1997). More information on the 16 Ecological Landscapes defined within Wisconsin is available at:

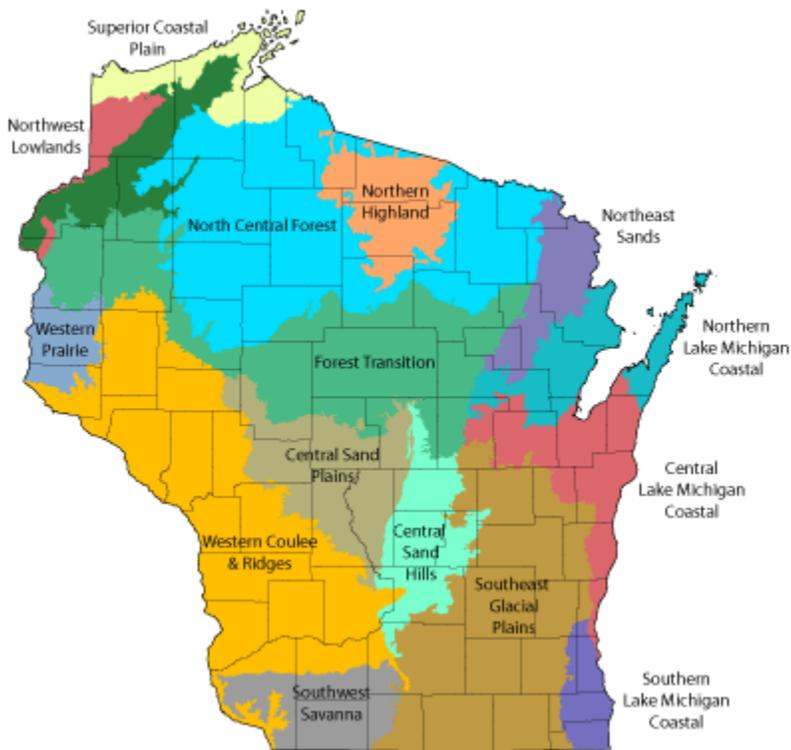
<https://dnr.wi.gov/topic/landscapes/index.asp?mode=Choose>

The Polk County Forest lies within two Ecological Landscapes.

Northwest Sands –. Soils are typically generally well drained sands or loamy sands with forest types dominated by pine, aspen-birch and oak. Land cover is a mix of dry forest, barrens, grasslands and agriculture. This ecological landscape presents an opportunity to manage for dry forest of jack pine, northern pin oak and red pine.

Forest Transition Soils are non-calcareous, moderately well drained sandy loams derived from glacial till. Land cover is highly variable with a mixture of forest, lakes and agricultural land. Within the Polk County Forest boundary this ecological unit is dominated by mesic hardwoods.

Figure 300-1. Ecological Landscapes of Wisconsin.



300.2.4.1 Land Type Associations

Land type associations are units of the National Hierarchical Framework of Ecological Units (NHFEU) classification system. They are much smaller than Ecological Landscapes and are generally based on glacial features. They can be useful for planning at finer scales within a landscape for future vegetative communities, wildlife species, and compatible recreation uses. The following Land Type Associations are present within the Ecological Landscapes of the Polk County Forest. More information is available at:

<https://dnr.wi.gov/topic/landscapes/index.asp?mode=detail&Landscape=10>

The Polk County Forest Sterling Block is included in the Grantsburg Dunes Subsection. (212Ka01). This subsection is characterized by outwash sand plains with dunes, marshes and swamps. Common habitat types include PQGc, QAP and PArVam.

The Polk County Northeast Block is included in the Late St Croix Moraines subsection. (212QA01). This subsection is characterized by a rolling landform pattern interlaced with outwash terraces and intermixed with ice-walled lake plains. Soils are predominantly moderately well drained sandy loam over dense acid sandy loam till. Common habitat types include AcaCi, AAT and AVDe. The vegetation contains mixed deciduous and coniferous forest found in a distinct climatic zone that occurs north of the tension zone.

300.2.5 Vegetative Cover Types

Approximately 94 % of the County Forest land base is forested, and approximately 6% percent is non-forested. Forested uplands are comprised of primarily Aspen, oak, scrub oak, jack pine, red pine, northern hardwoods and white pine while Swamp Hardwoods occupy the forested lowlands. Non-forested includes types open water, wetlands, rights-of-way, grass openings, shrubs and bogs.

