

JUNEAU COUNTY FOREST COMPREHENSIVE LAND USE PLAN
TABLE OF CONTENTS

CHAPTER 600
PROTECTION

<u>Section</u>	<u>Subject</u>	<u>Page</u>
600	PROTECTION	3
605	FIRE CONTROL	3
605.1	COOPERATION WITH THE DEPARTMENT OF NATURAL RESOURCES.....	3
605.1.1	Personnel.....	3
605.1.2	Equipment	4
605.1.3	Fire Detection	4
605.1.4	Forest Fire Prevention.....	4
605.2	DEBRIS BURNING.....	4
605.3	CAMPFIRES.....	4
605.4	PRESCRIBED BURNING.....	4
605.5	COUNTY FOREST FIRE HAZARD AREAS	5
610	CONTROL OF FOREST PESTS & PATHOGENS	5
610.1	DETECTION.....	5
610.2	PEST SURVEYS	5
610.3	SPECIFIC PESTS AND PATHOGENS OF CONCERN	5
610.3.1	Specific Pests of Interest	6
610.3.1.1	Gypsy Moth Strategy.....	6
610.3.1.2	Jack Pine Budworm	7
610.3.1.3	Oak Wilt	7
610.3.1.4	Forest Tent Caterpillar.....	8
610.3.1.5	Two-lined Chestnut Borer.....	8
610.3.1.6	Emerald Ash Borer.....	9
610.3.1.7	Heterobasidion Root Disease (HRD).....	9
610.3.2	Funding	10

610.3.3	Special Projects	10
610.4	DEER BROWSE	11
610.5	INVASIVE PLANT SPECIES	11
610.5.1	Funding and Partnerships	11
610.5.2	Best Management Practices.....	12
610.5.3	Current Plant Invasives.....	12
610.5.3.1	Buckthorn.....	12
610.5.3.2	Garlic Mustard.....	13
610.5.3.3	Honeysuckle.....	13
610.5.3.4	Spotted Knapweed.....	14
610.5.3.5	Japanese Barberry.....	14
610.5.3.6	Black Locust.....	15
610.5.3.7	Multi-Flora Rose.....	16

600 PROTECTION

OBJECTIVE

To protect and manage the resources of the forest from preventable losses resulting from fire, insects, diseases, and other destructive elements including those caused by people. Protective methods shall include proper silvicultural methods.

The DNR provides statewide technical guidance that will be used to inform local decisions. This guidance will be referenced to make decisions at the county level.

605 FIRE CONTROL

Damage to the forest caused by uncontrolled fire can create an important challenge in the management of the forest. Loss of resource values caused by fire will be minimized through organized prevention, detection, and suppression methods. Maintaining a healthy forest is key to fire management. The DNR is responsible for all matters relating to the prevention, detection, and suppression of forest fires outside the limits of incorporated villages and cities, as stated in s. 26.11(1), Wis. Stats. The DNR works cooperatively with local fire departments in all fire control efforts. Juneau County Forest is part of the Intensive and Cooperative Forest Fire Protection Area. The Fire Management Handbook No. 4325.1 and the Area Operations Plan shall serve as the guidelines for fire control activities.

605.1 COOPERATION WITH THE DEPARTMENT OF NATURAL RESOURCES

Pursuant to s. 26.11(4) and s. 28.11(4)(f), Wis. Stats., and of the Juneau County Forest Ordinance, the county may cooperate with the DNR in the interest of fire prevention, detection and suppression on the County Forest. This is accomplished through agreements authorizing the DNR to use County Forest land or to utilize county personnel and equipment for fire protection activities.

605.1.1 Personnel

County Forest personnel, upon request from the DNR, shall be made available for forest fire control efforts within the county in accordance with an established memorandum of understanding (MOU). The DNR is responsible for training and directing the activities of

county personnel in accordance with the rules identified in the Fire Management Handbook, No. 4325.1.

605.1.2 Equipment

County Forest equipment, upon request and as identified in the MOU, shall be available for forest fire control suppression. During periods of high fire hazard, all County Forest vehicles and/or crews should be equipped with one or more backpack cans, axes or shovels, appropriate personal protective equipment, mobile communication, and any other equipment deemed essential by the MOU. All hand tools shall be maintained and provided by the DNR.