FORESTED COMMUNITIES

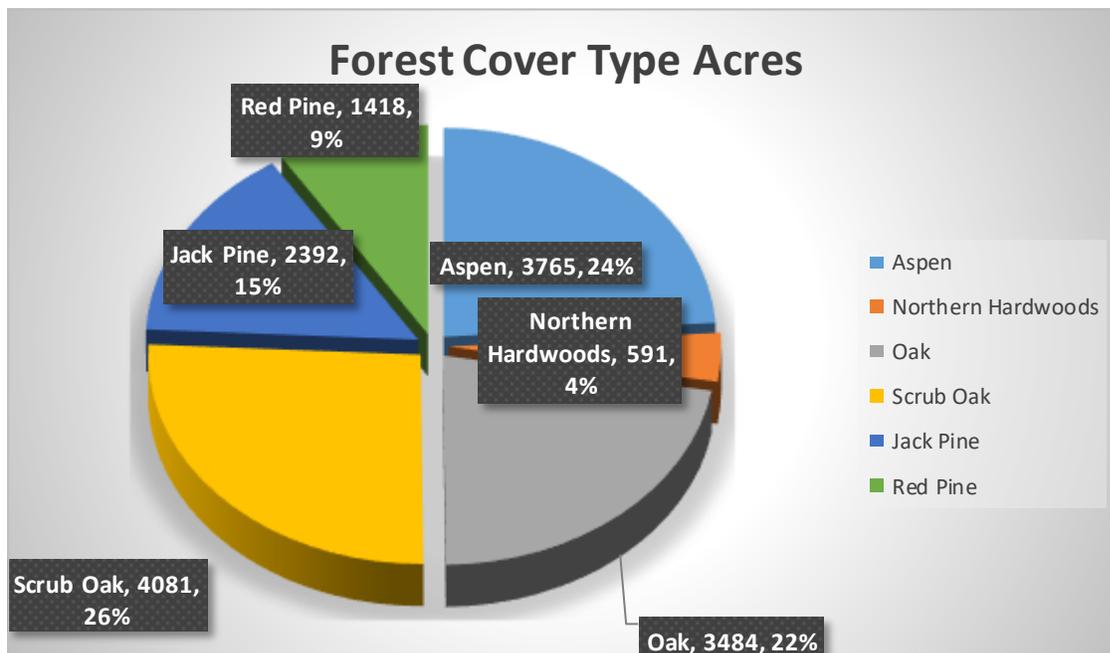
The forested cover types are made up or a variety of size classes from regeneration to sawtimber. Please refer to the tables and graphs on the following pages for the forested communities within the Polk County Forest.

The Polk County Forest is dominated by five main cover types with scrub oak being the largest cover type. The remaining major cover types are aspen, oak, jack pine and red pine. Other forest cover types are represented within the forest but are less dominate and include northern hardwoods, white pine, swamp hardwoods, tamarack, red maple, white spruce, white birch and black spruce. The forest cover types associated with the County Forest are:

Table 300-1. Polk County Forest Cover Types

Forest Cover Type	Acres	Percent
Aspen	3765	24
White Birch	9	0
Red Maple	51	0
Northern Hardwoods	591	4
Oak	3484	22
Scrub Oak	4081	26
Jack Pine	2392	15
Red Pine	1418	9
White Pine	134	1
Black Spruce	2	0
Swamp Hardwoods	86	1
White Spruce	18	0
Tamarack	67	0
Total	16098	93

Figure 300-2 Polk County Forest Types by acreage.

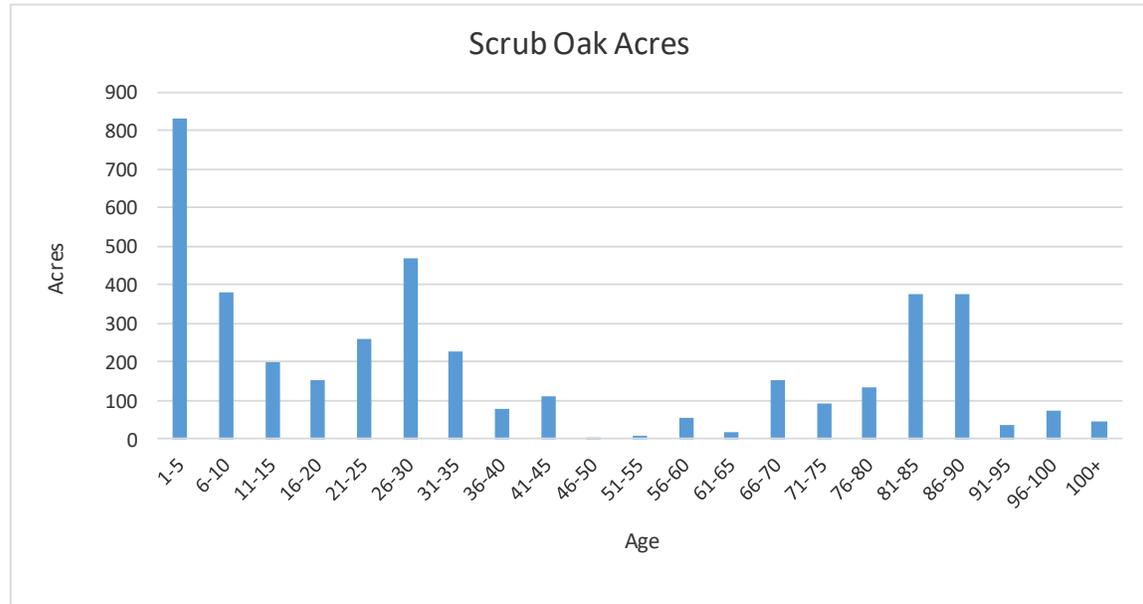


The Scrub Oak cover type is 26% of the forest. The scrub oak type is one of the five dominate forest cover type. Scrub Oak consists of northern pin oak, white oak and bur oak lumped together. This community generally grows on excessively dry, sandy soil. Economically the value of wood products is low, however, the aesthetic and wildlife value is high. The Scrub oak forest type has all age classes represented with minimal acres in the 46-55 year old age classes.

Table 300-2. Polk County Forest Scrub Oak Age Distribution by Acres

Scrub oak	
Age	Acres
1-5	832
6-10	382
11-15	201
16-20	153
21-25	261
26-30	467
31-35	229
36-40	80
41-45	111
46-50	3
51-55	6
56-60	56
61-65	16
66-70	153
71-75	91
76-80	133
81-85	376
86-90	376
91-95	35
96-100	73
100+	47
Total	4081

Figure 300-3. Scrub Oak Age Class Distribution

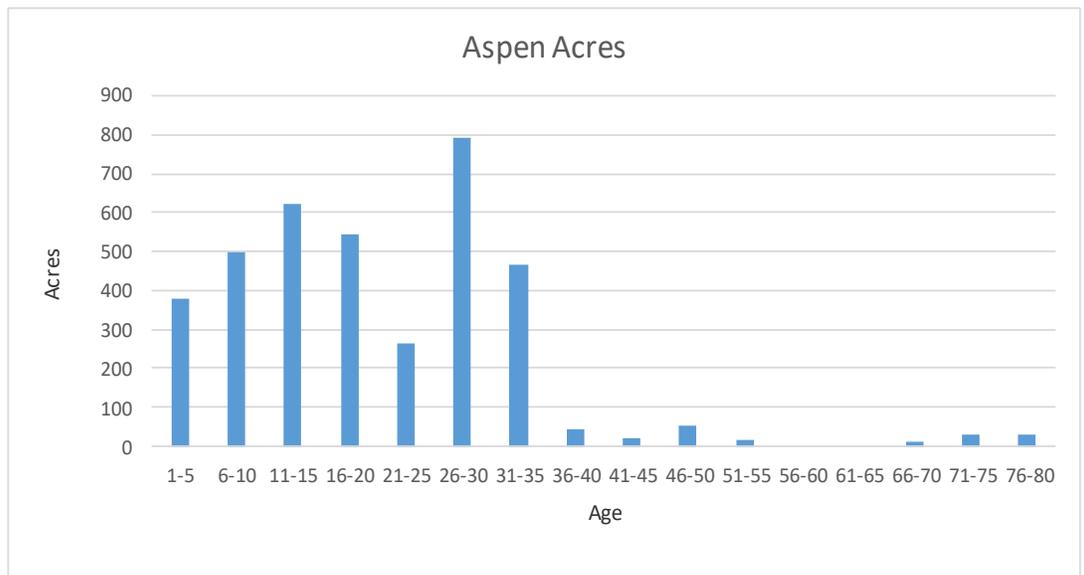


The aspen cover type is 24% of the forest. Aspen stands are often found in combination with white birch and red maple. The distribution of age classes are not equally represented but all age classes are well represented throughout the forest. The dominate age class is in the 26 to 30 year category with 790 acres.

Table 300-3. Polk County Forest Aspen Age Distribution by Acres

Aspen	
Age	Acres
1-5	378
6-10	499
11-15	622
16-20	542
21-25	266
26-30	790
31-35	464
36-40	45
41-45	23
46-50	52
51-55	15
56-60	0
61-65	0
66-70	11
71-75	29
76-80	29
Total	3765