605.1.3 Fire Detection

Fire detection is the responsibility of the DNR. County Forestry personnel may assist and report any wildfires to the DNR, local Fire Department or 911 Dispatch.

605.1.4 Forest Fire Prevention

DNR fire control personnel are authorized by the county to place fire prevention signs at recreational areas and other strategic locations within the forest. The County conducts and controls all operations (including harvesting) on the forest in a manner designed to prevent forest fires. The use of the county forest and the Department will coordinate during high fire danger periods to impose any necessary restrictions. These restrictions may include, but are not limited to, recreation and logging.

605.2 DEBRIS BURNING

Unauthorized burning of debris will not be permitted on County Forest Lands pursuant to s. 26.12(5), Wis. Stats.

605.3 CAMPFIRES

During periods of high fire danger, use of campfires may be restricted.

605.4 PRESCRIBED BURNING

All prescribed burning on County Forest lands will follow the DNR recommendations. See

Prescribed Burn Handbook No. 4360.5 for details. Prescribed fire may be an effective management tool on the County Forest.

605.5 COUNTY FOREST FIRE HAZARD AREAS

The DNR places primary emphasis will be placed on fire control efforts in pine areas. Maps of these areas are available at the local DNR field office. The County will cooperate with DNR Fire Control in providing for firebreaks or access ways. Existing access roads, firebreaks and water access points will be maintained as deemed necessary. Secondary emphasis will be placed on hardwood areas with no firebreaks developed or maintained. However, access roads will be maintained as defined in Chapter 700 of this plan.

610 CONTROL OF FOREST PESTS & PATHOGENS

610.1 DETECTION

Damage to the forest caused by insects, other pests and diseases can adversely affect management of the forest resources. Losses to resource values impacted by forest pests will be minimized through integrated pest management methods, with emphasis on silvicultural prescriptions (timber sales). The detection and control of pest problems will be accomplished by county and DNR personnel in cooperation with other agencies.

610.2 PEST SURVEYS

Pest surveys are conducted under the direction of the DNR's forest health specialists. The County may cooperate by providing personnel and equipment to assist in these operations.

610.3 SPECIFIC PESTS AND PATHOGENS OF CONCERN

Integrated pest management for the purpose of this Plan, is defined as follows:

“The maintenance of destructive agents, including insects, at tolerable levels, by the planned use of a variety of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable.”

The integrated pest management control and methodology shall be determined jointly by the County Forest Administrator, and DNR liaison forester in consultation with the DNR

district Forest Health Specialist. Suppression of forest pests may include the following:

1. Silvicultural prescriptions, including timber sales.
2. Biological control.
3. Chemical control.

610.3.1 Specific Pests of Interest

610.3.1.1 Gypsy Moth *Lymantria dispar*

This introduced pest has progressed westward from the northeastern United States since the early 1900's. It became established in eastern counties of Wisconsin in the 1990's and is now naturalized in Juneau County and as far west as Eau Claire County (as of 2022). It reached eastern Wisconsin and has been widespread in some counties since 1988. Despite efforts to slow-the-spread and suppress outbreaks, it is progressing westerly through Wisconsin. The Juneau County Forest's strategy to minimize damage from this insect focuses on using silvicultural techniques to maintain and improve forest vigor, to decrease the likelihood of significant mortality following defoliation. Where even defoliation could not be tolerated, treatment with approved insecticides may be considered. Areas that may be treated with insecticide to suppress outbreaks include high use recreation areas and stands containing a high percentage of susceptible, high valued timber. These areas are identified in Chapter 900. Juneau County will view treatment options available at <https://gypsymoth.wi.gov/> and consult with local DNR forest health specialist for additional guidance on management. Treatments may be done on individual trees or small areas if appropriate to the goal.