Figure 300-4. Aspen Age Class Distribution

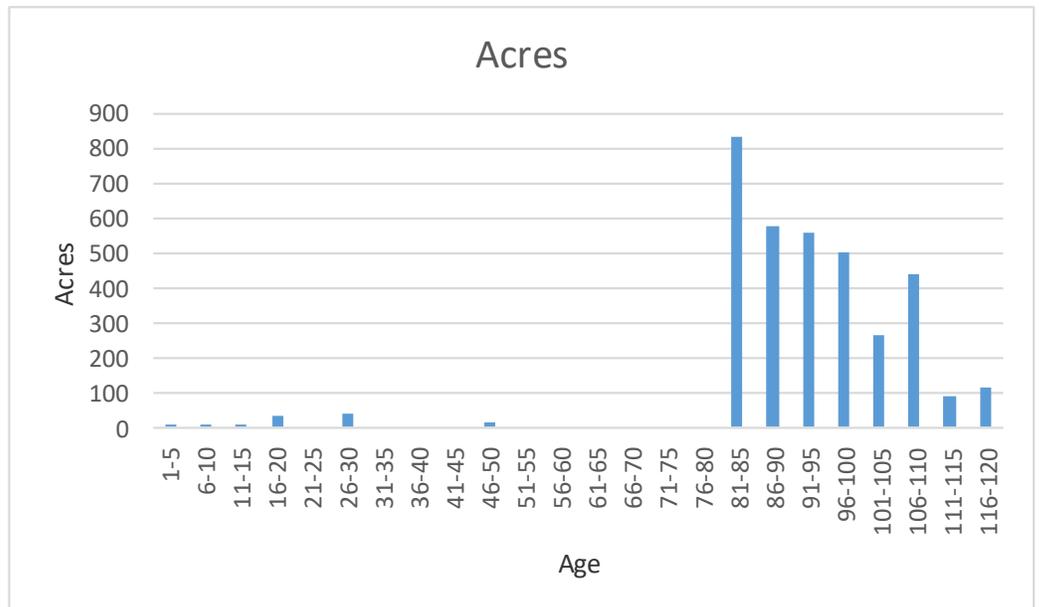


Red Oak is the dominant tree in the oak forest cover type. Oak is relatively long lived (120-160 years). Oak forests are very important to wildlife as a food source. In addition, the oak forest produce high value wood products. The oak age class distribution I Polk County is dominated by stands that are older than 85 years old. Specific stands will need to be regenerated during the next 15 year planning cycle.

Table 300-4. Polk County Forest Oak Age Class Distribution by Acres

Red Oak	
Age	Acres
1-5	7
6-10	3
11-15	4
16-20	35
21-25	0
26-30	38
31-35	0
36-40	0
41-45	0
46-50	12
51-55	0
56-60	0
61-65	0
66-70	0
71-75	0
76-80	0
81-85	836
86-90	580
91-95	561
96-100	503
101-105	263
106-110	439
111-115	89
Total	3484

Figure 300-5. Red Oak Age Class Distribution.

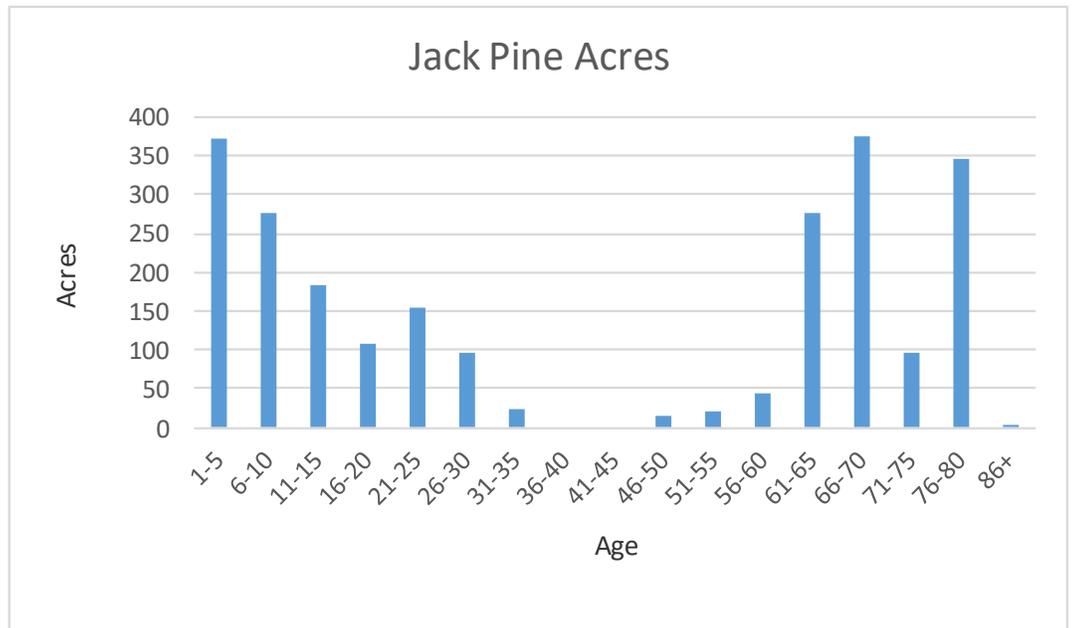


Jack pine is declining as it is being converted either successional or through planting. Planting efforts have maintained jack pine on the landscape over the last 30 -35 years. The remaining jack pine acreage is getting old and will be cut during the next 15 year planning cycle. Polk County Forest should attempt to minimize conversion of jack pine to other species in order to mitigate the further decline of the species.