Juneau County is located within the quarantined area for *L. dispar*. DATCP is the agency that regulates movement of products including logs and firewood to non-quarantined counties in Wisconsin. See their webpages on the quarantine at https://datcp.wi.gov/Pages/Programs_Services/GMQuarantineRegs.aspx. They can also help with questions about moving regulated items out of state to non-

quarantined areas though USDA APHIS is the regulatory agency for inter-state movement of products.

610.3.1.2 Jack Pine Budworm

Jack pine budworm, *Choristoneura pinus*, is a native needle-feeding caterpillar that is generally considered the most significant pest of jack pine. Red, Scotch and white pine, and spruce, can also be defoliated and suffer top-kill and mortality by jack pine budworm. Vigorous, young jack pine stands are less likely to be damaged during outbreaks. The most vigorous stands are well stocked, evenly spaced, fairly uniform in height, and less than 45 years old. Stands older than 45 years that are growing on very sandy sites and suffering from drought or other stresses are very vulnerable to damage. Tree mortality and top-kill are more likely to occur in these stands. In addition, stressed stands are more susceptible to attack by Ips bark beetle. Mortality from Ips can occur for 2-3 years after the jack pine budworm outbreak collapses. This mortality and top-kill create fuel for intense wildfires.

It will be Juneau county's strategy to harvest at the appropriate rotation age, maintain high stand densities (without overcrowding), and use good site selection for jack pine. This will be an effort to help avoid budworm-caused tree mortality and reduce the threat of damaging wildfires while still providing suitable conditions for jack pine regeneration. Prompt salvage following an outbreak will also help reduce the possibility of wildfire. Esthetic strips and/or islands should not be used. Leaving these esthetic strips/islands can prolong the outbreak by giving the budworm areas for breeding. Use of insecticides is not warranted in combating this forest pest on the County Forest.

610.3.1.3 Oak Wilt

Oak wilt, *Bretziella fagacearum*, is a destructive disease of oak trees. It is responsible for the death of thousands of oak trees in forests, woodlots, and home landscapes each year. Oak wilt is caused by a fungus that invades and impairs the tree's water conducting system, resulting in branch wilting and tree death. Trees

in both the red oak group and white oak group are affected. There is no known cure once a tree has oak wilt. Prevention of new oak wilt infection centers is the best management option and involves avoiding injury to healthy trees and removing dead or diseased trees. The [Oak Harvesting Guidelines to Reduce the Risk of Introduction and Spread of Oak Wilt](#) will be used for management guidance. If pruning is necessary or damage is incurred during the growing season, (e.g. through construction activities or storms), the wounds should be painted immediately with a wound paint. Timber harvesting in stands being managed for oak will be restricted to the period from April 1st to July 15th. Where appropriate, efforts to increase species diversity or to convert oak stands to other cover types will be made to help reduce future impacts from the disease.

610.3.1.4 Forest Tent Caterpillar

Forest tent caterpillar, *Malacosoma disstria*, can be found throughout the United States and Canada wherever hardwoods grow. The favored hosts in Wisconsin are aspen and oak. This native insect causes region-wide outbreaks at intervals from 10 to 15 years; outbreaks usually last 2 - 5 years in the Lake States. Severe and repeated defoliation can lead to dieback and/or reduced growth of affected trees, which in some instances may be significant. Populations are often controlled by natural enemies, helping the population crash. Aerial spraying of insecticides can be an option for control as well. It will be Juneau County's strategy to employ sound silvicultural practices to combat this cyclic pest.

610.3.1.5 Two-lined Chestnut Borer

The two-lined chestnut borer, *Agrilus bilineatus*, is a common secondary pest in trees which have been severely defoliated several years in a row. Oaks that are under stress from drought and/or defoliation by insects such as gypsy moth (*Lymantria dispar*), fall cankerworm (*Alsophila pomataria*), and forest tent caterpillar (*Malacosoma disstria*) can be infested and killed by two-lined chestnut borer. Prevention of two-lined chestnut borer through sound silvicultural practices is the best management option. Postponing management activities in stressed stands for two years after severe drought and/or defoliation have ended will

provide time for trees to recover and reduce their susceptibility to two-lined chestnut borer attack. Infestations should be salvaged promptly. Juneau County will strive to maintain healthy trees through sound silvicultural practices to discourage infestation.