Table 300-5. Polk County Forest Jack Pine Age Distribution by Acres

Figure 300-6. Jack Pine Age Class Distribution

Jack Pine	
Age	Acres
1-5	373
6-10	275
11-15	183
16-20	109
21-25	155
26-30	97
31-35	24
36-40	0
41-45	0
46-50	14
51-55	20
56-60	45
61-65	276
66-70	374
71-75	97
76-80	345
86+	3
Total	2390

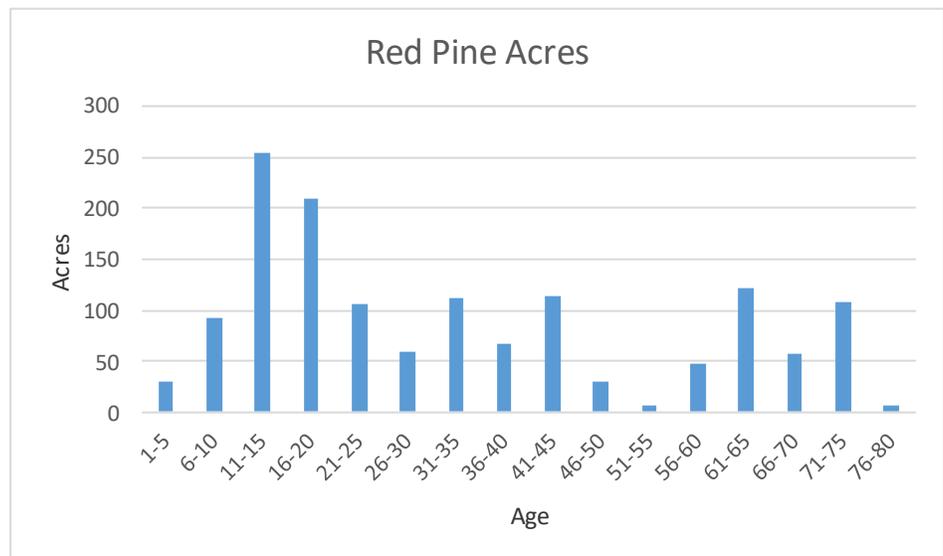


With a few exceptions, the Red Pine Resource is primarily in plantation form. Major plantings began roughly 35 years ago to create the stands that are present on the Polk County Forest. Red Pine is a desirable species in terms of economic returns. The Plantations can be thinned every 8 to 15 years yielding a steady cash flow. As the red pine plantations become older, they provide more structure and species diversity for wildlife species.

Table 6. Polk County Red Pine Age Distribution by Acres.

Red Pine	
Age	Acres
1-5	29
6-10	93
11-15	254
16-20	209
21-25	105
26-30	59
31-35	111
36-40	67
41-45	114
46-50	30
51-55	7
56-60	48
61-65	121
66-70	57
71-75	108
76-80	6
Total	1418

Figure 300-7. Red Pine Age Class Distribution.



The acreage of the Polk County Forest has remained relatively constant since the forest was created in the 1930's. Over time the forest has changed. The most notable difference is the loss of Jack pine from 1977 to today. Most of the jack pine has been replaced with scrub oak or either planted to red pine. The loss of Northern Hardwoods since 1977 can be contributed to two things. The first reason is in consideration into better inventory where the dominate species was oak rather than northern hardwood species. The second reason is due to the management of the Northern hardwood stands and promoting the oak within them. Red oak has increased in acreage due to the reasons just mentioned. In the future oak is predicted to decline as more shade tolerant species such as maple will eventually dominate the current oak stands.

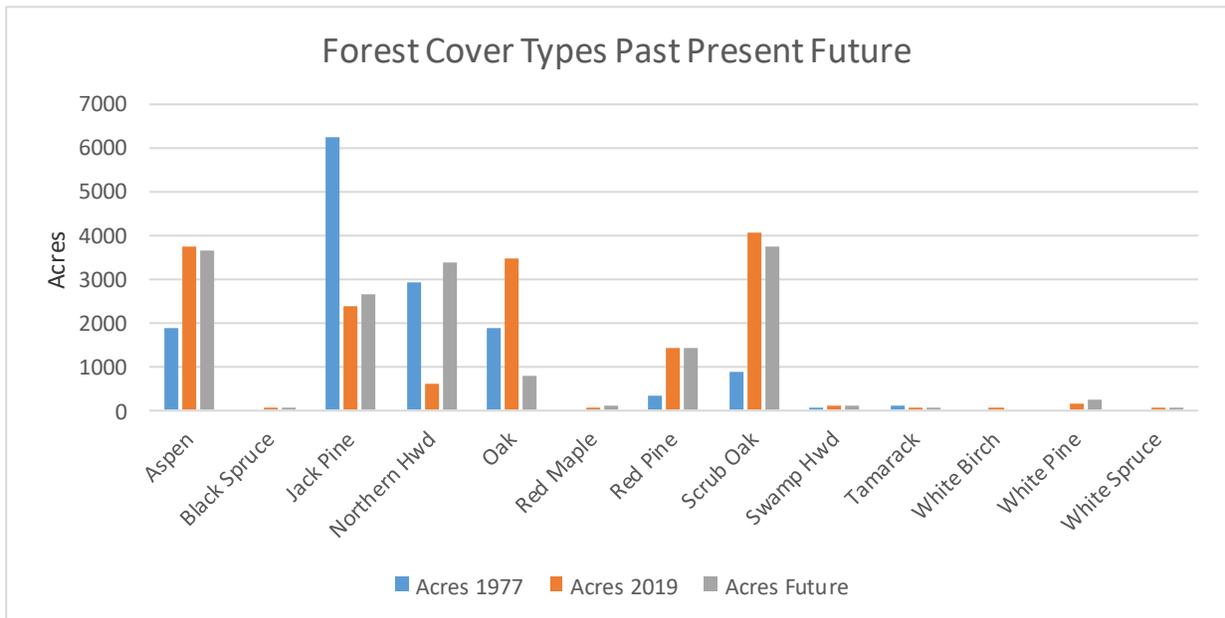


Figure 300-8. Past, present and predicted Future Cover Types of the Polk County Forest

NON-FORESTED COMMUNITIES

Non-forested habitats are important components of management within the County Forest. In broad categories the non-forest communities include upland .5%, wetland 3.3% water 1.8% roads and R.O.W. .2%.

Up-land and wetland non-forest types provide important habitat for distinct groups of species.

Upland Non-Forest

Upland non-forest areas of the County Forest include grass, prairie, campgrounds, parking areas and right of ways.

Grass openings- consist of upland grasses such as brome, quack, bluegrass, timothy, big and little bluestem, and Indian grass.

Herbaceous vegetation- ground cover predominated by herbaceous species with bracken fern, sweet clover, giant ragweed, sting nettle, upland aster, goldenrod, and prairie species.

Shrub opening- primarily upland site less than 10% stocked with tree species but having 50% or more of the area stocked with taller growing, persistent shrubs. This includes hazel, dogwood, juneberry, sumac, alder, willow, and prickly ash.

See Chapter 830 for detailed discussion on Biological Community Types.

Wetlands

Wisconsin State Statutes define a wetland as “an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation, and which has soil indicative of wet conditions.” Wetland communities are recognized to be a complex association of plants and animals, soils and water levels having special natural values. They provide many functional values including shoreline and flood protection, water quality protection, groundwater recharge, and animal and plant habitat. Therefore, it is the policy of Polk County to preserve, protect, and manage wetlands under its jurisdiction in

manner that recognizes the natural values of wetland and their importance on the environment. Scientist distinguish dozens of wetland types, characterized by vegetation, soil type and degree of saturation or water cover. Some of the more prominent types found on the County Forest include:

Aquatic bed- plants growing entirely on or in a water body no deeper than 6 feet. Plants may include pondweed, duckweed, lotus and water-lilies.

Marshes- characterized by standing water and dominated by cattails, bulrushes, pickerelweed, lake sedges and/or giant bur-reed.

Sedge or “wet” meadows- these wetlands more often than not have saturated soils rather than standing water. Sedges, grasses and reeds dominant, but may also have blue flag iris, marsh milkweed, sneezeweed, mint and several species of goldenrod and aster.

Scrub/shrub- these areas, which include bogs and alder thickets, are characterized by woody shrubs and small trees such as tag alder, bog birch, willow and dogwood.

Forested- these areas, include bogs and forested floodplain complexes, are characterized by trees 20 feet or more in height such as tamarack, white cedar, black spruce, elm, black ash, green ash and silver maple.

Forest management is conducted on many of the forested wetlands with activities occurring primarily during frozen conditions. See Chapter 830 for detailed discussion on Biological Community Types.

300.2.6 Fish and Wildlife

Wisconsin supports over 650 different types of mammals, birds, reptiles, amphibians and fish as well as millions of invertebrates. Management of county forest lands and the biotic communities they support provide a mix of habitat types and ages for a wide range of wildlife species. Each species, or interacting group of species, do best under different conditions. County forest lands provide a full range of habitats from open grasslands/barrens to mature forests, from bogs to forested wetlands, from spring ponds to lake shorelines. County forest staff works closely with WDNR fish and wildlife managers and conservation organizations to identify and manage critical habitat for breeding, migrating and wintering fish and wildlife. Polk Forest does not contain a specific wildlife management area due to the small acreage of the forest. Polk County Forest is willing to partner with other government entities, hunting organizations, wildlife groups are other appropriate agencies to support fish and wildlife.