610.3.1.6 Emerald Ash Borer

The emerald ash borer, *Agrilus planipennis*, was accidentally introduced to North America from Asia in 2002. Emerald ash borer (EAB) infestations in Wisconsin have resulted in widespread mortality to *Fraxinus* species including green, white, and black ash. It is expected that 99% of the ash trees in Wisconsin will die. Ash comprises a significant component in the northern hardwood timber type and can be found in nearly pure stands in some lowland areas. Adult EAB beetles feed on foliage but it is the larvae that cause mortality by feeding on the phloem and outer sapwood of the ash trees.

The [Emerald Ash Borer Silviculture Guidelines](#) are available to help resource managers make informed stand-level decisions to manage forests that are not yet infested by EAB, as well as implement salvage harvests and rehabilitation in stands that have already been impacted by EAB.

It is Juneau County's policy to follow the Emerald Ash Borer Silviculture Guidelines.

610.3.1.7 Heterobasidion Root Disease

Heterobasidion root disease (HRD, previously called annosum root rot), is caused by the fungus, *Heterobasidion irregulare*. It is a serious disease that causes pine and spruce mortality in Wisconsin, but over 200 woody species have been reported as hosts. Red and white pine trees are most commonly affected in plantation-grown stands subjected to thinning. The disease was first confirmed in Wisconsin in 1993 and has since been found in a number of counties throughout Wisconsin. Diseased trees, including overstory trees and understory seedlings and saplings, will show fading, thin crowns with tufted foliage, and eventual mortality.

Currently there are no curative treatments to eliminate the HRD pathogen from a stand once it is infested, so preventing disease introduction is the best approach.

Infection most often occurs when HRD spores land and germinate on a freshly cut stump. The pathogen then grows into the root tissue and progresses underground from tree to tree through root contact. As the pathogen spreads, and trees decline and die, an ever-expanding pocket of mortality is formed. HRD fruit bodies, or conks, may be found at the base of dead trees and old stumps. Fruit bodies are most commonly observed in the fall but can be found any time of the year.

[Guidelines for stump treatment to reduce the risk of introduction and spread of Heterobasidion root disease in Wisconsin](#) should be used by the county forests.

The HRD guidelines are designed to help property managers and landowners determine whether the preventive pesticide treatment should be used to reduce the risk of introduction and spread of HRD at the time of harvest in a pine and/or spruce stand.

It is Juneau County’s policy to follow the “Guidelines for stump treatment to reduce the risk of introduction and spread of Heterobasidion root disease in Wisconsin.”

610.3.2 Funding

Desired control activities on the County Forest will be funded through the county forestry budget if other sources of funding are not available. In the event costs require additional funding, the County Forest will make all reasonable efforts to secure funding for control efforts, through other county funds, or other state, federal or private funding sources.

610.3.3 Special Projects

The County may cooperate with other agencies in forest pest research.

610.4 DEER BROWSE

Forest regeneration and reproduction is critical to sustain both timber production and wildlife habitat and the overall health of the deer herd. As a keystone species, deer can affect forest regeneration, long-term forest production, and forest sustainability. This is a concern for all interested in forest production and trying to balance deer numbers with habitat.

Juneau County Forest may monitor herbivory impacts during forest reconnaissance.

610.5 INVASIVE PLANT SPECIES

Invasive plants can cause significant negative impacts to the forest. Invasive species can displace native plants and hinder the forest regeneration efforts. Preventing them from dominating habitats is critical to the long-term health of the forest. There are a number of invasive plant species in varying densities on the County Forest. Some warrant immediate and continual treatment efforts while others may be allowed to remain due to extent and financial ability to control them. The County will continue to train staff in invasive species identification as well as attempt to secure funding sources to control them as much as is practical. Invasive plants on the forest should be documented as well as potential response to new infestations.

610.5.1 Funding and Partnerships

Grant opportunities for invasive species control funding can be found on the [Financial Assistance webpage](#) of the Wisconsin Invasive Species Council. The number of grants for local governments and county forest is limited, especially for terrestrial invasive plant control. Some grants, such as the Department of Natural Resource's [turkey stamp program](#), support invasive plant control as part of larger efforts to promote certain outcomes and might be applicable.