300.2.7 Rare and Endangered Resources See also chapter 800- 820.5

A review of the Natural Heritage Inventory (NHI) indicates the presence of a number of rare species, natural communities and unique natural features on the Polk County Forest. All land disturbing projects will include an evaluation phase, to determine whether an NHI screening is required.

The Natural Heritage Inventory Database is the most comprehensive source of rare species data for Wisconsin. These data are used for a variety of purposes including research, land management, state land master planning, community planning, conservation planning and review of public and private activities across the state, The NHI Portal is currently available to DNR staff and County Forest staff who hold a data sharing license. Polk County Forest Currently holds a license to check the Natural Heritage Inventory Database and can be accessed by: <https://dnr.wi.gov/topic/NHI/calypso/Portal.html>.

The Wisconsin Historical Preservation Database is the most comprehensive source of cultural resources for Wisconsin. These data are used for a variety of purposes including research, land management, state land master planning, community planning, conservation planning and review of public and private activities across the state, The Wisconsin Historical Preservation Database is currently available to DNR staff and County Forest staff.

300.2.8 Water

The Polk County Forest contains Mackie Lake which is a small 41 acre lake. In addition, the County Forest contains approximately 1600 feet of shoreline along Sommers Lake. Approximately 6 miles of streams traverse the County Forest with approximately 1 mile being classified as a trout stream. A complete inventory of the surface water inventory of Polk County can be found in chapter 1000

300.3 CULTURAL FACTORS

300.3.1 Economy

The importance of all of the County Forests to Wisconsin's economic health continues to rise. County Forests sustain over 60,000 full-time jobs derived from logging, trucking, paper production, manufactured building materials, and lumber. Many other jobs are created in such businesses as the expanding printing industry and are located far from the forested northland. County Forests contribute to the 24 billion dollar forest industry in Wisconsin.

In addition, the lands managed by these 30 counties provide an important recreation

resource to complement our state's valuable tourism industry. Tourists spend valuable money at local businesses. By providing 2.4 million acres of public recreation land, we bring tourist to our state. As population increases and public access to privately owned forestland decreases, the need for accessible lands unquestionably will assume an ever more important role. More information on the economic impact of the County Forest program can be found at <https://www.wisconsincountyforests.com/>

Production of forest products and spin-off industries derived from the recreational opportunities within the forest and the forest products it produces are vitally important to Polk County's economic well-being. The Forest industry is the 17th largest employer in the County with a total output of 52.5 million. This data was taken from the 2017 IMPLAN data at:

<https://dnr.wi.gov/topic/forestbusinesses/factsheets.html>.

Forest Economy Polk County



HIGHLIGHTS

Every 10 jobs in the forest industry support 5 additional jobs in the county

Every million dollars of output in the forest industry creates \$280,000 of output in other sectors

The forest industry provides 1% of the jobs and output in the county

The forest industry provides 1.2% of the GDP in the county

Wages in the forest industry are 20% higher than the county average



For more information contact:
Andrew Stoltman
Forest Inventory Analyst
Wisconsin Department of
Natural Resources
Phone: 608-266-9841
E-mail:
andrew.stoltman@wisconsin.gov

Direct Economic Effects

	Employment	Output	Value Added
Forestry and Logging	63 jobs	\$4.5 million	\$2.4 million
Pulp and Paper	27 jobs	\$11.2 million	\$2.0 million
Sawmills and Wood Products	185 jobs	\$36.7 million	\$13.4 million
Total	275 jobs	\$52.5 million	\$17.8 million

Employment

Jobs	275 jobs
Payroll	\$11.8 million
Total Labor Income	\$13.4 million
Indirect Employment	139 jobs

Output

Total Output	\$52.5 million
Output per Worker	\$191,000
Indirect Output	\$14.7 million

Taxes

Direct	\$310,000
Indirect Taxes	\$1.2 million

Forest Land

Total Forest Land	268,418 acres
Public Land	31,921 acres
Private Land	236,497 acres
Forest Area	44% forested

2016 data. Output is the total value of the industry in the local economy. Value added is a measure of the industry's contribution to the local community; it includes wages, rents, interest, and profits. Direct impacts are jobs, revenue, and taxes for normal business operations. Indirect includes indirect and induced impacts. It refers to the dollars industry and households spend at other area businesses and the local jobs supported by the forest industry.

Figure 300-9. Economic Influence of Forestry in Polk County.

Tourism ranks as the number three industry within Polk County.

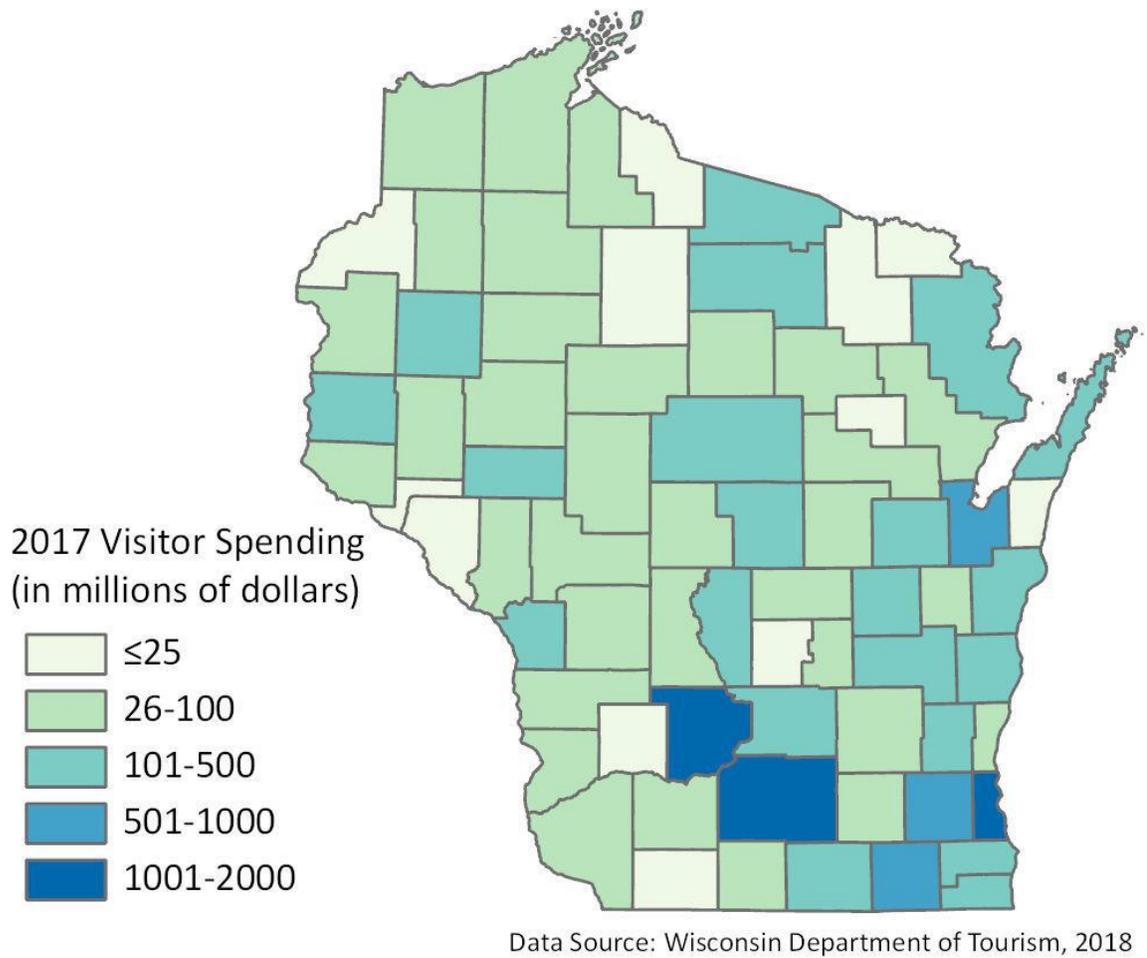


Figure 300-10. Visitor Spending by County 2017.

Table 300-7. Top five Employers Polk County 2017.

	Description	Employment
1	Employment and payroll of local govt, education	1,420
2	Hospitals	1,297
3	Tourism	1,098
4	Employment services	1,050
5	Employment and payroll of local govt, non-education	847

Source: *Tourism output and employment: <https://dnr.wi.gov/topic/Lands/scorp/>*

300.3.2 Education and Research

Education and research continue to be critical components in making decisions that affect our natural resources. As public needs and demands of our forest and its products increase, we must be prepared to assure that sound decisions result. To this end, Polk County encourages and supports research efforts that relate to the forest, and educational opportunities that will promote a better understanding of forest communities and management.

300.4 OTHER PUBLIC LANDS OWNERSHIP

Polk County Forest shares a common boundary with Governor Knowles State Forest, Town of Sterling, Sand Creek Fisheries Area, McKenzie Creek Wildlife Area, and Rice Bed Creek Wildlife Area. Roads and trails are connected without interruption between the public lands providing for a more enjoyable experience for the user groups. Polk County Forest will continue to form and build on these relationships with other adjacent public lands in the best interest of the public.