The Department of Natural Resources promotes the formation of cooperative invasive species management areas (CISMAs) through its

[Weed Management Area – Private Forest Grant Program](#). While activities funded by this grant are restricted to non-industrial private forests, CISMAs are encouraged to partner with other groups in their area and some can provide technical support to county forests. The CISMA's of Wisconsin can be found on this [map](https://ipaw.org/the-solution/education/cismas/). (<https://ipaw.org/the-solution/education/cismas/>)

610.5.2 Best Management Practices

In 2009, the Department of Natural Resources and many stakeholder groups approved a series of Best Management Practices (BMPs) for minimizing the spread of forest invasive plants. The full text of the [BMPs](#) is found on the Wisconsin Council on Forestry website. Voluntary use of the BMPs during forestry stewardship activities reduces the spread of invasive plants that can impede forest regeneration in county forests.

BMPs used before, during and after a harvest promote forest regeneration. Reasonable efforts to clean vehicles, equipment, footwear and other clothing helps reduce the spread of seeds and plant fragments to un-infested forests. Planning the sequence and timing of stewardship activities to reduce contact with invasive plants during forestry operations is another helpful strategy. Similarly, controlling populations of invasive plants before logging reduces the risk of spreading them. Follow-up monitoring of disturbed stands can detect populations of invasive plants while they are still small and more easily managed.

610.5.3 Current Plant Invasives

610.5.3.1 Buckthorn

Two species of invasive buckthorn impact Wisconsin's forests. Common buckthorn, *Frangula cathartica*, is more often found growing on well-drained soils while glossy buckthorn, *Frangula alnus*, favors wetter soils. Both species grow in shade or sun, quickly form dense, even-aged thickets that shade out understory plants, including tree seedlings, and hinder forest

regeneration. Their dark colored fruits are eaten by birds who disperse them long distances. Both buckthorns green-up before native plants and remain green after the natives drop their leaves.

Buckthorn can be controlled by taking advantage of the longer period in which they retain their leaves. Foliar applications of herbicide applied when buckthorn has leaves and the natives are leafless will minimize damage to native plants. Other control options include mowing the shrubs and then treating re-sprouts with foliar herbicide, basal bark herbicide applications, and cut stump herbicide applications.

610.5.3.2 Garlic Mustard

Garlic mustard (*Alliaria petiolata*) is an herbaceous, biennial, native to Europe. During the first year a basal rosette of only leaves develops. The second year, several stems from 1 – 4 feet tall grow from the basal rosette. The leaves have a distinct garlic fragrance when crushed. From the stems grow several small white flowers. Each plant can produce 100's of tiny seeds inside long, narrow capsules. Garlic mustard can quickly colonize disturbed forests as it often follows corridors such as game trails or man-made roads/paths. As garlic mustard spreads, it quickly displaces native plants and is known to radiate chemicals into the soil that disrupt associations between mycorrhizal fungi and native plants. Small populations can be hand pulled, while larger populations are better controlled with prescribed fire and/or herbicide. All pulled plant materials should be bagged and removed from the forest as seeds have been known to mature on dead plants left on site. Treatment should be repeated until the seed bank is depleted, which takes multiple years. Garlic mustard sites should be monitored annually, until no plants are discovered for several years.

610.5.3.3 Honeysuckle

Bush Honeysuckles (*Lonicera maackii*, *L. tatarica*, *L. morrowii*, *L. X bella*) were introduced from Eurasia as ornamentals, wildlife cover and soil erosion control. Bush honeysuckles are upright deciduous shrubs, ranging from 5 - 12

feet tall with gray shaggy bark. The leaves are opposite, simple, oval and untoothed and can be smooth, to velvety depending on species. Flowers are fragrant and tubular ranging in colors of white, red and pink. They bloom May through June and then form red to yellow berries that are found as pairs on the leaf axils. Honeysuckles replace native forest shrubs and herbaceous plants by inhibiting growth of understory plants due to early leaf-out which shades out herbaceous ground cover and depletes soil moisture. Control options include hand pulling small infestations and prescribed burning which kills seedlings and top kills mature shrubs. Herbicide options include cut stump treatment and foliar spraying. With all control efforts repeated monitoring is needed.

610.5.3.4 Spotted Knapweed

Spotted knapweed (*Centaurea stoebe*) is an herbaceous, short-lived perennial native to Eurasia that can grow 2 – 4 feet tall. This plant first appears as a basal rosette of somewhat silvery leaves and may persist this way for several years before developing pink-purple flowers on long spreading stems. The flowers are thistle-like with many petals and stiff bracts. Knapweed invades dry-upland areas including disturbed sites such as forest trails and openings. The roots exude an allelopathic chemical which inhibits establishment of other plants; hindering forest regeneration. Small populations can be hand pulled provided the entire tap root is removed. Gloves, long sleeves and pants should be worn when handling this plant as it may cause skin irritation. Chemical control should be applied directly to plants or broadcast across large areas of infestation. Biological control is also available as part of an integrated pest management plan.

610.5.3.5 Japanese Barberry

Japanese barberry (*Berberis thunbergii*) was introduced from Japan around 1875 and now ranges across most of North America. It is a compact, spiny, deciduous shrub with arching branches of dense foliage. It commonly grows 2 - 3 feet tall and has been known to reach heights of 6 feet. Japanese barberry regenerates by seed, creeping roots and branches that root freely when they

touch the ground; which increases its overall spread. Small, rounded, smooth edged leaves are clustered in tight bunches close to the spiny branches and small yellow flowers bloom through May forming red oblong berries that mature in mid-summer and persist into winter. This plant is highly adapted to growing in young forests where it forms thorny thickets that shade out and limit the growth of native plants and spreads easily under the shade of established forests. The primary method of mechanically controlling barberry is hand pulling or digging early before seed set in areas where there are only a few plants. It has shallow roots but resprouting may occur if the entire root system is not removed. Larger populations may be controlled by herbicides with a cut stump treatment and repeated monitoring for both seedlings and roots re-sprouting.

610.5.3.6 Black Locust

Native to the southeastern United States, black locust is a fast-growing tree in the legume family, growing 30-90' tall with a trunk 2-4' in diameter. While the bark of young saplings is smooth and green, mature trees can be distinguished by bark that is dark brown and deeply furrowed, with flat-topped ridges. Seedlings and sprouts grow rapidly and are easily identified by long paired thorns. Leaves of black locust alternate along stems and are composed of seven to twenty one smaller leaf segments called leaflets. Leaflets are oval to rounded in outline, dark green above and pale beneath. Fragrant white flowers appear in drooping clusters in May and June and have a yellow blotch on the uppermost petal. Fruit pods are smooth, 2 to 4 inches long, and contain 4 to 8 seeds. Two other locusts, native to the Appalachians, *Robinia viscosa* (with pink flowers), and *Robinia hispida* (with rose-purple flowers), are used in cultivation and may share black locust's invasive tendencies. Black locust poses a serious threat to native vegetation in dry and sand prairies, oak savannas, and upland forest edges, outside of its historic North American range. Once introduced to an area, black locust expands readily into areas where their shade reduces competition from other (sun-loving) plants. Dense clones of locust create shaded islands with little ground vegetation. Lack of ground fuel limits the use of fire in natural disturbance regimes. The large, fragrant blossoms of black locust compete with

native plants for pollinating bees.

610.5.3.7 Multi-Flora Rose

Multiflora rose is a thorny, perennial shrub with arching stems (canes), and leaves divided into five to eleven sharply toothed leaflets. The base of each leaf stalk bears a pair of fringed bracts. Beginning in May or June, clusters of showy, fragrant, white to pink flowers appear, each about an inch across. Small bright red fruits, or rose hips, develop during the summer, becoming leathery, and remain on the plant through the winter. Multiflora rose is extremely prolific and can form impenetrable thickets that exclude native plant species. This exotic rose readily invades open woodlands, forest edges, successional fields, savannas and prairies that have been subjected to land disturbance.